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Is a Higher Calling Enough? Incentive Compensation in the Church

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We study the compensation and productivity of more than 2,000 Methodist ministers in a 43-year panel data set. The church appears to use pay-for-performance incentives for its clergy, as their compensation follows a sharing rule by which pastors receive approximately 3% of the incremental revenue from membership increases. Ministers receive the strongest rewards for attracting new parishioners who switch from other congregations within their denomination. Monetary incentives are weaker in settings where ministers have less control over their measured performance.

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> The parochial clergy are like those teachers whose reward depends partly upon their salary, and partly upon the fee or honoraries which they get from their pupils; and these must always depend more or less upon their industry and reputation. (Adam Smith, *The Wealth of Nations*, bk. 5, chap. 1, pt. 3, article 3)

> If we have sown spiritual seed among you, is it too much if we reap a material harvest from you? If others have this right of support from you, shouldn't we have it all the more? (1 Cor. 9:11–13)

I. Introduction

The Holy Bible and *The Wealth of Nations* are two of the most influential books in Western culture. Although written nearly two thousand years apart, the quotations above show that both the Apostle Paul and Adam Smith recognized the value of a sound remuneration system for members of the clergy.

In this study, we examine the compensation arrangements of a large sample of pastors who minister to United Methodist congregations in the American Midwest. We evaluate whether clergy have meaningful pay-for-performance incentives, an arrangement that might seem unlikely for several reasons. Ministers are called to their work because of strong intrinsic motivation, which might negate any need for explicit performance incentives. Incentives might undermine credibility with a congregation, causing it to question a minister's motivation or commitment. Finally, churches lack clear motives for creating incentive contracts, because they are nonprofit entities without residual claimants (Fama and Jensen 1983).

Notwithstanding these obstacles to efficient contracting, we find abundant evidence that ministers' compensation conforms to standard principal-agent models. We analyze an extensive panel data set of all 727 United Methodist churches and 2,201 ministers in the state of Oklahoma between 1961 and 2003.[1] We find that when a new member joins a church,

ments. We especially thank Rev. Denny Hook (retired) for sharing his insights and knowledge of the church and for help with acquiring and understanding the data. Part of this research was completed while Yermack was a visiting professor at Erasmus University Rotterdam. Contact the corresponding author, Jay Hartzell, at Jay.Hartzell@mccombs.utexas.edu.

[1] For brevity, we use the term "Methodist" in place of the fuller name of the denomination, the United Methodist Church. The United Methodist Church as it currently stands was formed in 1968 via a merger between the Methodist Church and the Evangelical United Brethren Church. In our sample, nearly all of the United Methodist churches came from the original Methodist denomination.

its minister's annual compensation increases by just under $15 (all values are in constant 2008 dollars). When a member leaves a congregation, the minister's pay falls by about $7. Based upon the donations associated with a typical church member, we argue that ministers' incentives operate as a type of sharing rule, by which a pastor is paid close to 3% of the incremental revenue that accrues to a church when a new member joins. These effects translate to a pay-size elasticity with respect to membership of approximately 0.2, about half the pay-size elasticity of corporate CEOs.

After establishing the presence of performance pay in ministers' compensation, our study investigates two implications of agency theory. Our first tests involve the rewards for different types of actions taken by a pastor. When an agent can work on multiple tasks, as a minister might, theory predicts that rewards for each task should vary. Incentives should be stronger when a task yields higher marginal returns to effort and also when the agent incurs a lower marginal cost of supplying effort. Our second tests involve the trade-off between risk and incentives. The standard prediction is that in riskier settings where output is a poor signal of effort, firms should use less performance pay.

We test the incentives for different pastoral actions by estimating the rewards to pastors for recruiting new congregation members. New members can come from several different sources, which require different levels of involvement from the minister. These sources include other Methodist congregations, other non-Methodist but Christian congregations, or new conversions to Christianity. Recruiting other Methodists requires the least effort, because it involves little search cost or explanation of church doctrine. Recruiting other Christians should be more time consuming, while the unchurched population requires the greatest effort.

Consistent with this hypothesis, we find strong evidence that a minister's compensation reflects his marginal cost of effort. A pastor's annual compensation increases by about $18 when a member joins who is unaffiliated with any church ("by profession of faith"). The pay increase is about twice as high, approximately $33, for adding new members who defect from other Methodist churches. In the other direction, the financial penalty for losing a congregant to another Methodist church is even stronger, a cost to the minister of approximately $43 in annual compensation. These relations between pay and within-Methodist transfers are stronger where churches are geographically denser, suggesting that the results are not driven by relocations. In addition, membership changes that have little to do with ministerial effort have no impact on a minister's compensation. For example, losing a member to death results in no discernible change in pay.

An alternative explanation for this pattern is that members recruited from other Methodist churches are worth more, perhaps because they donate more. Our data do not support this interpretation, as church

revenues increase when any type of new parishioner joins a congregation, without a statistically significant difference among categories of new members.

The church's apparent compensation policy at the congregation level leads to a collective action problem for the church as a whole, because Methodist clergy are rewarded by their parishes for poaching members from one another's flocks. This practice of "sheep stealing" is recognized and lamented in religious circles (Chadwick 2001). Some religions implement policies to work actively against sheep stealing, such as the Catholic Church's "territorial parish" system that organizes church membership according to geographic neighborhood boundaries.[2]

Thus, what is optimal depends on the party asking the question—for a local church, paying for sheep stealing is optimal, while for the overall Methodist body, paying for such transfers may be wasteful, although church leadership might tolerate or even encourage some sheep stealing for incentive or disciplinary reasons. Our data allow us to observe the different incentives between the local church and the Annual Conference, the central governing body that reassigns ministers to new churches every few years. Although the conference does not set a minister's pay, it can influence compensation indirectly by promoting (demoting) him to a larger (smaller) church. We find that these promotion incentives counteract local churches' rewards for sheep stealing. When reassigning ministers, the conference is more likely to send a pastor to a better-paying church only if he has increased net membership in the Methodist faith and not if increases have resulted from poaching members of other Methodist parishes.

Our final tests consider the impact of risk upon ministerial compensation. When a pastor's private effort and measurable output are weakly correlated, then a risk-averse minister will reduce effort (e.g., Holmstrom 1979; Banker and Datar 1989), because an additional unit of effort has a certain cost but an uncertain outcome. Incentive contracts should therefore reduce an agent's exposure to factors that are beyond his control. A number of studies have attempted to demonstrate this relation, with varying degrees of success. Prendergast (2002) documents a variety of findings in prior studies and offers a rationale for such inconsistent evidence: be-

[2] Catholics living in a geographical area automatically become members of their designated territorial parish. Catholics may attend mass wherever they wish and "register" with other parishes, but they cannot change parish membership unless they move. Marriages must take place in the territorial parish church of either spouse, with similar requirements for baptisms, unless an exemption is granted in advance by the territorial parish priest. While enforcement of these rules appears to have been relaxed over time, they remain operative worldwide due to Canon Law. See http://catholicexchange.com/2008/04/11/111841/ (United States) and http://ewtn.com/library/Liturgy/zlitur158.htm (Britain).

cause risk alters the nature of the job itself, standard tests of risk versus incentives can be misleading. He shows that under some conditions, risk and incentives can be positively related.[3] Our data allow us to sidestep this endogeneity, because a minister's job is largely homogenous regardless of the output risk that he faces.

We test for cross-sectional differences in incentive pay that depend upon the risk borne by the minister. Our first proxy is the volatility of a parish's membership. We find that a church with volatility above the median pays its minister roughly 50% less sensitive pay-for-performance incentives than a counterpart church with volatility below the median, controlling for church size. Our second test exploits the fact that some regions of Oklahoma have economies strongly connected to oil prices, which fluctuate exogenously. Because church attendance fluctuates with economic conditions, oil shocks impose risk upon the minister. We find that pay for performance is significantly lower for parishes located in oil-driven local economies. Together, these results provide support for one of the most standard predictions of agency theory but one that has been difficult to test cleanly.

Our study contributes to several lines of research in finance and economics. Although nonprofits constitute a significant portion of the national economy, they face few disclosure requirements and therefore are rarely studied by empirical economists. A nascent literature has studied the role of incentive compensation in nonprofits. Leading papers include Hallock (2002) and Brickley and Van Horn (2002). A large literature, reviewed by Iannaccone (1998), examines the economics of religion. Several papers in this area have studied the compensation of clergy, all of them using cross-sectional data to estimate the determinants of pay across churches. McMillan and Price (2003) and Haney (2007) use a survey of 883 pastors across nearly 100 different faiths to evaluate relations between compensation and church structure, location, and size. Trawick and Lile (2007) study Southern Baptist congregations and find that ministers' pay is higher in areas where Southern Baptist churches have a greater concentration. Zech (2007) finds that ministers in larger communities earn more pay, while pay is unrelated to self-reported performance scores. None of these papers takes a time series approach or uses objective performance criteria to evaluate the strength of pay-for-performance incentives, which is the main focus of our work.

[3] Specifically, delegation of duties is more likely to occur when agents face uncertainty about the types of activities that they should be working on. Prendergast (2002) uses the example of a project manager working in a foreign country, where the agent must choose not only how hard to work but in what dimensions (e.g., developing political connections, recruiting labor, etc.). Because his firm cannot determine ex ante which activities are appropriate, they are forced to pay only on output, leaving the discretionary choice to the agent.

Our analysis is limited to the day-to-day activities of ordinary church pastors who preach on Sundays and minister to congregations during the rest of the week. Some charismatic American clergy have earned fortunes through book royalties, televangelism, and charging fees for access to sacred texts, but those entrepreneurial activities are beyond the scope of our study and probably have little overlap with the work of the Midwestern clergy in our sample.

The remainder of the paper is organized as follows. Section II describes our data. Section III presents our analysis of pay-for-performance for parish clergy. Section IV concludes.

II. Data Description and Background

Our study uses data on pastoral compensation provided to us by a unit of the United Methodist Church, the second largest Protestant denomination in the United States. The Methodist church came to the United States in the eighteenth century, not long after its founding at Oxford University in England by theologian John Wesley. The denomination's current U.S. organizational form resulted from mergers in 1939 and 1968 between several related branches that had separated in the nineteenth century for doctrinal and administrative reasons. With approximately 8 million members today, the United Methodist Church has a reputation for moderate, mainstream Christian beliefs and good ecumenical relations with other denominations. Members include such diverse public figures as George W. Bush and Hillary Rodham Clinton.

We were fortunate to receive a 43-year time series of data about the activities and finances of every local parish in the United Methodist Church's Oklahoma Annual Conference. An Annual Conference, the basic regional organizational unit of the church, is led by a bishop who presides over a Cabinet of District Superintendents. These officials control the hiring and assignment of individual pastors and, to a lesser degree, the clergy's annual compensation. A pastor typically serves a particular congregation for only a few years, as pastors rotate on a mandatory basis across churches (but only within an individual conference). Some pastors oversee a circuit of several smaller parishes.

Our data come from handbooks of the Oklahoma conference compiled for each of the years 1961–2003. These handbooks include detailed information about each congregation's expenditures, balance sheet items, and activities such as baptisms and Sunday School attendance, approximately 100 variables per parish per year. We received more than 8,000 pages of data and arranged for it to be scanned into spreadsheets and verified through a series of quality checks. Our sample has 24,989 parish-year observations, with information on 727 churches, 2,201 pastors, and 7,676 unique pastor-church combinations between 1961 and 2003. During

our sample period the size of the United Methodist Church in Oklahoma remained stable, with 240,378 members in 625 churches in 1961 and 252,567 members in 548 churches in 2003, although the number of churches fluctuated from year to year.

In analyzing the compensation of Methodist ministers, it is important to note that the individual churches and pastors cannot "screen" or select each other, as the allocation of labor is done at the conference level. However, decisions about pay are made by local congregations. Each year, the Pastor Parish Relations Committee of each congregation meets with the church's pastor and the district superintendent to set the minister's wage for the next year. While the district superintendent can give advice, the pay package is ultimately set by the local church. In addition, each year, both the minister and local church representatives fill out separate forms indicating whether they would like for the minister of that congregation to change, remain the same, or if they are open to either alternative. The Cabinet (bishop and district superintendents) take these forms and decide which ministers to relocate. Ministers take an oath to go where called (i.e., to accept their assignments from the conference), and local congregations do not have the ability to select their ministers (they do not interview or preapprove of the assignments, although they may lobby to receive a certain ministerial profile or type).

The strong role of the conference in determining the assignments of Methodist ministers resembles the Catholic Church's top-down authority over the posting of its priests, yet it contrasts with practices followed by most faiths in the United States. Hoge and Wenger (2005, 19–23) compare pastoral assignment practices in the American Lutheran, Methodist, Pentecostal, and Presbyterian churches, observing that in Protestant faiths other than Methodism, parish congregations have autonomy to select, retain, and compensate their own clergy. The role of the central church organization is often limited to administering a matching process, through which congregations with vacancies and pastors seeking new positions become aware of one another, sometimes with the central authority retaining some gatekeeping power. We are aware of similar matching practices in use by the Unitarian, Baptist, and Jewish faiths in the United States. These processes generally resemble an open market, in which pastors can seek new positions based on their qualifications and experience and may negotiate their own compensation. While Methodist ministers have far less control over their career paths, they enjoy greater job security than their counterparts in many other faiths.

In our analysis of Methodist ministers' compensation, we focus on the provision of incentives for the head or "senior" minister at each church.[4]

[4] A number of larger churches also have associate pastors who assist the senior pastor. We do not study the incentive provisions for associate pastors.

Ministers receive three types of direct compensation: salary, housing, and utilities.[5] Although the annual value of housing is not reported directly, church yearbooks tabulate the estimated market value of each congregation's living quarters, or "parsonage." To estimate the value of each pastor's occupancy, we use the annual price-to-rent ratio for residential housing in the state and multiply it by each reported parsonage value. Our results below are insensitive to whether we define a pastor's compensation as salary only or also include housing and utilities. Ministers also receive indirect incentives through the possibility of promotion and demotion, as the conference periodically rotates pastors throughout its area of jurisdiction.

Table 1 presents summary statistics for key variables about ministerial compensation and church performance. All items are converted to January 2008 dollars using the Consumer Price Index for All Urban Consumers. We report each parish's ministerial compensation as salary only (on the first line) and as salary plus housing and utilities (on the second line). Because some smaller parishes share the services of a single minister, we aggregate each individual pastor's total compensation across parishes and report it on the third and fourth lines of table 1. Median pastor compensation, using the broad definition, is about $36,900 in 2008 dollars, with an interquartile range between $22,651 and $49,586. A few pastors earn in excess of $100,000, with the sample maximum of more than $238,000 received by the head of a large urban church.

Figure 1 shows how the average real compensation of ministers evolved over time between 1961 and 2003. For comparison, we show a time series of per capita personal income in Oklahoma. Somewhat surprisingly, pastoral compensation appears risky, varying significantly over the 40-year horizon for which we have data. Mean clergy compensation declined during much of the 1960s and 1970s, before sharply increasing in the 1980s and growing more moderately from the late 1980s onward. Over the entire period clerical pay grew at a compound annual real rate of 0.9% per year, while per capita income grew much faster, at 1.9% per year.

Table 1 describes other church characteristics used in our analysis. Membership equals the cumulative number of people joining the church, less the number who withdraw. Becoming a member is distinct from attending church, which anyone may do. Membership requires no formal commitment beyond an oath to support the church with one's "prayers, presence, gifts, and service." However, joining the church may require an investment of time to attend classes or become baptized, and members are solicited to support church activities financially and otherwise. In

[5] United Methodist ministers also receive travel expenses, particularly when serving at multiple churches simultaneously, but we do not include these reimbursements as part of compensation.

Table 1
Summary Statistics

Variable	Mean	Min.	25th Percentile	Median	75th Percentile	Max.	SD	Obs.
Salary (per parish)	$23,191	$0	$7,768	$20,694	$33,600	$196,400	$18,554	24,989
Total Compensation (per parish)	$30,216	$0	$9,362	$27,360	$43,957	$238,486	$24,376	24,989
Salary (per pastor)	$29,511	$5	$17,517	$28,389	$37,906	$196,400	$17,700	19,637
Total Compensation (per pastor)	$38,421	$6	$22,651	$36,890	$49,586	$238,486	$23,130	19,637
Membership	436.57	0	95	201	443	8,762	729.07	24,961
Average Attendance	115.23	1	33	65	123	3,559	191.63	23,412
Sunday School Attendance	90.35	2	25	48	95	3,585	152.88	23,980
Annual change in membership	.54	−1,595	−3	0	6	446	38.84	24,989
Members added	18.85	0	2	7	19	725	39.64	24,989
Members removed	18.31	0	2	6	18	1,673	41.99	24,989
Added: Professions of Faith	6.33	0	0	2	7	361	12.39	24,989
Added: Professions of Faith, Net	2.52	0	0	0	3	359	7.02	21,946
Added: Other Denomination	3.87	0	0	1	4	275	10.76	24,989
Added: From Other Methodist	8.65	0	0	2	8	389	20.31	24,989
Removed: Action	.52	0	0	0	0	1,612	14.78	24,989
Removed: Dead	4.34	0	1	2	5	217	7.32	24,989
Removed: Other Denomination	2.20	0	0	0	2	141	5.76	24,989
Removed: To Other Methodist	7.38	0	0	2	7	367	16.61	24,989
Removed: Withdrawn	3.86	0	0	0	0	945	24.66	24,989
Revenue × 10^{-3}	$174	−$3,324	$23	$65	$163	$1,200	$425	23,676
Revenue/Membership	$355	−$135	$219	$315	$440	$1,353	$227	23,655
Δ (Salary [per parish])	$18	−$56,621	−$993	−$188	$847	$4,092	$60,245	23,915
Δ (Total Compensation [per parish])	$136	−$80,053	−$1,185	−$156	$1,202	$4,757	$96,015	23,915
Δ (Average Attendance)	.20	−1,469	−5	0	4	35.2	1,359	21,609
Δ (Sunday School Attendance)	−1.83	−2,180	−6	−1	3	45.48	2,083	22,690
Δ (Revenue × 10^{-3})	$1.50	−$5,650	−$12	$0	$11.5	$211	$7,341	22,446

NOTE.—This table presents summary statistics for United Methodist Church parishes in Oklahoma from 1961 through 2003. *Total Compensation* equals the sum of *Salary*, utilities, and implied rental income. *Salary (per pastor)* and *Total Compensation (per pastor)* represent aggregates that account for ministers who serve circuits with more than one parish. *Average Attendance* and *Sunday School Attendance* are the mean annual values in each parish for attendance at Sunday worship services and Sunday School, respectively. *Added: Professions of Faith* equals the number of new members added for the year due to professions or restorations of faith. *Added: Professions of Faith, Net* equals the above variable minus the number of professions of faith who had attended church school. *Added: Other Denomination* and *Added: Other Methodist* represent members added during the year who previously belonged to another religious denomination or to other United Methodist churches, respectively. *Removed: Action* represents members removed due to inactivity. *Removed: Withdrawn* equals the number of members who leave a parish without reporting other reasons. *Revenue* is a proxy for total parish revenue, equal to total expenses and capital improvements, plus changes in other assets, less changes in debt. All amounts are presented in constant 2008 dollars. Data are obtained from yearbooks published by the Oklahoma Annual Conference of the United Methodist Church.

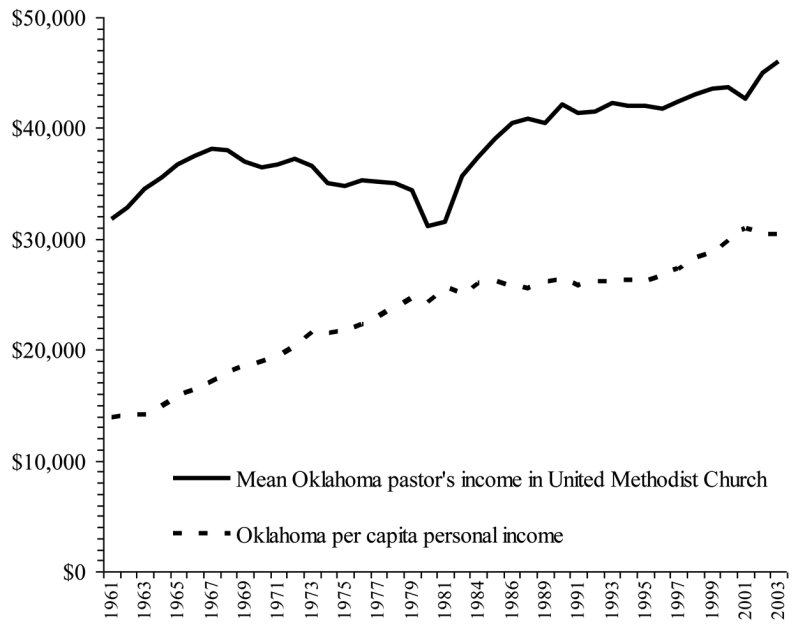

FIG. 1.—Income of Methodist ministers compared to Oklahoma statewide averages. The figure shows a time series of the median compensation for ministers in the United Methodist Church in the state of Oklahoma between 1961 and 2003. For comparison purposes, the figure shows per capita personal income for all workers in Oklahoma during the same period. All values are adjusted for inflation and expressed in 2008 dollars. Ministers' income equals the sum of salary, utilities, and the imputed value of housing. Data are obtained from yearbooks published by the Oklahoma Annual Conference of the United Methodist Church and from the Federal Reserve Bank of St. Louis.

addition to data about church membership, we have information about attendance at Sunday services and Sunday School. On average, about a third of a church's members attend a given Sunday's worship services, and about 70% of those attending worship also attend Sunday School. Parishes frequently lose and gain individual members, around 18 on average per parish for both gains and losses, but net membership changes are small, with a median value of zero and an interquartile range of −3 to +6.

Members can join the church via Professions of Faith, from Another Denomination, or from Another Methodist congregation. Profession of faith occurs when someone simultaneously joins the United Methodist Church and the Christian religion. Two particularly common ways this occurs are when an adult converts to Christianity from another or no religion and when an adolescent undergoes Confirmation at or about age 13. Members can be removed for many of the same reasons they are

added. For example, churches can lose members to Other Denominations or to Other Methodist churches. In addition, members can be removed for Action, after an extended period of inactivity, or can Withdraw. Withdrawing from the church usually coincides with exit from Protestant Christianity (otherwise Other Denomination is specified), although this is self-reported and not verified upon exit. Members can also be removed by Death.

These reasons for joining or leaving a parish differ substantially in the extent to which a parish's minister may be involved. Clearly, some events are completely beyond his or her control, such as death and, in most cases, removal for action. Others require more involvement. The activity requiring greatest pastoral effort is adding members through professions of faith, which involves identifying "nonbelievers" in the community who are most receptive to church membership. The next most demanding category for pastors is recruiting new members from other Christian denominations. The category requiring the least pastoral involvement is adding members from other Methodist churches. Here, doctrinal issues or beliefs are less likely to be a consideration. Search costs for the pastor and switching costs for the parishioner should both be low, because when a member of a sister Methodist congregation becomes disenchanted, that member may naturally look to join other Methodist churches. Gaining these members may require little more effort from a pastor than returning a phone call.

We tabulate information about annual parish revenues in table 1. A church's financial health invariably depends upon the voluntary giving or "tithing" of its members. Revenues at the church level are not directly reported by our data source, but we can infer annual revenue from each church's reported expenses (including capital improvements to property and equipment), plus the change in the church's other assets (mainly, cash), less the change in total debt. Inspection of the data reveals some problems with the timing of changes in debt and other assets relative to the expenditures, so we use 2-year averages for these numbers, akin to a midyear convention. The median (mean) church-year in our sample has about \$65,000 (\$174,000) in revenue, corresponding to median (mean) revenue per member of \$315 (\$355).

III. Evidence of Pastoral Incentive Compensation

A. Basic Pay-for-Performance Models

We begin by estimating linear pay-performance regressions over our sample of more than 2,200 Methodist ministers. We use a fixed effects specification that assigns a unique intercept to each minister-church pair, because both the pastor and congregation members might influence either pay or performance. For example, a particular minister might be a gifted

orator, and a particular church may have members that are especially devout or generous. A particular minister-church pairing may succeed if a certain pastor connects better with a rural congregation or if his theology aligns better with the local church. Our specification is

$$\text{Pay}_{ijt} = \alpha_{ij} + \sum_{k=1}^{n} \beta_k(\overline{\text{Performance}}_{k,ij} + \text{Performance}_{k,ijt-1}) + \eta_{ijt}, \quad (1)$$

where i indexes ministers, j churches, and we have $k = 1, \ldots, n$ performance measures. Intercepts capture the average pay for each ij minister-church pair, and we decompose each performance measure into a component that is constant for a given minister-church pair, $\overline{\text{Performance}}_{k,ij}$, and a time-varying component, $\text{Performance}_{k,ijt-1}$. Because annual compensation adjustments for pastors are based on outcomes over the previous year, we lag performance measures 1 year. We treat the error term, η_{ijt}, as heteroskedastic, permitting it to persist within churches and have a common component across churches each year. We then take first differences and estimate

$$\Delta\text{Pay}_{ijt} = \sum_{t-1}^{T} \partial_t \text{Year}_t + \sum_{k=1}^{n} \beta_k \Delta(\text{Performance}_{k,ijt-1}) + \varepsilon_{ijt}, \quad (2)$$

where we include indicator variables, Year_t, to account for common changes in compensation across the state for a particular year. We calculate robust standard errors following White (1980) and allow for serial correlation by clustering observations at the church level.

Choosing an appropriate performance variable presents a challenge due to the multifaceted responsibilities of a minister. According to the *Book of Discipline of the United Methodist Church* (United Methodist Publishing House 2008, 87), "The Mission of the Church is to make disciples of Jesus Christ for the transformation of the world. Local churches provide the most significant arena through which disciple-making occurs." The *Book* states that "disciple-making" is a fourfold task:

a. Reach out to people and welcome them to the church.
b. Relate people to God and help them deepen their relationship with God.
c. Nurture people in Christian living.
d. Support people in their ministry.

These objectives suggest that a minister's main jobs include recruiting members, maintaining high attendance, providing religious teaching, and delivering services, including marriage counseling, hospital visitation, and

the like.[6] While we do not have information about all of these activities, we do have data about changes in church membership, church attendance, and Sunday School attendance, and we use these as performance variables in our regressions.

Table 2 shows the regression results. In the first column, we use the change in church membership as an estimate of a pastor's performance. Consistent with a pay-for-performance hypothesis, the membership variable has a positive and significant estimate, with a magnitude of about $10 per new member. We find similar results in the next two columns when the performance measures are the increase in each parish's average attendance and the increase in its Sunday School attendance. Both of these variables exhibit positive and significant estimates with magnitudes of about $7 per congregant. Comparing the estimates in table 2 suggests that membership is consistently the strongest determinant of pastoral compensation, so we adopt this variable as our main performance measure.[7]

Perhaps the most striking result of table 2 is what does *not* appear to influence pastoral compensation: the church's revenues. At first, this result seems puzzling, but there are at least three reasonable explanations. First, the church's strategic objective might be to serve the greatest number of parishioners, instead of taking in the most revenue, and indeed revenue is not mentioned as an objective in the material quoted above from the *Book of Discipline*. A second alternative is that revenues are at best a noisy signal of pastoral effort, because church donations likely depend on external factors linked to the economy. Figure 2, showing a close connection between per capita income in Oklahoma and median church revenue, is consistent with this conjecture. Finally, it is possible that our estimate suffers attenuation bias through measurement error. As we note above, although the data for a church's expenditures are quite detailed, tithes and offerings are not directly reported, requiring us to infer revenues through other expense and balance sheet items. To the extent that our proxy for revenue is noisy, the true marginal effect of revenue on compensation will be higher than estimated in table 2.

As robustness checks on the estimates in table 2, we estimate a regression with all four independent variables together, with results shown in column 5, and an additional model shown in column 6 with the de-

[6] More detail about pastoral responsibilities appears in paragraph 340 of the *Book of Discipline*, in a section titled "Responsibilities and Duties of Elders and Licensed Pastors." We appreciate the suggestion of an anonymous referee in making us aware of this material.

[7] We consulted with United Methodist Church officials about this choice and were told that as stated in the *Book of Discipline*, the primary mission of the church is to make disciples of Christ, that this mission had not changed in a long time, and that for a pastor, recruiting new members is the first and key step in the disciple-making process.

Table 2
Regression Estimates of Pay-Performance Sensitivity for Ministers

Dependent Variable	Δ(Total Comp.) (1)	Δ(Total Comp.) (2)	Δ(Total Comp.) (3)	Δ(Total Comp.) (4)	Δ(Total Comp.) (5)	ΔSalary (6)
$\Delta(\text{Members}_{t-1})$	\$10.01***				\$9.14***	\$7.40***
	(2.33)				(2.09)	(1.39)
$\Delta(\text{Average Attendance}_{t-1})$		\$7.46**			\$1.73	\$1.98
		(3.46)			(3.35)	(3.20)
$\Delta(\text{Sunday School Attendance}_{t-1})$			\$7.10***		\$6.28***	\$7.95**
			(1.97)		(2.23)	(3.24)
$\Delta(\text{Revenue}_{t-1}) \times 10^{-3}$				−\$.07	−\$.15	−\$.28
				(.23)	(.22)	(.17)
Observations	12,465	12,465	12,465	12,465	12,465	12,465
R^2	.067	.061	.065	.059	.072	.071
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of church clusters	671	671	671	671	671	671

NOTE.—This table presents regression estimates of changes in pastoral compensation against changes in various performance measures for United Methodist churches in Oklahoma from 1961 through 2003. Pastors' first years at a particular church are excluded. *Total Compensation* equals the sum of *Salary*, utilities, and implied rental income. *Revenue* is a proxy for total parish revenue, equal to total expenses and capital improvements, plus changes in other assets, less changes in debt. *Average Attendance* and *Sunday School Attendance* are the mean annual values in each parish for attendance at Sunday worship services and Sunday School, respectively. All performance variables are lagged by 1 year. All regressions include year indicator variables. Standard errors clustered by parish are shown in parentheses. All dollar amounts are presented in 2008 dollars, and Δ indicates a change in the associated variable.

* Significant at the .10 level, using two-tailed tests.
** Significant at the .05 level, using two-tailed tests.
*** Significant at the .01 level, using two-tailed tests.

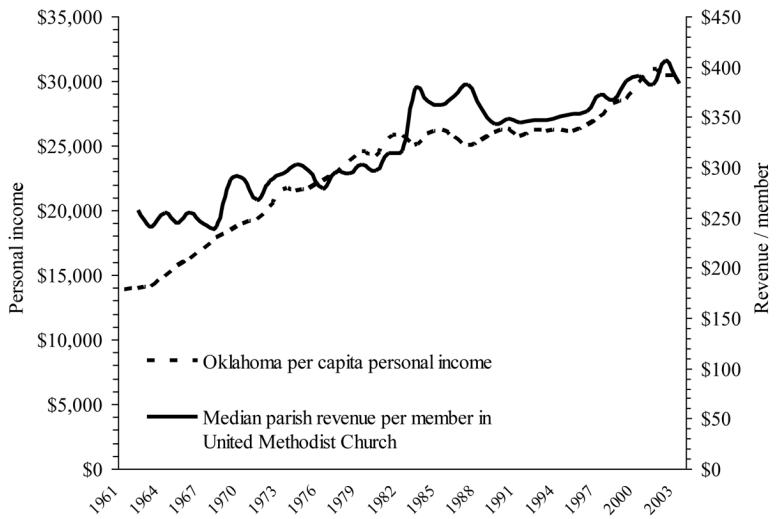

FIG. 2.—Parish revenue and per capita income. The figure shows a time series of the median revenue for United Methodist Church parishes in the state of Oklahoma between 1961 and 2003. For comparison purposes, the figure shows per capita personal income for all workers in Oklahoma during the same period. All values are adjusted for inflation and expressed in 2008 dollars. Revenue is a proxy for total parish revenue, equal to total expenses and capital improvements, plus changes in other assets, less changes in debt. Data are obtained from yearbooks published by the Oklahoma Annual Conference of the United Methodist Church and from the Federal Reserve Bank of St. Louis.

pendent variable equal to the change in the pastor's salary only, instead of his change in total compensation. We find that when all variables are included together the estimate for the attendance variable weakens considerably, while the others remain essentially unchanged. Changing the dependent variable to equal salary only has little impact upon the estimates, a pattern that we find in all our models throughout the paper. To save space in subsequent tables, we generally tabulate only results based upon total compensation.

We investigate alternative pay-performance specifications in table 3. In the first two columns, we regress the pastor's change in total compensation against the change in membership, including one and two additional lagged values, respectively. Estimates show that churches tie compensation not only to contemporaneous changes in membership but also to lags from the recent past. The estimated total impact of a new member upon the pastor's compensation equals the sum of the coefficients of these lagged values, or about $13, compared to an estimate of $10 when just the first lagged difference in membership appears in the regression. Note that sample sizes for these regressions drop substantially compared to

Table 3
Additional Models of Pay-Performance Sensitivity for Ministers

Dependent Variable	Δ(Total Comp.) (1)	Δ(Total Comp.) (2)	Total Comp. (3)	Ln(Total Comp.) (4)
$\Delta(\text{Members}_{t-1})$	\$6.63**	\$3.54		
	(2.61)	(3.54)		
$\Delta(\text{Members}_{t-2})$	\$6.24***	\$7.21***		
	(1.48)	(2.20)		
$\Delta(\text{Members}_{t-3})$		\$4.21*		
		(2.26)		
Members_{t-1}			\$17.58***	.211***
			(3.61)	(.034)
$\text{Average Attendance}_{t-1}$			\$4.26	.102***
			(9.41)	(.019)
$\text{Sunday School Attendance}_{t-1}$			\$687.79	.034***
			(429.05)	(.011)
$\text{Revenue}_{t-1} \times 10^{-3}$			\$1.71***	.022***
			(.64)	(.005)
Total Estimated Impact of Δ(Members)	\$12.87	\$14.96		
F-statistic, sum of coefficients	18.43***	18.38***		
Observations	9,485	5,686	19,954	19,954
R^2	.070	.068	.419	.161
Year fixed effects	Yes	Yes	Yes	Yes
Log of independent variables	No	No	No	Yes
Pastor-church fixed effects	No	No	Yes	Yes
Pastor-church combinations			7,588	7,588
Church clusters	674	642	628	628

NOTE.—This table presents regression estimates of pastoral compensation for United Methodist churches in Oklahoma from 1961 through 2003. The first two columns show regressions of the change in total pastoral compensation as a function of lagged values of changes in church membership. The right column shows the natural log of total compensation as a function of the natural log of church membership lagged 1 year. Pastors' first years at a particular church are excluded. *Total Compensation* equals the sum of *Salary*, utilities, and implied rental income. All regressions include year indicator variables, and the model in the right column includes fixed effects for each unique pastor-church pair. Standard errors clustered by parish are shown in parentheses. All dollar amounts are presented in 2008 dollars, and Δ indicates a change in the associated variable.

* Significant at the .10 level, using two-tailed tests.
** Significant at the .05 level, using two-tailed tests.
*** Significant at the .01 level, using two-tailed tests.

those in table 2, because higher-order lags of data do not exist for many pastor-church combinations.

In fixed effects specifications shown in the third and fourth columns of table 3, revenues emerge as a significant determinant of the minister's overall compensation. As noted previously, we do not observe each church's year-by-year revenue, but we can partially reconstruct it from expenditures and changes in assets and liabilities. Thus, for any given year (especially around large building projects), revenues may be contaminated with substantial measurement error. Using the fixed effects specification rather than first differences mitigates this concern. If revenues are measured more accurately over a longer time span, as we expect for our data, then measurement error in revenue demeaned by the sample average will

be smaller than that in revenue first differences. The average tenure for a pastor at a given church is between 4 and 5 years, suggesting that the reduction in measurement error could be substantial.

In levels regressions with pastor-church fixed effects (table 3, col. 3), we see that a rise of $1,000 in church revenue is associated with $1.71 in added compensation for the pastor. Column 4 shows that under a logarithmic specification, a 10% increase in church giving raises pastoral pay by roughly 0.22%. Because the regressions already control for changes in membership, these coefficients indicate the pastor's share of new revenues unassociated with membership changes. As we later show, the church's current and future revenue are also affected by changes in membership. The pastor's share of revenues via membership changes is substantially higher than the sharing rule implied here for increasing donations from existing members.

The logarithmic specification in table 3, column 4, also allows us to compare our estimated elasticities to those of corporate CEOs by estimating the association between the log of a pastor's compensation and the log of congregation size. The estimated elasticity of pay with respect to congregation size is highly significant with magnitude of 0.21, indicating that ministers' pay rises by approximately one-fifth when congregation size doubles. This is lower than but comparable to the firm-size elasticity of corporate CEOs, which typically falls in the 0.30–0.40 range (e.g., Baker, Jensen, and Murphy 1988; Murphy 1999; Engelberg, Gao, and Parsons 2009).

Comparing the R^2 between columns 3 and 4 suggests that the linear model explains about twice as much variation in pay as the logarithmic specification, although the *t*-statistics on performance measures are stronger in the latter. Which is the better model depends on a number of assumptions, particularly about how the minister's effort interacts with church size.[8] We do not take a strong stand on the "correct" functional form for membership additions and subtractions, noting that reasonable arguments could be advanced for either. Some of a minister's actions (e.g., a powerful sermon) scale with size, while others (e.g., hospital visitation) do not.[9] The evidence in table 3 merely serves to show that pay for

[8] Schaefer (1998) shows that when effort and size are additive, dollar-dollar sensitivity (e.g., table 3, col. 2) is optimal; when effort and size are multiplicative, semi-elasticity dominates. Edmans, Gabaix, and Landier (2009) show that full elasticity (e.g., col. 4) is the optimal contract when effort is multiplicative with respect to both size and the agent's utility.

[9] Likewise, one could imagine other reasonable nonlinear specifications, such as revenue and membership interacted. If, for example, certain members were expected to give generously to the church, we might expect a positive interaction. We have examined this and similar possibilities and found little empirical support.

performance is not unique to any one functional form or set of underlying assumptions.

As a check on our estimates of clerical pay for performance, we obtained information about the pay scale of ministers from another denomination, the Episcopal Church, in another area of the United States, the state of Pennsylvania. We find broadly similar pay practices, with Episcopal priests earning more as the size of their churches increases, although we do not have panel data to replicate the United Methodist pay-performance tests reported in this study. The elasticity between congregation size and the pay of Episcopalian priests in Pennsylvania is positive and significant but about one-third lower in magnitude than the elasticity in our sample of Oklahoma Methodist ministers. Overall compensation is higher for Episcopal priests in Pennsylvania compared to Methodist ministers in Oklahoma for the same congregation size.

B. Incentives and Effort Costs

When an agent can choose among several activities, the principal compares the agent's marginal cost associated with each activity against the principal's marginal benefit. Holding the latter constant, an optimal contract will encourage the agent to exert effort in the least costly dimension. Such a contract allows the principal to maximize his benefits, as the agent spends time on those activities least costly to implement (Holmstrom and Milgrom 1991).[10] Testing this implication requires a multitasking setup in which one can infer both the productivity and cost associated with a number of different activities. Our data are well suited to this purpose, as we can focus in detail on which categories of new members are associated with the strongest performance incentives.

We classify new members into three types: those from other Methodist churches, those from non-Methodist Christian churches, and those unaffiliated with any church. Each type of member differs in the recruiting effort required of the pastor and may or may not have different incremental value to a parish. Converting the unchurched requires the most difficult recruiting work for a pastor because it requires leading the new member through three steps: acceptance of the Christian faith, of the

[10] Holmstrom and Milgrom (1991) characterize optimal linear contracts when the agent may choose to allocate effort among several alternatives. Perhaps the more familiar conclusions from this study relate to the role played by measurement error in the optimal piece rates offered for a family of tasks. Here, however, we focus on variation in the agent's cost of effort, which Holmstrom and Milgrom show (1991, eq. 5, p. 32) affects the desired incentive scheme. The intuition is simply that an agent's response to incentives depends on how costly it is to provide effort. Because the firm has to satisfy the worker's incentive constraint, it ultimately bears the expense of more costly actions and shifts incentives to encourage activities that require less effort.

Methodist denomination, and of the minister's particular church. In contrast, converting another non-Methodist Christian requires only the second and third steps, and recruiting members of a sister Methodist church requires only the final condition, perhaps catalyzed by dissatisfaction with another Methodist congregation.

Table 4 uses regression analysis to estimate how ministerial compensation changes as a function of increases or decreases in different membership types. We begin by examining the differential impact of overall membership additions and subtractions. Estimates in the left column indicate that ministers are rewarded much more when a church parish grows than they are penalized when it shrinks. A new member adds about $15 to a minister's total compensation, while ministerial pay falls by a little under $7 when the parish rolls shrink by one member. One reconciliation of this asymmetry is "stickiness" in ministerial salaries: if salary is the primary incentive tool (as a comparison of the final columns of table 2 indicates), then downward rigidity would imply steeper incentives for growth than for shrinkage. Another is that expected giving of newly acquired members is higher than that from members soon to depart.

We next estimate a model in which changes in membership are decomposed into categories, with the results shown in the second column of table 4. Adding members from other United Methodist churches has the largest economic and statistical effect upon pastoral compensation, more than $32 per member. Other types of membership increases do not affect pastoral compensation as importantly. Adding members through professions of faith or from other denominations has a smaller point estimate of around $17 each, although one category slightly misses having statistical significance. Together, these estimates imply a premium for recruiting other Methodist members. When a church loses members, the story is the same. Transfers to other parishes within the denomination result in compensation reductions to the minister on the order of $43 per member, while losing members who join other denominations implies only an insignificant decline in the pastor's income (−$8, with a *t*-statistic of −0.81). The difference in these coefficients is significant at the 5% level (although the difference in coefficients for the additions of members is not statistically significant).

The third column addresses an issue related to classification of membership types. Most of the categories are self-explanatory, but Professions of Faith includes "confirmands," adolescents who formally join the Methodist church upon turning 13 years of age. Because this group probably requires only modest pastoral effort to recruit, we would like to remove them from the Professions of Faith variable so that we can study conversions of unchurched adults separately. For this purpose, we rely upon data from some churches that report new members who join from "church school," which would include predominantly adolescents who take con-

Table 4
Pay-Performance Sensitivity with Respect to Detailed Performance Measures

Dependent Variable	Δ(Total Comp.) (1)	Δ(Total Comp.) (2)	Δ(Total Comp.) (3)	Δ(Total Comp.) (4)
Members Added$_{t-1}$	\$14.71***			
	(2.60)			
Members Lost$_{t-1}$	−\$6.68***			
	(1.85)			
Added: Professions of Faith		\$17.70***		\$16.41***
		(6.14)		(6.06)
Added: Professions of Faith, Net			\$10.84	
			(8.15)	
Added: From Other Denomination		\$17.78	\$19.82	\$18.44
		(12.09)	(12.09)	(12.24)
Added: From Other Methodist		\$32.51***	\$35.54***	\$20.59***
		(6.91)	(7.32)	(6.04)
Added: From Other Methodist × City Church				\$15.97*
				(9.04)
Lost: Action		\$.36	\$.24	−\$.02
		(1.66)	(1.65)	(1.67)
Lost: Death		\$2.69	\$7.73	\$3.01
		(6.45)	(6.52)	(6.26)
Lost: To Other Denomination		−\$8.44	−\$17.59	−\$8.65
		(10.46)	(11.28)	(10.09)
Lost: To Other Methodist		−\$43.39***	−\$36.95***	−\$22.97***
		(6.44)	(6.84)	(6.09)
Lost: To Other Methodist × City Church				−\$32.69***
				(9.60)
Lost: Withdrawn		\$1.20	\$1.96	\$.94
		(1.89)	(2.28)	(1.94)
City Church				\$414.10***
				(99.66)
Observations	15,768	15,768	13,875	15,768
R^2	.064	.073	.068	.075
Year fixed effects	Yes	Yes	Yes	Yes
Number of church clusters	705	705	705	705

NOTE.—This table presents regression estimates of changes in pastoral compensation against changes in various performance measures for United Methodist churches in Oklahoma from 1961 through 2003. Pastors' first years at a particular church are excluded. *Total Compensation* equals the sum of salary, utilities, and implied rental income. *Professions of Faith, Net* equals *Professions of Faith* less those new confirmands who had attended church school the previous year. Other variable definitions appear in table 1. All performance variables are lagged by 1 year. *City Church* is an indicator variable for churches located in Tulsa or Oklahoma City. All regressions include year indicator variables. Standard errors clustered by parish are shown in parentheses. All dollar amounts are presented in 2008 dollars, and Δ indicates a change in the associated variable.

* Significant at the .10 level, using two-tailed tests.
** Significant at the .05 level, using two-tailed tests.
*** Significant at the .01 level, using two-tailed tests.

firmation classes. While this measure is not perfect, netting from Professions of Faith attendees of church school removes a substantial fraction of adolescent would-be members. The third column shows that when church school attendees are removed,[11] the effect of Professions of Faith decreases substantially to an insignificant $10 point estimate. This is approximately half the monetary reward for adding a member from another denomination, and less than one-third that from recruiting a non-Christian to the Methodist church. The specification in column 3 suggests that churches implicitly encourage the minister, via steeper incentives, to allocate his or her effort toward those activities with the best cost-benefit ratios.

Although columns 1–3 indicate that pastoral compensation is most sensitive to movements of parishioners between United Methodist churches, one might argue that these changes do not always occur as a consequence of pastoral effort. Some might arise from exogenous circumstances such as job relocations or a parishioner purchasing a new home across town. We gain more insight into the importance of membership transfers within the denomination by focusing upon parishes in urban areas. In cities, churches are more densely located, and the cost of switching from one United Methodist Church to another should be lower. In addition, pastoral tenures are longer in city churches, so congregants may be more willing to switch in cities to reap the benefits of the different minister for longer periods. We therefore expect that within cities, membership changes to and from other United Methodist churches should be more informative signals of ministerial effort rather than simply reflecting relocations.

To test this conjecture, we create a City Church indicator for parishes in the two main cities in Oklahoma, Tulsa and Oklahoma City. We reestimate our regressions with an interaction term between City Church and membership changes to or from other United Methodist churches, plus the indicator itself. Results in the final column of table 4 show that, as we expect, pastoral compensation exhibits greater sensitivity to intradenominational transfers if the minister works in an urban location.

Our regression results are consistent with the hypothesis that ministers receive the strongest incentives to undertake tasks requiring the least effort.[12] However, this interpretation ignores the possibility that separate

[11] In a small number of cases the parish reports a larger number of Professions of Faith from church school than Professions of Faith overall. For these observations we set Professions of Faith, Net equal to zero.

[12] This interpretation is not exclusive. We also note the possibility that different types of membership may confer different signal-to-noise ratios about the pastor's unobservable effort. Specifically, if recruiting other Methodists is in some way more informative about the pastor's input compared to recruiting parishioners from other denominations, then the differential incentives observed in table 5 would be expected.

Table 5
Regression Estimates of Changes in Parish Revenue

Dependent Variable	Δ(Revenue)	Δ(Revenue)
Members Added$_{t-1}$	\$451***	
	(110)	
Added: From Other Denomination		\$1,467*
		(768)
Added: Professions of Faith		\$584
		(799)
Added: From Other Methodist		\$441*
		(230)
Members Lost$_{t-1}$	−\$154	
	(96)	
Lost: To Other Denomination		−\$955
		(591)
Lost: To Other Methodist		−\$884***
		(261)
Lost: Withdrawn		\$109
		(126)
Lost: Action		\$34
		(45)
Lost: Death		−\$127
		(297)
Observations	22,446	22,446
R^2	.009	.012
Year fixed effects	Yes	Yes
Number of church clusters	701	701

NOTE.—This table presents regressions of changes in revenues on changes in membership, by type, for United Methodist churches in Oklahoma from 1961 through 2003. *Revenue* is a proxy for total parish revenue, equal to total expenses and capital improvements, plus changes in other assets, less changes in debt. Definitions of various membership change classifications appear in table 1. All performance variables are lagged by 1 year, except for the alternative lags of membership changes. All regressions include year indicator variables. Standard errors clustered by parish are shown in parentheses. All dollar amounts are presented in 2008 dollars, and Δ indicates a change in the associated variable.

* Significant at the .10 level, using two-tailed tests.
** Significant at the .05 level, using two-tailed tests.
*** Significant at the .01 level, using two-tailed tests.

categories of members may bring differential benefits to a congregation. We investigate this hypothesis with regression analysis in table 5, studying first-difference estimates of changes in parish revenue as a function of lagged changes in different categories of membership. In the first column, estimates indicate that a new member (regardless of category) leads to a significant increase in church revenue of about \$451 the next year, while a member lost has a much smaller and insignificant negative effect upon revenue.[13]

Membership changes in either direction have slightly larger impacts

[13] In general, we would not expect revenues to be constant over a member's tenure at a particular church. Specifically, as the estimates in table 5 indicate, revenues are much less sensitive to reductions than to additions to membership, which would occur if members gradually reduce their financial support prior to withdrawing.

upon parish revenue if we include lagged terms of the independent variables (results not tabulated to save space). Combining these results with the estimates in table 4, we can characterize ministers' pay-for-performance rewards as a type of sharing rule. If a new member typically donates $451 annually to the church, and the pastor's compensation rises by $15, we would conclude that 3% of the incremental revenue from a new member is dedicated to compensation. We can develop more refined estimates of this statistic by using lagged values of membership changes, but all are in a neighborhood near 3%–5%. In the other direction, the financial penalty to a pastor when a member leaves the church can be characterized as 4% of the incremental lost revenue stream, which equals the quotient of $6.68 (from table 4) divided by $154 (from table 5).

In the second column of table 5 we investigate whether some new members are worth more to the church than others in financial terms.[14] This regression indicates that new members of all types tend to donate to the church, although the estimate is not significant for those joining due to professions of faith. The most ardent donors appear to be those that convert to Methodism after leaving another denomination (roughly $1,450), giving more than three times greater than transfers from other Methodist churches (roughly $450). However, differences among these three categories are not statistically significant. We find large decreases in parish revenue when a member leaves to join another United Methodist congregation (roughly $850) or another denomination (roughly $950), although only the first is statistically significant. These estimates are generally noisy with large standard errors and not significantly different from one another. Among the categories of membership departures, almost no change in church revenue occurs when a member dies, withdraws from the practice of Christianity, or is dropped from the parish rolls due to inactivity; in all three of these cases the member probably had been providing little support to the parish.

From our analysis we conclude that little significant difference exists in the benefits obtained from different classes of new church members. This suggests that our results shown in table 4, indicating that churches pay a premium for ministers to recruit new members from one another's flocks, represent the outcome of a contract that is largely based upon expected effort costs rather than expected revenue gains. Methodist ministers are implicitly encouraged to devote effort to recruiting parishioners from other Methodist parishes, because an incremental amount of time spent by a pastor in this way should increase his congregation size more

[14] Members of a church congregation are obviously valued for reasons beyond their willingness to donate. Iannaccone (1998, 1482–83) writes that "in congregational settings, an active member (who attends regularly, sings wholeheartedly, and greets others enthusiastically) increases the utility of other members."

Table 6
Incentives during Years in Which Pastor Changes Congregations

Dependent Variable	Δ(Total Comp. |Move)	Δ(Total Comp. |Move)
$\Delta(\text{Members}_{t-1})$	\$30.91***	
	(8.42)	
$\Delta(\text{Revenues}_{t-1}) \times 10^{-3}$	\$1.17	\$1.60
	(1.25)	(1.01)
$\Delta(\text{Average Attendance}_{t-1})$	−\$.96	\$4.02
	(2.65)	(3.23)
$\Delta(\text{Sunday School Attendance}_{t-1})$	−\$3.64	−\$4.59
	(4.50)	(3.17)
Added: Professions of Faith		\$208.5***
		(41.68)
Added: From Other Denominations		\$255.9***
		(77.79)
Added: From Other Methodist		\$38.11
		(25.00)
Lost: Action		−\$35.29
		(47.44)
Lost: Dead		\$5.88
		(56.70)
Lost: To Other Denomination		−\$4.00
		(53.89)
Lost: To Other Methodist		−\$5.98
		(26.18)
Lost: Withdrawn		\$.26
		(7.47)
Total Comp_{t-1}	−.196***	−.298***
	(.02)	(.02)
Observations	2,929	2,929
R^2	.122	.157
Year fixed effects	Yes	Yes

NOTE.—This table presents regression estimates of changes in pastoral compensation against changes in membership for United Methodist churches in Oklahoma from 1961 through 2003. The sample includes only observations for pastors whose church appointment changes during the year, so that compensation in the new church is regressed against performance in the pastor's last year in the old church. Definitions of various membership change classifications appear in table 1. All regressions include year indicator variables. Standard errors clustered by parish are shown in parentheses. All dollar amounts are presented in 2008 dollars, and Δ indicates a change in the associated variable.

* Significant at the .10 level, using two-tailed tests.
** Significant at the .05 level, using two-tailed tests.
*** Significant at the .01 level, using two-tailed tests.

quickly than the same effort spent recruiting non-Methodist Christians or the unchurched.

The evident shortcoming of these contracts lies in their collective interaction, which encourages ministers to prey upon one another's congregations in a competition that amounts to a zero-sum game. Therefore, it would not be surprising for the conference, the supervising authority, to discourage incentives for ministers to steal from each others' flocks. To gain insight into the conference's response to pastoral sheep stealing, we present in table 6 the results of estimating equation (2) for only those

years in which ministers are reassigned to new parishes. These are the only years in which the conference directly influences the minister's pay, via its ability to send him to a smaller or larger church.[15]

Table 6 shows that the conference's pattern of rewards differs strikingly from that used by local churches. The first column in table 6 examines whether pay changes due to moves are related to changes in membership, revenues, or attendance at the previous church. As the results indicate, pay increases due to new appointments are significantly related to membership changes at the minister's previous church. Conditional on a move, a new member is associated with an approximately $31 increase in total compensation, a higher magnitude reward than the $11 increase in annual pay within the same church estimated in table 2. In the second column of table 6, estimates indicate that the conference appears to use its promotion power to reward clergy who attract new United Methodists to the church rather than those who entice members to defect from other United Methodist parishes. Coefficients on members added through professions of faith and from other denominations are statistically and economically significant, an order of magnitude higher than the annual compensation incentives documented above. A new profession of faith is associated with approximately $209 more total compensation, conditional on a change in appointment, with similar magnitudes for members added from other denominations ($256). In contrast, adding new members from other United Methodist churches is associated with a smaller and insignificant change in pay of about $38.

We cannot rule out the possibility that the conference tolerates and perhaps encourages a certain amount of sheep stealing at the parish level. Local churches possess "soft information" about the performance of the pastor and use this knowledge when setting compensation, so the conference may put up with the negative externalities of sheep stealing to achieve more efficient rewarding of ministerial effort. Incentives that reward sheep stealing may also improve system-wide performance if ministers compete directly for members and exert more effort in the process. The conference may also allow sheep stealing for structural reasons, to create larger congregations that can offer more developed programs and

[15] Performance could be rewarded through movement across churches in two ways. First, a minister who performs better could move to the next church sooner rather than later. To test for this, we estimate several hazard models where the dependent variable (or "spell") is the length of time that a minister was in place at a particular church. We find no significant relation between the probability that a minister moves in a particular year, conditional on not having moved yet, and any of our performance measures. For the sake of brevity, we do not present these results but, instead, focus on the second potential channel where performance could be rewarded—a change in pay for the minister, conditional on a change in churches.

amenities. This type of consolidation would come at the expense of allowing some churches to wither and perhaps fail, albeit without the political fallout that would come if headquarters closed a church unilaterally.

C. Risk versus Incentives

Agency theory predicts a trade-off between risk and incentives. Convincing evidence of this intuitive relationship has proved elusive in cross-sectional data sets, as discussed in Prendergast (2002). He offers one explanation: when a job is risky, the firm has difficulty observing the agent's input, so it must compensate workers on the only signal available—output. Consequently, in some cases, a positive relation may exist between risk and incentive pay. In addition, workers may self-select into more or less risky professions and job assignments, depending on their own risk aversion, private costs of effort, and so forth. Two features of our data alleviate these concerns, affording us a particularly sharp test of risk versus incentives. First, our proxies for risk are unlikely to change the nature of the job, because all ministers deliver sermons, administer services to parishioners, and attempt to grow the church. Second, because their assignments are made by the conference, ministers have no ability to self-select into churches based upon private information or risk tolerance.

We develop two proxies for the signal-to-noise ratio of how closely membership changes reflect pastoral effort at individual churches. Our first proxy is the church-level standard deviation of membership changes over time. We use the entire time series of up to 43 years per parish to calculate the volatility of each church's annual percentage changes in membership. Churches with volatility above the sample median are classified by an indicator variable, High Volatility. However, presupposing the result that more volatile churches pay less per new member, this finding may also be explained by a story that has nothing to do with risk. Suppose, for example, that members of more volatile churches were less likely to remain in a parish for a given length of time than their counterparts of more stable churches. Were this the case, then members with shorter horizons may, purely from an expected giving standpoint, be of less worth to the church. However, in untabulated tests, we find that changes in membership are more persistent in high volatility churches, a result inconsistent with this conjecture.

To address this possibility further, we use another measure of risk based upon oil prices, an exogenous factor that partially explains church membership in at least two ways. An oil-related boom might generate population growth and contribute to increased parish membership. However, an offsetting effect may arise from the tendency of religious activity to decline amid higher wealth and income (Azzi and Ehrenberg 1975). We show such a pattern for one community in figure 3, which graphs annual

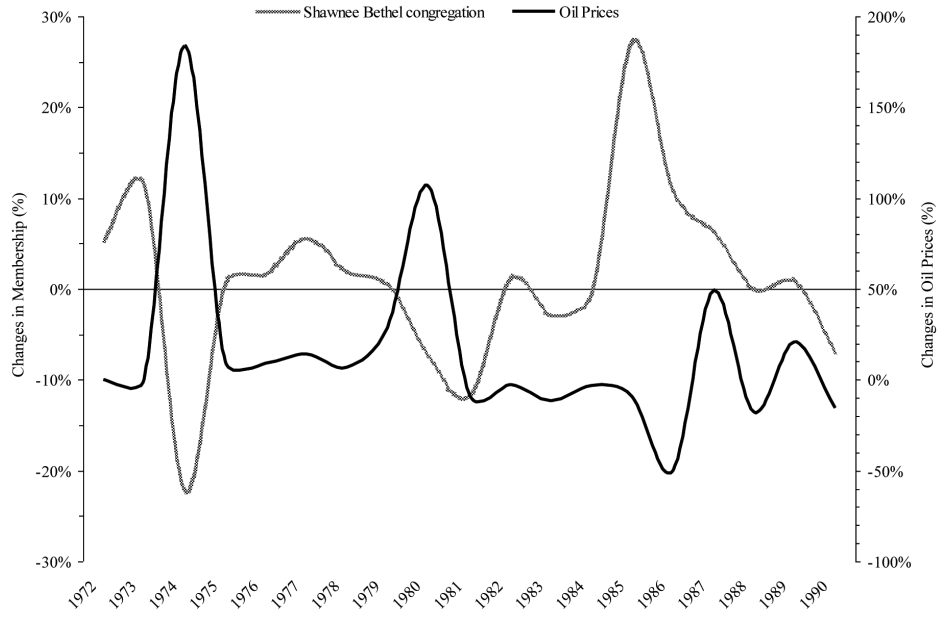

FIG. 3.—Shawnee Bethel congregation growth and changes in oil prices. The chart shows annual changes in the membership of the Shawnee Bethel, Oklahoma, parish of the United Methodist Church as well as annual changes in the price of oil. Shawnee lies in an oil-rich part of the state and in the 1920s referred to itself as "The Hub of the World's Largest Oil Fields."

changes in membership of the Shawnee Bethel United Methodist Church against annual changes in oil prices. Shawnee is the county seat of Pottawatomie County, which in the 1920s boasted that it was "The Hub of the World's Largest Oil Fields."[16] As shown in figure 3, this parish's time series of church membership changes and oil price changes behave almost as mirror images. Data indicate that Shawnee Bethel exhibits both countercyclical membership changes (with respect to oil prices), as well as procyclical giving per member. Each pattern is consistent with Gruber's (2004) finding that people substitute higher donations for church attendance based upon their marginal utilities for leisure and money.

To measure the exogenous impact of oil prices upon church membership in different parishes, we start by regressing membership for each church on lagged membership and a time trend, and calculating the R^2 of that regression for each church. We then add current and lagged oil prices to the model and calculate the improvement in the R^2.[17] Churches with a change in R^2 greater than the median, in which oil explains more of the variation in membership than usual, are classified by an indicator variable, Oil Driven.[18]

In table 7, we present regressions of changes in pastoral compensation against changes in membership, including interactions between this variable and the two indicators High Volatility and Oil Driven. We also include an interaction between changes and membership and the average size of the church over time, to control for possible size effects. Estimates in column 1 indicate that churches with greater variability in membership put significantly less weight on changes in membership when setting pastoral compensation. The change in total pay associated with a new member at a high-volatility church is about $12, compared to $23 at a low-volatility church. Similarly, results in column 2 suggest that churches with membership influenced by variation in oil prices have less pay-performance sensitivity. A new member in an oil-driven church is associated with a $10 increase in total compensation, compared to an $18 increase in a less oil-driven church. Column 3 includes all interactions simultaneously and provides evidence that the two effects are not redundant. In aggregate these results indicate a trade-off between the risk a minister faces and how much he is rewarded for changes in membership.

IV. Conclusion

Our study investigates incentive compensation for Methodist ministers in the state of Oklahoma between 1961 and 2003. We find compensation

[16] See http://www.shawneeok.org/History/Default.asp.

[17] Oil prices are downloaded from http://research.stlouisfed.org/fred2/series/OILPRICE.

[18] We find similar results if we partition churches into terciles based on volatility or oil exposure and test whether the highest third differs from the lowest third.

Table 7
Pay-Performance Sensitivity and Risk Factors

Dependent Variable	Δ(Total Comp.)	Δ(Total Comp.)	Δ(Total Comp.)
$\Delta(\text{Members}_{t-1})$	\$22.63***	\$18.48***	\$23.44***
	(4.61)	(3.16)	(4.57)
$\Delta(\text{Members}_{t-1})$ × High Volatility	−\$10.75***		−\$8.45**
	(4.16)		(3.92)
$\Delta(\text{Members}_{t-1})$ × Oil Driven		−\$8.06**	−\$5.67*
		(3.57)	(3.36)
$\Delta(\text{Members}_{t-1})$ × Average Membership × 10^{-3}	−3.29**	−1.90**	−3.09***
	(1.36)	(.93)	(1.18)
Observations	15,760	15,758	15,758
R^2	.062	.062	.063
Year fixed effects	Yes	Yes	Yes
Number of church clusters	698	696	696

NOTE.—This table presents regression estimates of changes in pastoral compensation against changes in membership for United Methodist churches in Oklahoma from 1961 through 2003. Pastors' first years at a particular church are excluded. *Total Compensation* equals the sum of *Salary*, utilities, and implied rental income. *High Volatility* is an indicator variable for churches whose time series volatility of annual percentage changes in membership lies above the sample median. *Oil Driven* is an indicator variable based upon regressions of each church's membership changes as a function of oil price changes; the indicator equals 1 for churches with above-median values of the goodness-of-fit measure. *Avg. Membership* is the average membership for each church over the sample period. All regressions include year indicator variables. Standard errors clustered by parish are shown in parentheses. All dollar amounts are presented in 2008 dollars, and Δ indicates a change in the associated variable.

* Significant at the .10 level, using two-tailed tests.
** Significant at the .05 level, using two-tailed tests.
*** Significant at the .01 level, using two-tailed tests.

patterns consistent with principal-agent models of optimal contracting. Although the overall level of ministerial pay is modest, it responds significantly to increases and decreases in parish membership. When we decompose membership changes into different categories, we find that the more informative types of changes are associated most strongly with changes in pastoral compensation. Pay-performance sensitivity is lower when performance variables are volatile in a given parish and also when a church operates in an environment exposed to external economic factors such as the price of oil. Finally, the central church administration appears to use its power of ministerial assignment to reward productive clergy with plum appointments that bring higher total compensation and also to counteract incentives for ministers to poach new members from one another's congregations.

These results may seem rational to scholars who study agency theory and the economics of contracting. However, they occur in a setting—a major American religious denomination—in which one might expect low material rewards for excellent performance. Although pastors are no doubt motivated by idealism and a variety of nonpecuniary rewards, our research suggests that incremental financial incentives also affect their effort and service to parishioners.

References

Azzi, Corry, and Ronald Ehrenberg. 1975. Household allocation of time and church attendance. *Journal of Political Economy* 83:27–56.

Baker, George P., Michael C. Jensen, and Kevin J. Murphy. 1988. Compensation and incentives: Practice vs. theory. *Journal of Finance* 43: 593–616.

Banker, Rajiv D., and Srikant M. Datar. 1989. Sensitivity, precision, and linear aggregation of signals for performance evaluation. *Journal of Accounting Research* 27:21–39.

Brickley, James A., and R. Lawrence Van Horn. 2002. Managerial incentives in nonprofit organizations: Evidence from hospitals. *Journal of Law and Economics* 45:227–49.

Chadwick, William. 2001. *Stealing sheep: The church's hidden problem with transfer growth.* Downers Grove, IL: InterVarsity Press.

Edmans, Alex, Xavier Gabaix, and Augustin Landier. 2009. A multiplicative model of optimal CEO incentives in market equilibrium. *Review of Financial Studies* 22:4881–4917.

Engelberg, Joseph, Pengjie Gao, and Christopher A. Parsons. 2009. The price of a CEO's Rolodex. Unpublished manuscript, Kenan-Flagler Business School, University of North Carolina, Chapel Hill.

Fama, Eugene F., and Michael C. Jensen. 1983. Separation of ownership and control. *Journal of Law and Economics* 26:301–25.

Gruber, Jonathan. 2004. Pay or pray? The impact of charitable subsidies on religious attendance. *Journal of Public Economics* 88:2636–55.

Hallock, Kevin F. 2002. Managerial pay and governance in American nonprofits. *Industrial Relations* 41:377–406.

Haney, Becky Roselius. 2007. The relationship between labor market structure and clergy compensation in protestant denominations. *Atlantic Economic Journal* 36:65–75.

Hoge, D. R., and J. E. Wenger. 2005. *Pastors in transition: Why clergy leave local church ministries.* Grand Rapids, MI: Eerdmans.

Holmstrom, Bengt. 1979. Moral hazard and observability. *Bell Journal of Economics* 10:74–91.

Holmstrom, Bengt, and Paul Milgrom. 1991. Multi-task principal-agent analyses: Incentive contracts, asset ownership, and job design. *Journal of Law, Economics, and Organization* 7:24–52.

Iannaccone, Laurence R. 1998. Introduction to the economics of religion. *Journal of Economic Literature* 36:1465–96.

McMillan, Becky R., and Matthew J. Price. 2003. How much should we pay the pastor? A fresh look at clergy salaries in the 21st century. Pulpit and Pew Research Reports 2, Duke University Divinity School.

Murphy, Kevin J. 1999. Executive compensation. In *Handbook of labor economics,* ed. Orley Ashenfelter and David Card. Amsterdam: Elsevier.

Prendergast, Canice. 2002. The tenuous trade-off between risk and incentives. *Journal of Political Economy* 110:1071–1102.
Schaefer, Scott. 1998. The dependence of pay-performance sensitivity on the size of the firm. *Review of Economics and Statistics* 80:436–43.
Trawick, Michelle W., and Stephen E. Lile. 2007. Religious market competition and clergy salary. *American Journal of Economics and Sociology* 66:747–63.
United Methodist Publishing House. 2008. *The Book of discipline of the United Methodist Church*. Nashville: Abingdon Press.
White, Halbert. 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica* 48: 817–38.
Zech, Charles. 2007. The agency relationship in churches. *American Journal of Economics and Sociology* 66:727–46.