

Does Where You Stand Depend on Where You Sit? Tithing Donations and Self-Serving Beliefs

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Economists and psychologists argue that individuals skew personal beliefs to accord with their own interests. To test for the presence of self-serving beliefs, we surveyed 1,200 members of the Mormon Church about tithing. A tithe is a voluntary contribution equal to 10 percent of income. Since respondents must decide privately what income items to tithe, we observe how the income definition depends on an individual's religious and financial incentives. We find surprisingly little evidence that an individual's financial situation influences beliefs about what counts as income for the tithe. However, ambiguity increases the role for self-serving biases. (JEL A12, D63)

Preacher: “Brother Brown, I want to make sure you understood my sermon on charity today. If you had two farms, and Brother White had no means of support, wouldn't you give him one of your farms?”

Brother Brown: “I most certainly would.”

Preacher: “What if you had two tractors, and Brother White had no way to harvest his crop. Wouldn't you give him one of your tractors?”

Brother Brown: “Why, sure I would.”

Preacher: “What if you had two horses and Brother White's only horse died. Wouldn't you give him one of your horses?”

Brother Brown: “Well, no. You see, I have two horses.”

Previous psychological and economic research indicates that individuals are highly inclined to

skew reported beliefs to line up with selfish interests. A recent paper by Linda C. Babcock and George Loewenstein (1997) reports several examples: workers feel that compensation for extra hours of work should be higher when they are the ones working longer hours; in public-sector salary negotiations that make reference to the salaries of comparable groups, the union's list of comparables contains higher salary districts than the municipality's list; and in a mock traffic-accident lawsuit in which participants are asked to predict an impartial judge's ruling, plaintiffs guess much higher award amounts than defendants. Additional work has focused on the self-serving behavior of managers, so that, for example, the peer-company stock-return benchmarks chosen by management for required comparisons are downward biased (Wilbur G. Lewellen et al., 1996).

A self-serving bias occurs when individuals subconsciously alter their fundamental views about what is fair or right in a way that benefits their interests. In many situations, these distorted beliefs cause individuals to behave more self-servingly or to bargain harder to get their “just” rewards. It can be difficult to identify self-serving beliefs, however, since what appears to be a bias may merely be the result of an individual's self-presentation. That is, individuals may knowingly pursue what is in their best interest but use the language of fairness to support their actions. For example, both true self-serving biases and the conscious calculation for gain likely affect individuals' stated beliefs on

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how best to assess tax burdens. Individuals have the direct financial incentive to consciously support and vote for changes that lower their taxes, and not necessarily for reforms that they feel are most equitable. Indirectly, individuals' true perceptions of what is fair in taxation may be distorted by self-interest in minimizing their own taxes. While economists usually focus on the direct incentive individuals have to benefit themselves when making decisions, psychologists emphasize the psychological inability of individuals to separate out their own self-interest when forming beliefs.

To test for the presence of self-interested beliefs, we conducted a telephone survey of members of the Church of Jesus Christ of Latter-Day Saints and asked them about their practice of tithing. Tithing is similar to a flat tax with no deductions, where individuals make voluntary contributions to the Church equal to 10 percent of their income. While Latter-Day Saint doctrine teaches that paying an honest tithe is necessary to be right with God, Church members must decide for themselves what income items to tithe. Hence, we can observe how income definitions depend on an individual's financial and religious incentives. With the identifying assumption that believing members will not try to "cheat" God by consciously excluding a valid income source from the tithing base, any observed bias in income definitions must be driven by self-justified perceptions of what is right, and not the conscious calculation for gain.

Somewhat surprisingly, we find only minor evidence that tithable income definitions are affected by the potential for financial gain. Having received a sizable gift or inheritance does not seem to affect individuals' views of whether gifts and inheritances should be tithed. Likewise, whether an individual has invested in the stock market, been unemployed, or owned his own business does little to change the perception that stock-market gains, unemployment benefits, and monies used by the self-employed to purchase health insurance belong in the tithing base. In addition, the tithing treatment of retirement accounts does not depend on whether an individual has ever made contributions to an IRA or 401(k) plan. However, our results do reveal strong evidence of self-interested tithing behavior in the treatment of capital gains from a home, with homeowners being less likely to say

they would tithe a housing capital gain compared to renters.

Self-serving biases, as defined broadly by psychologists, show up much stronger for non-financial motivations. While different incentives are created by the different financial situations of survey respondents, different motivations are also driven by beliefs about the importance of the Church. Individuals who attend church regularly, who serve in volunteer church positions, and who have previously served as missionaries think much more comprehensively about what items should be tithed. In accord with previous research, individuals exhibit stronger self-serving biases in the tithing scenarios that they view more ambiguously. In addition, individuals who appear to be less certain about tithing in general are also less generous in their tithing donations. Finally, individuals who avoid seeking advice from church leaders and others about what items to tithe hold to a narrower definition of the tithable income base. This finding supports Matthew Rabin's (1995) hypothesis that individuals whose moral dispositions serve as internal constraints will avoid seeking advice that could interfere with their self-interest.

I. Tithing

"[Latter-Day Saints] shall pay one-tenth of all their interest annually; and this shall be a standing law unto them forever ..."
(The Doctrine and Covenants of the Church of Jesus Christ of Latter-Day Saints, Section 119, Verse 4)

Tithing is the practice of paying a tenth part of one's income, or a tithe, as an offering to God. It originated anciently, as the Bible reports that Abraham (Genesis 14:18–20) and Jacob (Genesis 28:20–22) both paid tithes. Tithing was also a part of the law of Moses (see Leviticus 27:30). Today, tithing is an integral element of the religious practice of the Church of Jesus Christ of Latter-Day Saints, commonly called the LDS or Mormon Church. By its nature, the tithing system of the LDS Church represents a voluntary flat tax, where members decide for themselves what income-base definition to use. Thus, its practice allows us to observe whether individuals with varying financial or religious incentives define income in a self-serving fashion.

Current practice in the LDS Church is for members to mail or hand deliver tithes to the bishop, the local leader of the congregation. The bishop forwards the money collected to LDS Church headquarters, where central authorities authorize expenditures. Congregations receive a budget for the operation of local church programs based on the size of the congregation, not on the amount of tithes collected. Tithes are given with the understanding that the LDS Church may use them for any purpose. The Church uses tithing funds for the construction and purchase of buildings and for the day-to-day operation of the Church; tithing funds are also used to partially support education, missionary, and welfare programs (see Howard D. Swainston, 1992). Hence, tithes do not represent an entrance fee to a “local club,” nor does the amount of an individual’s donation directly benefit his or her local congregation financially. Members are also encouraged to donate “fast offerings,” for the relief of the poor, and funds for the support of the LDS Church’s missionary program. However, such contributions are not considered to be part of the tithe (Bruce R. McConkie, 1966).

For our purposes, it is important to note that tithing is a voluntary private matter. Church leaders teach that payment of an honest tenth is necessary to be right with God, but that such matters are between the individual and God. While the rate of 10 percent is immutable,¹ precisely which items to tithe is not laid out in detail. Bishops do not ask members for an accounting of what income sources were tithed; rather, in a yearly interview, each member simply declares to the bishop whether or not he has paid a full tithe. The *General Handbook of Instructions* (1989), which contains official Church policy and is distributed to every bishop, intentionally does not specify what income sources should be tithed. Under the sub-heading “Definition of Tithing,” the handbook quotes an official 1970 letter (p. 9-1):

The First Presidency has written: “The simplest statement we know of is the

statement of the Lord himself, namely, that the members of the Church should pay ‘one-tenth of all their interest annually,’ which is understood to mean income. No one is justified in making any other statement than this.”

This same 1970 letter further explains: “Every member of the Church is entitled to make his own decision as to what he thinks he owes the Lord and to make payment accordingly” (cited in Swainston [1992 p. 1480]).

While little direction is given on what income sources should be tithed, Church leaders admonish members to willingly and faithfully tithe, and they promise accompanying spiritual and temporal blessings (Stephen L. Richards, 1983). As a result, there is a pervasive LDS culture that encourages members to donate generously. According to LDS theology, God is omniscient; hence, members arguably have little incentive to try consciously to cheat on the income definition, since they believe that God would discern any such dishonesty. Indeed, since one of the primary motivations for the tithe is obedience to God’s commandments, intentionally lying about the income definition would negate much of the purpose and perceived benefit of the tithe.

II. Survey

To gain insights into potential biases in personal-income definitions, we conducted a survey which asked members of the LDS Church about their tithing practices. Using computer-assisted telephone interviewing (CATI), a professional survey company interviewed 1,200 Latter-Day Saints living in the state of Utah between May 7 and May 20, 1996.² While the LDS Church has a worldwide membership totaling 9.7 million, we chose this sample because of Utah’s high concentration of Church members. Martin B. Bradley et al. (1992) estimate that approximately 72 percent of the state population is LDS, and 73 percent of those randomly telephoned in our survey indicated that they were members of the LDS Church. Individuals were eligible to complete the survey if

¹ “Strictly speaking there is no such thing as a part tithing. Tithing is a tenth, and unless a person contributes the tenth, he has only made a contribution to the tithing funds of the Church” (McConkie, 1966 pp. 798–99).

² A copy of the survey is available from the authors upon request.

they indicated that they were members of the LDS Church, the male or female household head, and 18 years of age or older.³ The response rate to the survey was 43 percent, where the response rate is defined as the number of completed interviews divided by the number of eligible potential respondents.⁴ On average, the survey took 10 minutes to complete. The Appendix contains information on survey administration, sample management, and interviewer training, and Table A1 provides further details on the final sample disposition.

Survey participants were presented with hypothetical situations involving potential income sources and asked how they would treat the items for tithing purposes. To examine how variations in the hypothetical situations affect responses, we administered one version of the tithing questions to half the respondents (Ballot A) and a second version to the other half (Ballot B). Respondents were also asked demographic, labor-market, and church-activity questions. Table 1 lists some of the demographic and labor-market characteristics of the survey sample and provides a comparison to data for the entire state of Utah from the 1990 U.S. Census. The sample for our phone interview is more female and better educated, a pattern sometimes observed in telephone interviews (Groves, 1989). The higher marriage rate and larger family sizes observed in our sample relative to the Utah Census accord with the LDS Church's teachings on the importance of marriage and family life.

Because of the personal nature of tithing, we determined that asking individuals whether they contributed tithes to the Church and what items they actually tithed would result in an unacceptably high refusal rate. Instead, we asked questions about church activity, since individuals who are more involved with the LDS Church are more likely to believe in the importance of tithing. In addition, by asking tithing questions about hypothetical scenarios, we are able to examine the beliefs of all respondents. Indeed, to test for the presence of self-serving bias, the

beliefs of individuals who have never experienced an income source are as important as the beliefs of those who have. Due to the confidential nature of tithing, no official estimate of the number of tithe-payers is released. Our best estimate of the proportion of tithe-payers for members who regularly attend church is around two-thirds.⁵ Although we cannot identify those respondents in our sample who do not tithe, their answers probably reflect less about their personal beliefs and more about their perceptions of how an active church member should tithe.

Table 2 reports summary statistics on the church-activity and tithing-advice variables we collected. Almost 80 percent of respondents attend "Sacrament Meeting," the main Sunday service, at least three times a month, on average. In addition, 87 percent of the sample have attended church social activities, half of all males and 13 percent of females have served full-time missions,⁶ and around 70 percent of males and females currently hold a volunteer calling in the Church.⁷ As will be seen later, these church-activity measures strongly influence an individual's answers to the tithing questions. Slightly over half of the respondents discuss what items to tithe with their spouse, while around 40 percent have sought outside advice about tithing.

The survey questions as read to participants appear in Table 3, along with the fraction of participants answering "yes," "no," and "not sure." The tithing questions span five broad categories: gifts and inheritances, housing capital gains, stock investments, miscellaneous deductions, and retirement savings. The fraction of individuals who agree that an item should be included in the tithable income base provides a measure of consensus in the population. Similarly, the fraction of individuals answering "not sure" provides a measure of uncertainty in the population for a potential income item. To put the degree of consensus in our survey in perspective, the Gallup Poll defined

⁵ We arrived at this estimate after discussions about tithing with several bishops.

⁶ All male members are encouraged to serve full-time, unpaid, two-year proselyting missions for the LDS Church when they reach 19 years of age. Female members may choose to serve 18-month missions when they turn 21.

⁷ The LDS Church operates without a paid clergy or staff; instead members are "called" to serve in volunteer positions, such as organist, Sunday School teacher, or even bishop.

³ During the initial screening of candidates, any potential respondent who volunteered that he or she was not an active member of the LDS Church or did not tithe was also not interviewed.

⁴ This response rate is consistent with other telephone interviews on sensitive subjects (Robert M. Groves, 1989).

TABLE 1—CHARACTERISTICS OF SURVEY PARTICIPANTS AND 1990 UTAH CENSUS DATA

Characteristic	Category	Survey ^a (percent)	Utah Census ^b (percent)
Female		58.4	51.2
Age	18–25 years	7.5	7.4
	25–34 years	21.0	25.5
	35–44 years	24.6	23.1
	45–54 years	18.4	14.4
	55–64 years	10.5	11.6
	65 years and older (refused)	18.0 (<i>N</i> = 20)	—
Married	currently married	80.7	66.7
	(refused)	(<i>N</i> = 8)	—
Children ^c	no children	10.3	25.0
	1 or 2	22.8	30.9
	3 or 4	37.4	28.5
	5 or more (refused)	29.5 (<i>N</i> = 9)	15.7 —
Children under 18 living at home	no children at home	43.2	54.2
	1 or 2	27.1	27.4
	3 or more	29.7	18.4
	(refused)	(<i>N</i> = 11)	—
Schooling	high-school dropout	7.4	14.8
	high-school graduate	22.2	23.6
	some college	39.6	36.4
	Bachelor's degree	21.5	16.4
	advanced degree	9.2	8.7
	(not sure) (refused)	(<i>N</i> = 3) (<i>N</i> = 9)	— —
Income ^d	less than \$10,000	5.4	11.2
	\$10,000 or more, but less than \$20,000	10.8	15.6
	\$20,000 or more, but less than \$30,000	15.3	15.3
	\$30,000 or more, but less than \$40,000	20.7	15.1
	\$40,000 or more, but less than \$50,000	14.1	12.9
	\$50,000 or more, but less than \$60,000	12.3	9.5
	\$60,000 or more, but less than \$80,000	10.9	11.3
	\$80,000 or more	10.5	9.2
	(not sure)	(<i>N</i> = 58)	—
	(refused)	(<i>N</i> = 112)	—

^a Sample of 1,200 LDS Church members over age 18 in Utah, who were either the male or female household head.

^b Authors' calculations using 1990 U.S. Census data for individuals over age 18 living in Utah, who were either the householder or spouse of householder. Percentages were calculated weighting by the inverse of the sampling probability.

^c For the Census, number of children ever born are for females only.

^d Income from Census inflated 24 percent to account for Utah's income growth rate from 1989 to 1996.

super-majority consensus as 80 percent agreement, consensus as two-thirds agreement, and support as a simple majority for a public opinion referendum on 27 issues (Lydia Saad, 1996). As a matter of notation, question numbers followed by an "A" indicate questions asked on Ballot A, while question numbers followed by a "B" indicate Ballot B.

While the main focus of this paper is to test for observed differences in beliefs as a function of financial incentives, the level results are also in-

teresting.⁸ Table 3 reveals a fair amount of consensus among respondents on what items should be included in the tithing income base. The responses to Questions 1–3 indicate that Latter-Day Saints generally agree that cash gifts and

⁸ In this paper we only briefly discuss the degree of consensus among survey participants. For a more detailed discussion of how tithing beliefs provide insight into the popular definition of income as it relates to tax policy, interested readers are referred to Dahl and Ransom (1997).

TABLE 2—CHURCH-ACTIVITY AND TITHING-ADVICE
CHARACTERISTICS OF SURVEY PARTICIPANTS

Characteristic	Percent
Number of times respondent attends Sacrament Meeting each month	
Less than one	10.8 (0.9)
One	3.8 (0.5)
Two	4.9 (0.6)
Three	12.0 (0.9)
Four or more	66.0 (1.4)
Attends LDS Church social activities, not including Sunday meetings	87.1 (1.0)
Served full-time mission for the LDS Church	
Males (respondent or spouse)	50.6 (1.4)
Females (respondent or spouse)	13.4 (1.0)
Currently holds volunteer calling in the LDS Church	
Males (respondent or spouse)	69.7 (1.3)
Females (respondent or spouse)	72.7 (1.3)
Discusses what items to pay tithing on with spouse	51.8 (1.4)
Sought advice about what items on which to pay tithing from:	
Church leader	22.9 (1.2)
Friend	5.7 (0.7)
Family member (other than spouse)	16.1 (1.1)
Someone else	2.5 (0.5)
Did not seek advice	62.3 (1.4)

Note: Standard errors are reported in parentheses.

inheritances count as income for tithing purposes. Respondents apparently think about income as the amount of cash available for immediate consumption but do not seem to impute income from in-kind transfers when figuring their tithing base. Latter-Day Saints' perceptions on how to treat housing capital gains indicate that the source and subsequent use of the gain strongly impact tithing beliefs (Questions 4 and 5). A house that is a primary residence is not viewed as an income-

generating instrument as strongly as a secondary rental house. In addition, when the capital gain is reinvested into a new home, far fewer respondents feel they have experienced an increase in income. The answers to the stock-market scenarios (Questions 6 and 7) indicate that respondents are in agreement that investment gains should be tithed but point toward some incongruities on how individuals think about losses. The framing of the questions makes a substantial difference to the joint treatment of gains and losses; when respondents are asked how to treat a gain and a loss in two separate survey questions instead of one, they are much less likely to deduct a loss from their income base.⁹ The responses to Questions 8–10 indicate that Latter-Day Saints consider some of the deductions allowed in the federal tax code to be tithable income. A majority of respondents would tithe disability and unemployment benefits and would not deduct from tithable income federal and state taxes, charitable contributions, or health-insurance costs for the self-employed. While respondents do not agree on a single unified treatment of retirement savings, 83 percent would tithe contributions to an individual retirement account, either when the money is deposited or when the money is later taken out (Questions 11 and 12.1/12.2).

III. Does Where You Stand Depend on Where You Sit?

In this paper, we are able to test for the presence of self-serving biases within the unique system of tithing donations. Since indi-

⁹ Previous research has shown that choices can depend significantly on the way a problem or question is framed (Amos Tversky and Daniel Kahneman, 1981). One explanation for our results is that, when individuals are presented with a combined gain and loss, they mentally bundle the two events into a single transaction, in this case a gain of \$300. However, when the gain and loss questions are asked separately, the \$200 loss is viewed as a distinct event, and individuals do not feel comfortable taking a separate deduction from their total income. This type of mental accounting, which depends on the grouping of gains and losses as well as the reference income from which a loss would be deducted, could also explain why individuals do not agree on the tithing treatment of a capital gain on a house when a new house is purchased with the proceeds. Perhaps some respondents view the selling of an old home and the buying of a new home as a single transaction, with no net increase resulting from the exchange (see Richard H. Thaler, 1985; Kahneman, 1992)

TABLE 3—TITHING QUESTIONS AND RESPONSES

Question	Percentage answering			N
	Yes	No	Not sure	
1A) <i>Imagine that your parents give you \$500 for Christmas. Would you pay tithing on this gift?</i>	61.9 (2.0)	32.7 (1.9)	5.3 (0.9)	599
1B) <i>Imagine that your parents give you a sofa worth \$500 for Christmas. Would you pay tithing on the value of this gift?</i>	33.2 (1.9)	60.8 (2.0)	6.0 (1.0)	600
2A) <i>Your uncle, who was not a member of the Church and has therefore never paid tithing, passes away and leaves you \$10,000 cash in his will. Would you pay tithing on this inheritance?</i>	81.1 (1.6)	12.5 (1.4)	6.4 (1.0)	598
2B) <i>Your uncle, a member of the Church who paid tithing all his life, passes away and leaves you \$10,000 cash in his will. Would you pay tithing on this inheritance?</i>	77.5 (1.7)	14.5 (1.4)	8.0 (1.1)	599
3A) <i>Suppose you inherit the land your family has farmed for generations. You continue farming the land, which has an assessed value of \$700,000. Would you pay tithing on the value of the land you inherited?</i>	41.0 (2.0)	40.2 (2.0)	18.8 (1.6)	597
3B) <i>Suppose you inherit the land your family has farmed for generations. You sell the land, for which you receive \$700,000. Would you pay tithing on this money?</i>	80.3 (1.6)	12.2 (1.3)	7.5 (1.1)	600
4A, B) <i>Now I want you to imagine that you own a home and are ready to retire. You sell the home and receive \$50,000 more for the home than you originally paid for it. Suppose that you use all of the money from the sale of your home to buy a new home. Would you pay tithing on the \$50,000 gain you received when you sold your home?</i>	43.0 (1.4)	41.0 (1.4)	16.0 (1.1)	1,198
5A) <i>Now consider another alternative. Suppose that you put all of the money from the sale of your home in the bank and rent a condominium. Under these circumstances, would you pay tithing on the \$50,000 gain you received when you sold your home?</i>	66.6 (1.9)	21.7 (1.7)	11.7 (1.3)	599
5B) <i>Suppose that you are looking for an investment, so you buy a second house for \$75,000 to rent out. Later you sell this house for \$100,000. So you sell the house for \$25,000 more than you paid. Would you pay tithing on this gain?</i>	78.5 (1.7)	12.3 (1.3)	9.2 (1.2)	600
6A) <i>Imagine that to save for your child's college education, you buy shares of a stock for \$1,000, and later sell them for \$1,500. So you sell the stock for \$500 more than you paid. Would you pay tithing on this gain?</i>	75.0 (1.8)	18.4 (1.6)	6.7 (1.0)	599
7A) <i>Imagine again that you are investing to save for your child's college education. You buy shares of a stock for \$1,000, and later sell them for \$800. So you sell the stock for \$200 less than you paid. Would you subtract this loss from your income before paying tithing?</i>	22.9 (1.7)	65.6 (1.9)	11.5 (1.3)	599

Question	Percentage answering				N
	A	B	C	Not sure	
6B) <i>Imagine that to save for your child's college education, you buy shares of two different stocks, for \$1,000 each. Later you sell one stock for \$1,500 and the other for \$800. So you gain \$500 on one stock and lose \$200 on the other. Which of the following amounts would you pay tithing on?</i> A—The \$500 gain B—The \$500 gain minus the \$200 loss, or in other words, the \$300 combined gain C—None of the gain	23.8 (1.7)	50.8 (2.0)	8.1 (1.1)	17.3 (1.5)	596
Imputed responses from 6A and 7A	47.6	18.5	17.2	16.6 ^a	

TABLE 3—Continued.

Question	Percentage answering			N	
	Yes	No	Not sure		
8A, B) <i>Imagine that you receive a paycheck totaling \$1,000 before any deductions. If \$150 is deducted for federal and state taxes, would you subtract this amount before paying tithing on the paycheck?</i>	26.5 (1.3)	68.7 (1.3)	4.8 (0.6)	1,199	
9A) <i>Imagine that you are injured at your job and are unable to work ever again. You receive a monthly disability check. Would you pay tithing on these benefits?</i>	78.8 (1.7)	13.5 (1.4)	7.7 (1.1)	599	
9B) <i>Now imagine that you lose your job, and in the six months it takes you to find a new job, you receive unemployment benefits. Would you pay tithing on these benefits?</i>	71.8 (1.8)	16.0 (1.5)	12.2 (1.3)	599	
10A) <i>Suppose you own your own business and have to pay for health insurance for you and your family. Would you deduct the cost of this policy from the income of your business before paying tithing?</i>	30.1 (1.9)	55.0 (2.0)	14.9 (1.5)	598	
10B) <i>Suppose you are paying \$375 a month to support a missionary from your ward who could not afford to pay for his own mission. Would you deduct this contribution from your income before paying tithing?</i>	15.0 (1.5)	76.2 (1.7)	8.8 (1.2)	600	
11A, B) <i>Now imagine that to save for your retirement, you set up an individual retirement account. Each month while you are working, \$100 is automatically deducted from your paycheck and placed into the account. When you retire, you will receive a monthly retirement check from the account. While you are working, would you pay tithing on the money put into the account each month?</i>	64.8 (1.4)	28.5 (1.3)	6.7 (0.7)	1200	
Question	Percentage answering				N
	A	B	C	Not sure	
<i>Asked if Question 11 = "Yes":</i>					
12.1A, B) <i>Now imagine that you are retired and receiving a monthly retirement check from your account. Remember that, while you were working, you paid tithing on the money you put into the account. Which of the following would you now pay tithing on?</i> A— <i>The full amount of your monthly retirement check</i> B— <i>The amount of your monthly retirement check that represents the interest earning on the account</i> C— <i>No part of the monthly retirement check</i>	29.3 (1.6)	51.3 (1.8)	6.4 (0.9)	13.0 (1.2)	778
<i>Asked If Question 11 = "No":</i>					
12.2A, B) <i>Now imagine that you are retired and receiving a monthly retirement check from your account. Remember that, while you were working, you did not pay tithing on the money you put into the account. Which of the following would you now pay tithing on?</i> A— <i>The full amount of your monthly retirement check</i> B— <i>The amount of your monthly retirement check that represents the interest earning on the account</i> C— <i>No part of the monthly retirement check</i>	63.8 (2.6)	11.5 (1.7)	11.2 (1.7)	13.5 (1.9)	340

Note: Standard errors are reported in parentheses.

^a Includes individuals who responded "not sure" to either Question 6A or 7A.

viduals must decide for themselves what items to include and exclude from the tithing base, we can test whether selfish interests motivate differences in income definitions for tithing purposes. Ultimately, no asymmetric-information

problem exists, provided Church members believe that God knows whether they are truthfully revealing their beliefs. One plausible implication is that, in order for a person to skew the income definition in her favor, she must

fundamentally convince herself that her definition accords with God's will. If this identifying assumption is made, any self-serving income definitions for tithing are the result of changes in underlying tithing beliefs, and not a conscious calculation for gain. However, even without this additional assumption, our survey provides a natural experiment for the presence of self-serving behavior outside of the laboratory setting.

A. Financial Motivations

To test for the presence of self-serving beliefs based on financial incentives, we asked survey participants about their experience with different income sources.¹⁰ Table 4 documents the variation in experience, revealing substantial differences in individuals' financial situations. For example, 60 percent of the sample have at one time contributed to a tax-deferred pension plan, 19 percent have received an inheritance worth \$5,000 or more, and 79 percent have owned a home. With this information, we can test, for example, whether tithing beliefs about the capital gains on a house depend on whether or not the individual has ever owned a home.

If beliefs vary only by experience with an income source, the difference in the mean responses to a tithing question conditional on an individual's circumstance will characterize any self-serving bias. However, closer examination reveals that tithing beliefs depend on a variety of other personal characteristics, some of which are explored later in this paper. For individual tithing questions, urban respondents may have different opinions than rural respondents, education or income level may affect the way people define income, and church involvement and a variety of other personal characteristics may affect tithing beliefs. Insofar as any of these characteristics is correlated with a person's financial circumstances, the results will suffer from omitted variable bias. We chose to model the responses to the tithing questions as an unordered choice model with three possibilities which depend on personal characteristics:

“yes,” “no,” and “not sure.” The multinomial logit (ML) model used in estimation is

$$(1) \Pr(y_{ij} = k) = \frac{\exp(\beta'_k \mathbf{x}_i)}{[\exp(\beta'_{\text{yes}} \mathbf{x}_i) + \exp(\beta'_{\text{no}} \mathbf{x}_i) + \exp(\beta'_{\text{not sure}} \mathbf{x}_i)]}$$

$k = \text{yes, no, not sure}$

where β_{no} is normalized to zero, y_{ij} is individual i 's answer for income item j , and \mathbf{x}_i is a vector of personal characteristics affecting an individual's beliefs about what constitutes a fair definition of tithable income.

The coefficients from the multinomial logit model are hard to interpret, especially since the marginal effects of the regressors on the probabilities do not necessarily have the same sign as the parameter estimates. Therefore, we created “adjusted” probabilities conditional on financial circumstance. To understand how the adjusted probabilities are created, consider the questions and incentives associated with the capital gain on a primary residence (Table 6, Question 4). We first estimated a multinomial logit model using experience with home ownership, church activity, and a variety of demographic variables as explanatory variables.¹¹ We then went back to the raw individual data and coded every respondent as “owned but never sold a home.” Using the coefficient estimates from the ML estimation, we estimated a predicted value lying between 0 and 1 for each individual by multiplying the estimated coefficients by the corresponding individual values for the explanatory variables. Finally, we formed simple averages of the predicted values by financial incentive to arrive at the adjusted percentages for “yes” (40.9 percent), “no” (44.2 percent), and “not sure” (15.0 percent). Similar procedures, coding every respondent first as “owned and sold a home” and then as “never owned a home,” yield the second and third rows in Table 6. The likelihood-ratio statistic, calculated from estimating the restricted (without the home-ownership variables) and unrestricted

¹⁰ Note that we can only test for the presence of self-serving bias for some of the questions listed in Table 3, since we only collected information about the potential income sources listed in Table 4.

¹¹ The explanatory variables appearing in the ML model are the same as those in Table 11 (excluding the version-B dummy).

TABLE 4—QUESTIONS AND RESPONSES ABOUT POTENTIAL INCOME SOURCES

Question	Percentage answering			N
	Yes	No	Not sure	
<i>Have you [or your husband/or your wife] ever received a cash gift of \$300 or more?</i>	37.8 (1.4)	60.0 (1.4)	1.3 (0.3)	1,190
<i>Have you [or your husband/or your wife] ever received an inheritance worth \$5,000 or more?</i>	19.0 (1.1)	79.8 (1.2)	0.3 (0.2)	1,189
<i>Have you [or your husband/or your wife] ever owned a home or condo?</i>	79.1 (1.2)	20.2 (1.2)	0.3 (0.2)	1,194
<i>Have you [or your husband/or your wife] ever sold a home or condo?</i>	54.3 (1.6)	45.6 (1.6)	0.1 (0.1)	949
<i>Have you [or your husband/or your wife] ever made any investments in the stock market, not including investments which are part of a retirement plan?</i>	35.6 (1.4)	62.7 (1.4)	1.1 (0.3)	1,192
<i>Have you [or your husband/or your wife] ever contributed to a tax-deferred pension plan, such as an IRA or 401(k)?</i>	60.3 (1.4)	35.8 (1.4)	3.2 (0.5)	1,192
<i>Have you [or your husband/or your wife] ever been out of work and actively looking for a job for longer than a month, without being able to find one?</i>	29.3 (1.3)	68.4 (1.3)	1.5 (0.4)	1,190
<i>Have you [or your husband/or your wife] ever owned your own business which made more than \$5,000 in annual income?</i>	30.5 (1.3)	68.1 (1.4)	0.4 (0.2)	1,188

Note: Standard errors are reported in parentheses.

ML equations, reveals that home ownership significantly affects tithing beliefs for Question 4. A similar procedure was used for other questions, substituting the appropriate experience variables for home ownership.

Tables 5 through 9 list the impact of financial incentives for the various tithing questions. Each table first lists the raw percentages answering “yes,” “no,” and “not sure” by experience with the income source. To the right of these percentages is the chi-square statistic for the independence of the rows and columns, which can be interpreted as a simple test for the significance of a person’s financial incentives in determining beliefs. The tables also list the adjusted percentages resulting from the ML estimation. To the right of these adjusted percentages, we report the likelihood-ratio statistic for whether the coefficients on the incentive variables corresponding to the “yes” and “not sure” outcome categories are jointly zero.

While the adjustment does change some fractions by 5 percentage points or more, in general the adjustment does not drastically alter the overall picture. This is not, however, because the ad-

ditional regressors do not help explain individuals’ answers. Indicators of church activity, such as participating in church meetings, attending social activities, having served a mission, and holding a volunteer calling, have significant coefficients in a majority of the estimated ML equations. The age, gender, and education of the respondent, as well as the number of children, family income level, and county population size also influence beliefs about many of the hypothetical questions asked of participants. As expected, the predictive ability of most of these explanatory variables is smaller for the “not sure” answers compared to the “yes” answers.

Most of the results do not support extreme self-serving behavior, at least not to the extent of previous research on such biases. Beginning with Table 5, Question 1 reveals that individuals who have received a gift are even more likely to tithe gifts, the exact opposite of self-serving motives. Adjusting for observed covariates only strengthens this result. There also seems to be little evidence for self-serving behavior with inheritances. When confronted with a cash inheritance from a late uncle, individuals are equally generous in

TABLE 5—GIFT AND INHERITANCE QUESTIONS BY POTENTIAL FINANCIAL INCENTIVE

Question and potential financial incentive	Raw percentages			Chi-square test ^a [p-value]	Covariate-adjusted percentages			LR test ^b [p-value]
	Yes	No	Not sure		Yes	No	Not sure	
1A) <i>Imagine that your parents give you \$500 for Christmas. Would you pay tithing on this gift?</i>								
Received a gift	64.1	31.8	4.1	1.2	63.4	32.9	3.7	1.8
Never received a gift	60.2	34.1	5.7	[0.545]	60.8	33.1	6.2	[0.414]
1B) <i>Imagine that your parents give you a sofa worth \$500 for Christmas. Would you pay tithing on the value of this gift?</i>								
Received a gift	34.4	63.0	2.7	6.5	36.8	59.8	3.4	4.9
Never received a gift	31.1	62.3	7.7	[0.038]	30.3	62.6	7.0	[0.088]
2A) <i>Your uncle, who was not a member of the Church and has therefore never paid tithing, passes away and leaves you \$10,000 cash in his will. Would you pay tithing on this inheritance?</i>								
Received an inheritance	90.3	7.8	1.9	6.9	86.5	11.4	2.1	4.2
Never received an inheritance	78.7	13.2	7.1	[0.033]	80.7	12.2	7.1	[0.124]
2B) <i>Your uncle, a member of the Church who paid tithing all his life, passes away and leaves you \$10,000 cash in his will. Would you pay tithing on this inheritance?</i>								
Received an inheritance	79.0	18.5	2.5	6.2	74.2	23.0	2.7	11.9
Never received an inheritance	77.3	13.9	8.7	[0.045]	78.1	12.8	9.1	[0.003]
3A) <i>Suppose you inherit the land your family has farmed for generations. You continue farming the land, which has an assessed value of \$700,000. Would you pay tithing on the value of the land you inherited?</i>								
Received an inheritance	39.8	40.8	19.4	0.0	38.1	46.7	15.1	2.6
Never received an inheritance	40.6	40.4	19.0	[0.989]	40.9	38.9	20.2	[0.277]
3B) <i>Suppose you inherit the land your family has farmed for generations. You sell the land, for which you receive \$700,000. Would you pay tithing on this money?</i>								
Received an inheritance	82.4	10.9	6.7	0.5	80.0	14.4	5.5	1.3
Never received an inheritance	79.5	13.1	7.4	[0.779]	80.0	12.0	8.0	[0.521]

^a Chi-square test for independence of rows and columns.

^b Likelihood-ratio test for the incentive variables appearing in the multinomial logit equations.

their payment of tithes whether or not they have actually received an inheritance (Question 2). Those who have not received a cash inheritance, however, are three times as likely to answer “not sure”; perhaps these individuals had not seriously thought about the question prior to the survey because they had no need to consider it.¹² The results for inheriting the family farm likewise show little, if any, evidence of self-interested beliefs. For example, for Question 3B, equal fractions (approximately 80 percent) of respondents who have and have not received an inheritance felt that a large land inheritance sold for cash should be tithed.

The one outstanding exception to the lack of self-serving behavior shows up with housing capital gains in Table 6. With these questions, respon-

dents who have never owned a home are up to 20-percent more likely to believe that tithing should be paid on the capital gain. For example, in Question 5A, a super-majority (after adjusting for covariates) of those who have never owned a home feel that cash-realized gains from a primary residence should count as tithable income, compared to less than 63 percent of homeowners. For Question 4, the effects of home ownership are also highly significant, both before and after adjusting for observed covariates. The differences in beliefs between homeowners and non-homeowners disappear in Question 5A, when the capital gain results from a secondary house purchased as an investment. Apparently, homeowners do not view a primary residence as an income-generating instrument as strongly as a secondary investment house, while non-homeowners make no such distinction (Question 5A vs. Question 5B). Interestingly, non-homeowners are less likely to answer “not sure” to most of the housing-capital-gain questions. In fact, those who have owned and sold a home are uniformly the most likely to answer

¹² An alternative interpretation is that, when respondents answer “not sure,” they really mean “no.” If “not sure” is classified as “no,” the results presented in Tables 5–9 become even stronger, with a large bias for capital gains on a home and very little self-serving bias for the remaining questions.

TABLE 6—HOUSING-CAPITAL-GAIN QUESTIONS BY POTENTIAL FINANCIAL INCENTIVE

Question and potential financial incentive	Raw percentages			Chi-square test ^a [p-value]	Covariate-adjusted percentages			LR test ^b [p-value]
	Yes	No	Not sure		Yes	No	Not sure	
4A, B) <i>Now I want you to imagine that you own a home and are ready to retire. You sell the home and receive \$50,000 more for the home than you originally paid for it. Suppose that you use all of the money from the sale of your home to buy a new home. Would you pay tithing on the \$50,000 gain you received when you sold your home?</i>								
Owned but never sold a home	41.8	43.6	14.5	11.5	40.3	44.7	15.0	14.4
Owned and sold a home	39.8	42.2	18.0	[0.022]	39.7	42.2	18.1	[0.006]
Never owned a home	51.7	33.5	14.8		54.4	30.6	15.0	
5A) <i>Now consider another alternative. Suppose that you put all of the money from the sale of your home in the bank and rent a condominium. Under these circumstances, would you pay tithing on the \$50,000 gain you received when you sold your home?</i>								
Owned but never sold a home	67.2	22.1	10.2	6.1	63.0	25.8	11.2	16.9
Owned and sold a home	61.9	24.2	14.0	[0.190]	61.6	24.8	13.5	[0.002]
Never owned a home	74.6	15.8	9.7		81.0	9.3	9.7	
5B) <i>Suppose that you are looking for an investment, so you buy a second house for \$75,000 to rent out. Later you sell this house for \$100,000. So you sell the house for \$25,000 more than you paid. Would you pay tithing on this gain?</i>								
Owned but never sold a home	83.1	9.2	7.6	9.0	79.2	11.2	9.6	3.4
Owned and sold a home	75.9	13.0	11.1	[0.061]	75.5	13.6	10.9	[0.488]
Never owned a home	73.0	18.9	8.2		81.5	12.5	6.0	

^a Chi-square test for independence of rows and columns.

^b Likelihood-ratio test for the incentive variables appearing in the multinomial logit equations.

“not sure,” even though they were actually forced to make a similar decision at one time. In contrast, for most of the other questions on tithing beliefs, those never experiencing a potential income source are much more likely to answer “not sure.”

As shown in Table 7, there appears to be little evidence with stock investments for the “where you stand is where you sit” hypothesis. Without controlling for observed covariates, there appears to be some evidence for self-interested treatment of stock-market gains and losses for tithing purposes. However, whether an individual has investments in the stock market is correlated with other variables which influence tithing beliefs, such as age, family income level, and various church-activity measures. After controlling for observed covariates, the survey questions on the tithing treatment of stock investments reveal very similar attitudes for those who have and those who have not invested in the stock market. The only striking difference is that those who have never invested in the stock market are more likely to be unsure about the scenario, which may account for some of the differences in the fractions answering “yes” and “no” conditional on experience with stocks. The fact that these questions exhibit so little self-serving behavior is remarkable, especially since

the debate over the treatment of capital gains for federal tax purposes appears to largely be divided by wealth and stock position.

In Table 8, there is only minor evidence that being unemployed affects an individual’s beliefs about the tithability of unemployment benefits. There are small differences in the fraction of “no” and “not sure” responses by circumstance, but not in the number of respondents answering “yes.” There is also some evidence for self-interested behavior for Question 10A, which asks about the deductibility of health insurance for the self-employed. While 35 percent of the self-employed would deduct health-insurance costs before figuring out their tithable income, only 27 percent of the rest of the sample would. However, the likelihood-ratio statistic for the incentive variables appearing in the ML equations is insignificant.

Table 9 reveals that the potential for financial gain does not affect respondents’ tithing treatment of retirement savings. Participants were asked two questions: (i) whether they would tithe contributions placed into an individual retirement account (IRA), and (ii) how they would tithe subsequent withdrawals from the account. The combined responses in Table 9 summarize how individuals would tithe con-

TABLE 7—STOCK-INVESTMENT QUESTIONS BY POTENTIAL FINANCIAL INCENTIVE

Question and potential financial incentive	Raw percentages			Chi-square test ^a [p-value]	Covariate-adjusted percentages			LR test ^b [p-value]		
	Yes	No	Not sure		Yes	No	Not sure			
6A) <i>Imagine that to save for your child's college education, you buy shares of a stock for \$1,000, and later sell them for \$1,500. So you sell the stock for \$500 more than you paid. Would you pay tithing on this gain?</i>										
Invested in stocks	76.4	19.7	3.9	4.1	74.3	21.9	3.8	6.2		
Never invested in stocks	74.0	17.9	8.1	[0.132]	75.5	16.4	8.1	[0.045]		
7A) <i>Imagine again that you are investing to save for your child's college education. You buy shares of a stock for \$1,000, and later sell them for \$800. So you sell the stock for \$200 less than you paid. Would you subtract this loss from your income before paying tithing?</i>										
Invested in stocks	27.9	63.0	9.1	6.1	25.6	64.2	10.2	2.2		
Never invested in stocks	19.8	66.9	13.3	[0.047]	20.7	66.7	12.6	[0.337]		
Question and potential financial incentive	Raw percentages				Chi-square test ^a [p-value]	Covariate-adjusted percentages				LR test ^b [p-value]
	A	B	C	Not sure		A	B	C	Not sure	
6B) <i>Imagine that to save for your child's college education, you buy shares of two different stocks, for \$1,000 each. Later you sell one stock for \$1,500 and the other for \$800. So you gain \$500 on one stock and lose \$200 on the other. Which of the following amounts would you pay tithing on? A—The \$500 gain; B—The \$500 gain minus the \$200 loss, or in other words, the \$300 combined gain; C—None of the gain.</i>										
Invested in stocks	24.9	56.9	7.2	11.0	9.3	25.9	52.8	8.4	12.9	2.9
Never invested in stocks	23.6	47.7	8.6	20.2	[0.025]	23.4	49.8	8.2	18.6	[0.405]

^a Chi-square test for independence of rows and columns.

^b Likelihood-ratio test for the incentive variables appearing in the multinomial logit equations.

TABLE 8—SELECTED MISCELLANEOUS DEDUCTION QUESTIONS BY POTENTIAL FINANCIAL INCENTIVE

Question and potential financial incentive	Raw percentages			Chi-square test ^a [p-value]	Covariate-adjusted percentages			LR test ^b [p-value]
	Yes	No	Not sure		Yes	No	Not sure	
9B) <i>Now imagine that you lose your job, and in the six months it takes you to find a new job, you receive unemployment benefits. Would you pay tithing on these benefits?</i>								
Been unemployed	72.2	20.1	7.7	6.5	71.8	19.7	7.5	6.8
Never been unemployed	71.5	14.4	14.1	[0.039]	71.3	14.6	14.1	[0.033]
10A) <i>Suppose you own your own business and have to pay for health insurance for you and your family. Would you deduct the cost of this policy from the income of your business before paying tithing?</i>								
Owned own business	36.0	50.8	13.2	4.7	34.3	51.9	13.7	2.7
Never owned own business	27.2	57.0	15.8	[0.095]	27.4	56.7	15.9	[0.255]

^a Chi-square test for independence of rows and columns.

^b Likelihood-ratio test for the incentive variables appearing in the multinomial logit equations.

tributions (principal) and earnings (interest) on the IRA. The imputed responses exhibit no self-serving bias. For the covariate-adjusted percentages, almost identical fractions of respondents with and without tax-deferred pension plans

would pay on the principal plus interest (52 percent), the principal only (4 percent), the interest only (3 percent), or no part (3 percent). Interestingly, experience with an IRA or 401(k) does not affect the finding that around one-fifth

TABLE 9—RETIREMENT-SAVINGS QUESTIONS BY POTENTIAL FINANCIAL INCENTIVE

Potential financial incentive	Raw percentages ^a						Chi-square test ^b [p-value]	Covariate-adjusted percentages ^a						LR test ^c [p-value]
	(2P)+I	P+I	P only	I only	No part	Not sure		(2P)+I	P+I	P only	I only	No part	Not sure	
[Imputed responses on how to tithe contributions (principal) and earnings (interest) on an individual retirement account] ^d														
Contributed to IRA or 401(k)	18.1	55.5	3.4	3.0	2.8	17.2	7.7	18.7	52.1	3.7	3.0	3.2	19.3	0.77
Never contributed to IRA or 401(k)	20.1	47.4	4.8	3.4	3.8	20.6	[0.171]	19.3	52.4	4.2	3.3	3.3	17.4	[0.979]

^a P = tithe principal; I = tithe interest.

^b Chi-square test for independence of rows and columns.

^c Likelihood-ratio test for the incentive variables appearing in the multinomial logit equations.

^d Responses were imputed from Questions 11 and 12.1/12.2 as follows, with participants answering “not sure” to any part of Questions 11 or 12.1/12.2 being coded as “not sure.” Using broader or more detailed response categories in the analysis yields very similar results.

Response	Question 11	Question 12.1	Question 12.2
(2P)+I	yes	A	
P + I	yes	B	
	no		A
P only	yes	C	
I only	no		B
No part	no		C

of the sample would double-tithe the principal, by tithing both contributions to the IRA and later the full amount of the monthly retirement check. In addition, individuals with and without tax-deferred pension plans are equally unsure how to deal comprehensively with retirement savings.

B. Testing the Identification Assumption

This paper attempts to identify the extent of self-serving biases due to the subconscious alteration of beliefs, separate from any conscious calculation for gain. The critical premise is that devout Church members will not *consciously* “cheat” God by allowing financial self-interest to affect their income definition. In the previous section, the various church-activity variables were used as controls for sample heterogeneity. However, another useful interpretation of these variables is that they measure the degree to which the maintained assumption holds for individual respondents. The prediction is that the financial-incentive variables should have more explanatory power for less devout members than for firmly committed members.

Table 10 assesses the impact of church attendance, one measure of church involvement, on self-serving beliefs. A summary measure of the

bias is the difference in the percentage of respondents with and without a financial incentive answering “yes,” “no,” or “not sure” to a question. A simple test of the identifying assumption checks whether financially motivated differences in these summary measures are smaller for individuals who attend church regularly. Since other characteristics of the respondents may also affect the degree of self-serving beliefs, we created “adjusted” probabilities using the same variables and techniques explained in subsection A of this section. In this multinomial logit framework, the appropriate test examines whether the interaction term between the frequent-church-attendee variable and the financial-incentive variable significantly enters the ML equation.

In the table, a negative value for Δyes (the difference between the percentage of individuals with and without a financial incentive answering “yes” to a question) or a positive value for Δno indicates a self-serving bias for most of the questions.¹³ Likewise, a positive difference between frequent and infrequent

¹³ For Questions 7A and 10A the opposite is true, since these two questions ask whether items should be excluded from the income base. For these questions, a “no” answer implies that the individual would tithe the money.

TABLE 10—DEGREE OF FINANCIAL SELF-SERVING BELIEFS BY CHURCH ACTIVITY

Percentage-point difference in percentage answering “yes,” “no,” or “not sure” between respondents with and without a financial incentive											
Question	Δ_{yes} (adjusted for covariates)			Δ_{no} (adjusted for covariates)			$\Delta_{(not\ sure)}$ (adjusted for covariates)			LR test ^a	p-value
	Frequent church attendees	Infrequent church attendees	Difference	Frequent church attendees	Infrequent church attendees	Difference	Frequent church attendees	Infrequent church attendees	Difference		
	1A	5.3	-10.7	16.0	-2.4	10.6	-13.0	-3.0	0.2		
1B	7.7	0.4	7.3	-5.0	6.7	-11.7	-2.6	-7.0	4.4	3.73	0.155
2A	7.2	4.4	2.8	-2.9	2.7	-5.6	-4.2	-7.1	2.9	1.48	0.476
2B	-2.4	-8.3	5.9	8.2	17.2	-9.0	-5.7	-8.9	3.2	1.86	0.395
3A	-2.8	-0.6	-2.2	5.9	20.7	-14.8	-3.1	-20.2	17.1	4.08	0.130
3B	2.0	-5.6	7.6	-1.7	11.7	-13.4	-0.3	-6.1	5.8	4.29	0.117
4A, B ^b	-14.1	-17.8	3.7	11.4	16.6	-5.2	2.7	1.2	1.5	0.39	0.825
5A ^b	-15.8	-29.8	14.0	12.9	24.9	-12.0	2.9	4.9	-2.0	1.35	0.508
5B ^b	-1.4	-10.7	9.3	-4.5	6.1	-10.6	5.8	4.6	1.2	2.42	0.299
6A	-0.0	-10.2	10.2	5.5	5.7	-0.2	-5.4	4.6	-10.0	2.97	0.226
7A ^c	4.8	4.5	0.3	-3.6	2.9	-6.5	-1.2	-7.5	6.3	1.17	0.556
6B ^d	4.7	9.6	-4.9	-0.9	1.6	-2.5	-3.7	-11.2	7.5	1.59	0.661
9B	5.5	-14.5	20.0	4.2	7.3	-3.1	-9.6	7.3	-16.9	6.93	0.031
10A ^c	5.0	17.0	-12.0	-4.2	-5.7	1.5	-0.8	-11.2	10.4	2.31	0.316

Notes: The Δ operator denotes the percentage-point difference between mean responses for individuals with a financial incentive and those without a financial incentive. Hence, a negative value for Δ_{yes} or a positive value for Δ_{no} indicates a self-serving bias (except for Questions 7A and 10A, where the opposite is true). Likewise, a positive difference between frequent and infrequent church attendees for Δ_{yes} or a negative difference for Δ_{no} indicates that individuals who attend church relatively frequently are less self-serving in their beliefs.

^a Likelihood-ratio test for the interaction term between the appropriate incentive variable and the frequent-church-attendee variables appearing in the multinomial logit equations.

^b In this table, the incentive variable for the housing questions is whether or not the individual owns a home, regardless of whether he or she has ever sold a home.

^c these two questions ask whether items should be excluded from the income base, so an answer of “no” implies that the individual would tithe the money.

^d In this table, for Question 6B an answer of A or B is interpreted as “yes” and an answer of C is interpreted as “no.”

church attendees for Δ_{yes} or a negative difference for Δ_{no} suggests that individuals who attend church relatively frequently are less self-serving in their beliefs. To understand the table, consider Question 1A. For frequent church attendees, individuals who have received a gift are 5.3-percentage-points *more* likely to answer that they would tithe a cash gift and 2.4-percentage-points *less* likely to answer that they would not tithe a cash gift, compared to individuals who have never received a gift. In contrast, infrequent church attendees with a financial incentive are 10.7-percentage-points *less* likely to answer that they would tithe a cash gift and 10.6-percentage-points *more* likely to answer that they would not tithe a cash gift. Most of the other questions reveal a very similar pattern: frequent churchgoers appear less self-serving than infrequent churchgoers. While the differences support the notion that devout members are less subject to the bias, except in the case

of Question 9B, the likelihood-ratio test statistics are insignificant at conventional levels.¹⁴

C. Nonfinancial Motivations

So far, this paper has focused on whether individuals bias their judgments of fairness in the direction of their own financial self-interest. While testing for this kind of self-serving belief naturally appeals to economists, our survey allows for tests of other biases as well. Motivations that are not directly financial in nature could also result in self-serving beliefs. In particular, previous research points to self-serving biases which depend on an individual’s affiliation with a group. In one of the earliest studies on self-serving biases,

¹⁴ The two-part question on retirement savings (Questions 11 and 12.1/12.2), also displays little difference between frequent and infrequent churchgoers (the likelihood-ratio test statistic is 2.55, with a p-value of 0.769).

Albert Hastorf and Hadley Cantril (1954) found that perceptions of potential penalties in a football game between Princeton and Dartmouth depended on the team allegiance of the spectator. More recently, David Moore (1997) found that Democrats and Republicans have very different views about the ethical standards of Bill Clinton versus Newt Gingrich.¹⁵

Perhaps the most obvious nonfinancial motivation in our survey is how much an individual cares about the Church. Presumably those more involved with the LDS Church maximize utility by thinking about the income base more broadly, since they place more weight on overall financial well-being of the Church. People who care less about the LDS Church may convince themselves that fewer things should be tithed because that maximizes their utility. A simple test for self-serving bias would examine whether reported beliefs are tilted to line up with an individual's utility maximization, that is, whether the tithable income base is positively correlated with church-activity measures.

As expected, the survey reveals a strong bias linked to religious activity, with individuals more involved with the LDS Church thinking much more comprehensively about income for tithing purposes. For example, consider Question 2A, which asks if respondents would tithe a \$10,000 cash inheritance. Those who attend church services less than once a month on average answered "yes" 41 percent of the time (49 percent answered "no"; 10 percent were "not sure"), revealing a sharp division in beliefs. However, the group of respondents who attend church every week exhibited strong internal consensus, with 90 percent answering "yes" (5 percent answered "no"; 5 percent, "not sure"). The effect of church attendance for other survey questions is depicted in Figures 1 and 2, revealing similar variation in tithing beliefs.

To analyze succinctly the joint influence on beliefs of all of the church-activity variables, in

¹⁵ The question asked of 1,022 interviewees was: "Regardless of which political party you identify with, who do you think has higher ethical standards: Bill Clinton or Newt Gingrich?" Seventy-eight percent of Democrats versus 31 percent of Republicans thought Clinton had higher standards, revealing a strong division of beliefs along party lines. Interestingly, attitudes were mostly unrelated to knowledge of ethics charges against Gingrich.

addition to demographic and income variables, we created an overall index of "generosity." This index was formed by taking the fraction of questions an individual answered in such a way as to increase tithable income.¹⁶ For example, the index increased if the individual responded that he or she would tithe a cash gift (Question 1A) or would not deduct taxes before tithing a paycheck (Question 8). Hence, an index value of 0 would mean that the individual would not include any of the hypothetical income sources in the tithing base, while an index value of 1 would imply that the individual's accounting definition of income included every item in the survey. The mean of the generosity index was 0.65 (standard error = 0.24), so that respondents believe on average that about two-thirds of the questionnaire items belong in the tithable income base. A similar index to measure "uncertainty" was defined by taking the fraction of times a respondent chose "not sure." The mean of the uncertainty index was 0.10 (standard error = 0.13).

In Table 11 we present the results of regressing each of these indexes on church-activity, demographic, and income variables using ordinary least squares. Looking first at the generosity regression, these variables explain over one-fourth of the variation in the index. The church-activity questions have the greatest impact on tithing generosity, so that a respondent who attends church every week, participates in church social activities, has served a mission, and holds a calling has an index score that is 40-percentage-points higher on average compared to respondents with no such church involvement. In other words, for individuals with this high level of church activity, on average they answered almost five additional questions in a way that increased the tithable income base compared to less active respondents. These results provide further evidence of a strong self-serving bias based on a respondent's attachment to the LDS Church. In addition, Latter-Day Saints with more children, who discuss which items to tithe with their spouse, and who are in the lowest family income group have significantly higher generosity-index scores on average.

¹⁶ For Question 6B, answering either A or B increased the index. Since it is unclear how to deal with the two-part, conditional questions on retirement savings, Questions 11 and 12.1/12.2 are excluded from the index.

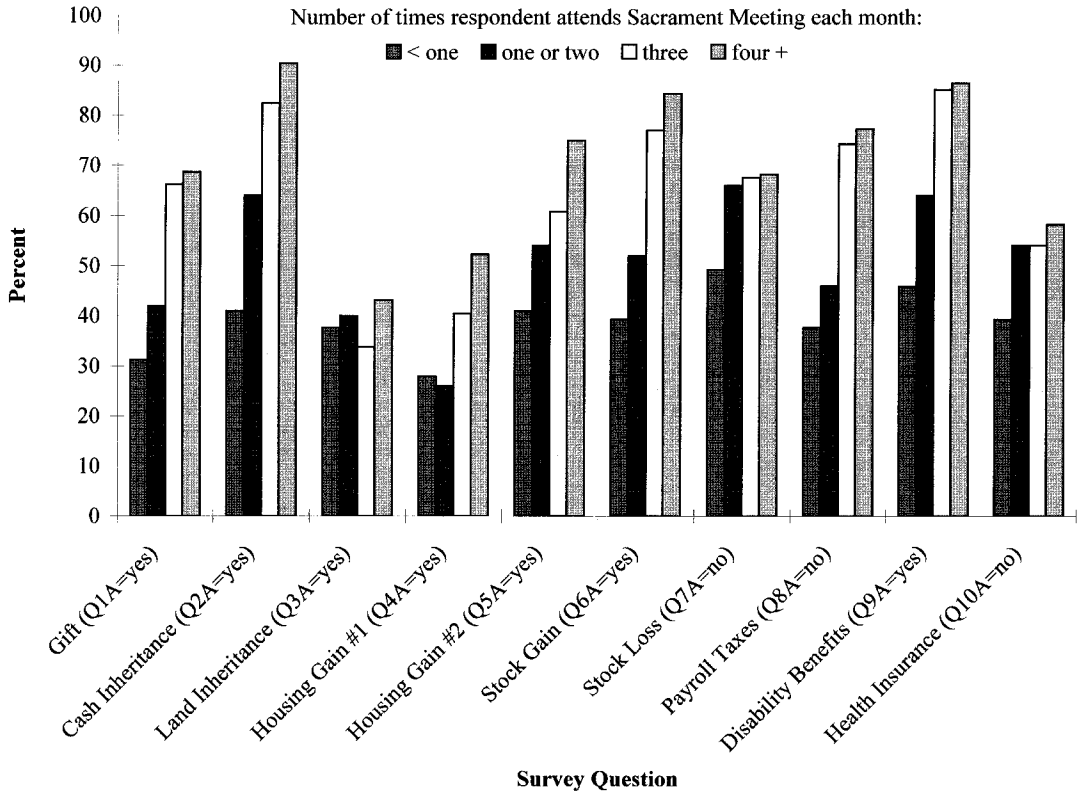


FIGURE 1. RESPONSES TO SURVEY QUESTIONS BY AVERAGE MONTHLY CHURCH ATTENDANCE, BALLOT A

In the uncertainty regression, far less of the variation in responses can be explained by the regression variables. Church activity significantly affects the uncertainty index, with members who attend church every week answering fewer questions “not sure.” Respondents in their early forties are also less uncertain, with younger and older respondents answering “not sure” more often. Females are more uncertain than males, on average. As might be expected, those who refused or answered “not sure” to the income question also answered “not sure” to the tithing questions more often.

D. Ambiguity and Bias

Previous psychological research provides a few additional theories about where self-serving biases might be expected to show up. The literature finds that the more ambiguous a situation, the more likely individuals are to exhibit self-serving biases. For example, David Dunning et

al. (1989) asked individuals to provide self-evaluations for a variety of character traits. They found that the more ambiguous the trait category, the more self-serving were individuals’ assessments. Applied to our survey, the theory predicts that, for a question item that is viewed as nebulous, respondents will be less likely to tithe the item compared to the results for a clear-cut question. The idea is that, for ambiguous questions, individuals are more able to formulate arguments and rationales that allow them to pursue their own self-interest in good conscience.

One measure of the ambiguity or complexity of a question is the fraction of respondents who answer “not sure.” Using this measure, Table 3 reveals a wide range of ambiguity for the different survey questions. Consider Questions 3A and 3B, which ask whether an individual would tithe the inheritance of a family farm. Of respondents who were told that the farm was sold immediately for cash (Question 3B), only

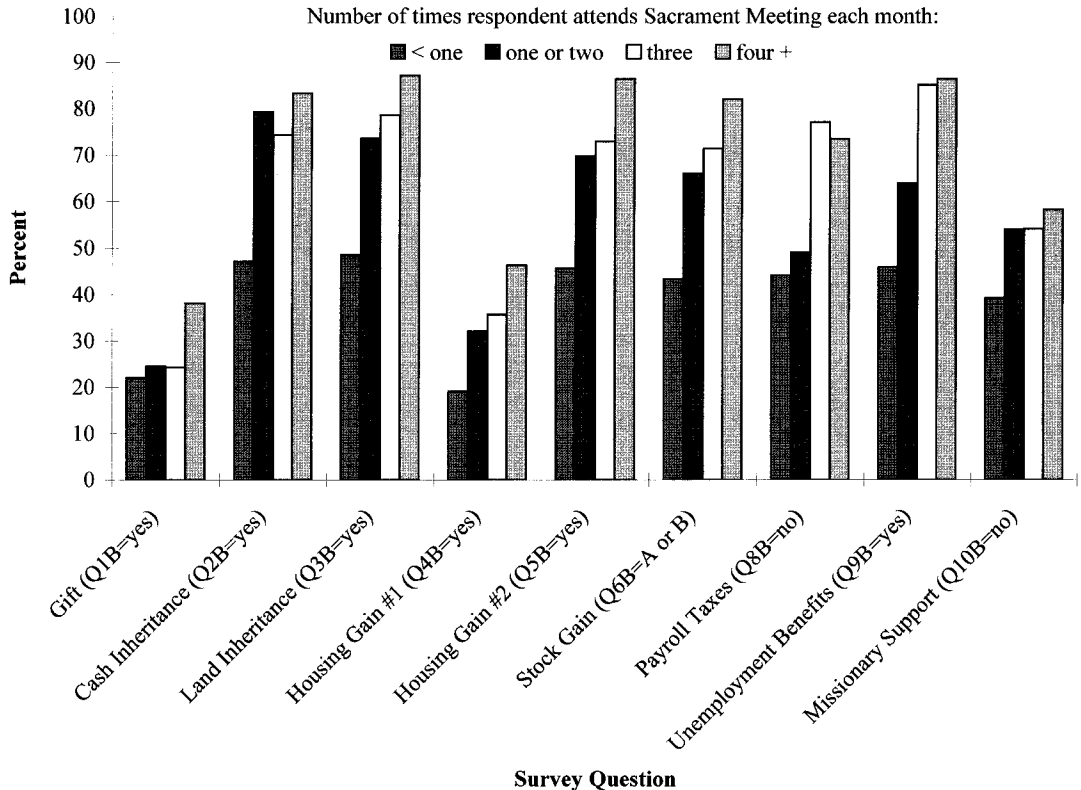


FIGURE 2. RESPONSES TO SURVEY QUESTIONS BY AVERAGE MONTHLY CHURCH ATTENDANCE, BALLOT B

7.5 percent were “not sure,” while 80 percent said they would tithe the inheritance. In contrast, for respondents who were told that they would continue to farm the land (Question 3A), 18.8 percent are uncertain how to answer, with the remaining respondents almost equally split on whether to tithe the assessed value of the land. In fact, for most of the questions, cash appears to be the least ambiguous item in respondent’s minds, while in-kind items, paper gains, and questions with a more complex structure evoke much more uncertainty among respondents.

Figure 3 graphs the relationship between question ambiguity and consensus among respondents for all of the survey questions. In this figure, consensus is defined as the fraction of respondents choosing the most agreed-upon answer. Since the fractions of all individuals answering “yes” or “no” are mechanically related to the fraction answering “not sure,” the figure

plots the degree of consensus among survey respondents who did not answer “not sure” to a question versus the fraction of all respondents answering “not sure” to the question. Except for Question 1B, there is agreement that the potential income sources asked about in the survey should be tithed. The regression line through the points indicates that, for every percentage-point increase in the fraction of individuals who answer “not sure” to a question, agreement among survey respondents answering “yes” or “no” drops by 1.67 percentage points. In general, the more ambiguous the question, the more likely survey respondents are not to tithe the potential income source.

The relationship between ambiguity and tithing generosity can also be examined at the individual level. Here the theory predicts that individuals who are more uncertain about tithing in general are more likely to be biased toward minimizing their tithing obligation. Ac-

TABLE 11—DETERMINANTS OF TITHING GENEROSITY AND UNCERTAINTY

Independent variable	Dependent variable			
	Generosity index ^a		Uncertainty index ^b	
	Coefficient	SE	Coefficient	SE
Intercept	0.3115*	0.0637	0.1432*	0.0408
Version-B dummy	0.0329*	0.0122	-0.0038	0.0078
Sought advice from:				
Church leader	0.0160	0.0213	0.0145	0.0136
Family member (other than spouse)	0.0275	0.0258	0.0244	0.0165
Friend or someone else	-0.0140	0.0400	0.0152	0.0256
Discuss items to tithe with spouse	0.0289 [†]	0.0167	-0.0062	0.0107
Average church attendance:				
Less than once a month	—	—	—	—
Once a month	0.1078*	0.0370	-0.0334	0.0237
Twice a month	0.1225*	0.0338	-0.0152	0.0216
Three times a month	0.1786*	0.0285	-0.0154	0.0182
Four times or more a month	0.2279*	0.0255	-0.0494*	0.0163
Not sure or refused	0.0535	0.0808	-0.0114	0.0517
Attend church social activities	0.0646*	0.0228	0.0138	0.0146
Served mission	0.0375*	0.0155	0.0016	0.0010
Hold calling	0.0659*	0.0176	0.0106	0.0113
Educational attainment:				
High-school dropout	—	—	—	—
High-school graduate	-0.0005	0.0262	-0.0089	0.0167
Some college	0.0313	0.0252	-0.0135	0.0161
Bachelor's degree	0.0102	0.0277	-0.0134	0.0177
Advanced degree	-0.0202	0.0321	-0.0304	0.0205
Not sure or refused	-0.0227	0.1054	0.0693	0.0675
Age	0.0011	0.0025	-0.0032*	0.0016
Age squared × 100	-0.0010	0.0025	0.0039*	0.0016
Female	0.0215	0.0140	0.0303*	0.0089
Married	-0.0264	0.0187	0.0109	0.0119
Number of children	0.0064 [†]	0.0033	0.0014	0.0021
Any children living at home	-0.0030	0.0168	-0.0028	0.0108
Family income category:				
Income < \$30,000	—	—	—	—
\$30,000 ≤ income < \$50,000	-0.0558*	0.0170	0.0068	0.0109
\$50,000 ≤ income	-0.0316 [†]	0.0184	-0.0050	0.0118
Not sure or refused	-0.0727*	0.0206	0.0301*	0.0132
Urban ^c	-0.0012	0.0149	0.0072	0.0095
Mean (standard deviation) of index:	0.65	(0.24)	0.10	(0.13)
F-statistic:	12.48		2.44	
R ² :	0.266		0.066	
Number of observations:	1,168		1,168	

^a Fraction of questions respondent answered in such a way as to increase tithable income, excluding Questions 11 and 12.1/12.2.

^b Fraction of questions respondent answered “not sure,” excluding Questions 11 and 12.1/12.2.

^c Salt Lake, Utah, Weber, or Davis County.

* Statistically significant at the 5-percent level.

[†] Statistically significant at the 10-percent level.

According to this hypothesis, an individual's score on the uncertainty index should be negatively correlated with the fraction of the remaining question items she thinks should be tithed, a fraction we call the “conditional generosity in-

dex.” In Table 12, the first specification presents the results of regressing the conditional generosity index on the uncertainty index, controlling for the version of the survey and the average percentage of all survey respondents who

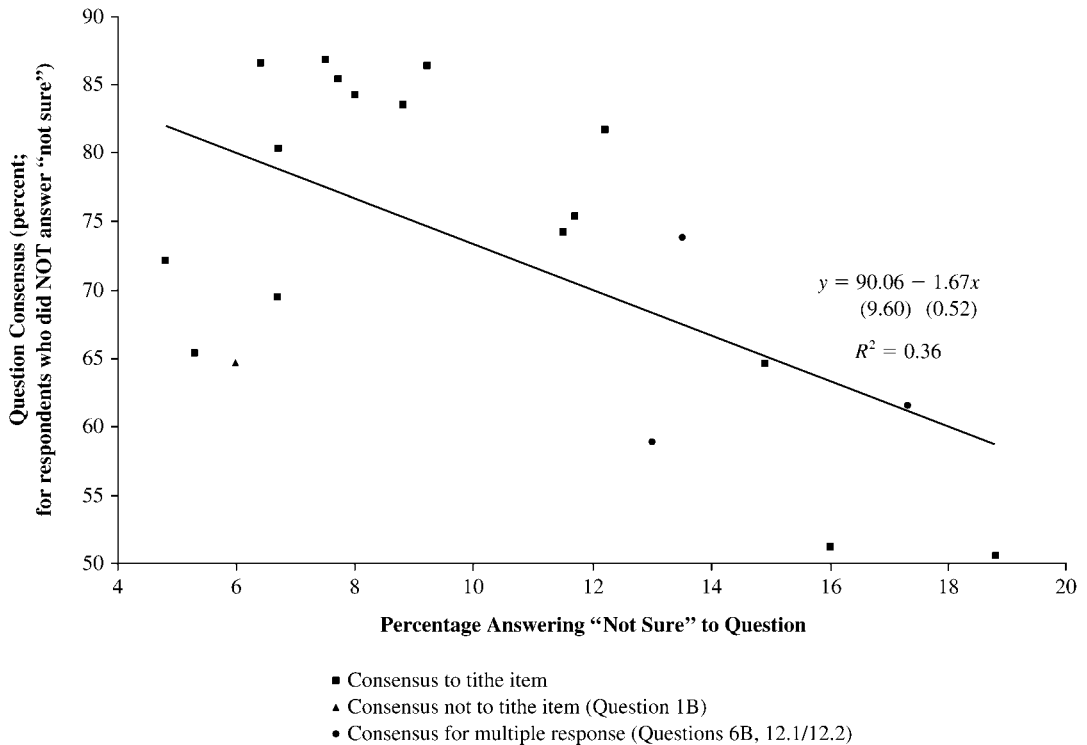


FIGURE 3. RELATIONSHIP BETWEEN QUESTION AMBIGUITY AND CONSENSUS AMONG RESPONDENTS

answered "not sure" to the same questions to which the respondent answered "not sure." There is a statistically significant and negative relationship between how uncertain an individual is about tithing and how generous he or she is on the remaining questions. Specification (iii) in Table 12 adds in all of the explanatory variables included in Table 11. Even controlling for these other covariates, the coefficient on the uncertainty index remains significant at the 10-percent confidence level.

E. Selective Information Search

A final subject which can be examined with our survey data is how the willingness to search for information relates to self-serving biases. Rabin (1995) develops a model that distinguishes between moral dispositions as constraints versus preferences and outlines how such constraints can give rise to self-serving biases. He argues that an individual with a preference to be moral will seek information in an

attempt to do what is right. In contrast, "... an agent with moral constraints sometimes strictly prefers less information to more: When her beliefs tell her it is morally okay to engage in an enjoyable activity, an agent will avoid gathering further information that might jeopardize her moral green light" (p. 3). Applying this framework to tithing, seeking information about what items to tithe could cause individuals to feel that they should increase their tithing donations. Therefore, the hypothesis predicts that respondents with a preference to be moral will ask for advice and tithe more potential income sources, while those with a constraint to be moral will avoid advice that could increase their tithing obligation.

Table 2 reveals that almost half of married respondents do not discuss which items to pay tithing on with their spouses, and that 62 percent of respondents do not seek advice from someone else, such as an LDS Church leader. The fact that so many people do not ask for tithing advice lends plausibility to Rabin's hy-

TABLE 12—EFFECTS OF AMBIGUITY AND THE SEARCH FOR INFORMATION ON TITHING GENEROSITY
(DEPENDENT VARIABLE = CONDITIONAL GENEROSITY INDEX)

Independent variable	Regression					
	(i)		(ii)		(iii)	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
Intercept	0.7053*	0.0120	0.6770*	0.0128	0.3886*	0.0645
Version-B dummy	0.0192	0.0138	0.0226	0.0139	0.0254*	0.0123
Uncertainty index ^a	-0.1241*	0.0537	—	—	-0.0799 [†]	0.0484
Average uncertainty of questions ^b	0.4655*	0.1203	—	—	0.2528*	0.1066
Sought advice from: ^c						
Church leader	—	—	0.0659*	0.0241	0.0319	0.0214
Family member (other than spouse)	—	—	0.0538 [†]	0.0286	0.0547*	0.0261
Friend or someone else	—	—	0.0269	0.0464	-0.0041	0.0403
Discuss items to tithe with spouse	—	—	0.0550*	0.0180	0.0231	0.0169
Average church attendance:						
Less than once a month	—	—	—	—	—	—
Once a month	—	—	—	—	0.1013*	0.0373
Twice a month	—	—	—	—	0.1101*	0.0340
Three times a month	—	—	—	—	0.1789*	0.0287
Four times or more a month	—	—	—	—	0.2136*	0.0258
Not sure or refused	—	—	—	—	0.0798	0.0814
Attend church social activities	—	—	—	—	0.0850*	0.0229
Served mission	—	—	—	—	0.0377*	0.0157
Hold calling	—	—	—	—	0.0764*	0.0177
Educational attainment:						
High-school dropout	—	—	—	—	—	—
High-school graduate	—	—	—	—	-0.0102	0.0264
Some college	—	—	—	—	0.0231	0.0254
Bachelor's degree	—	—	—	—	0.0045	0.0279
Advanced degree	—	—	—	—	-0.0438	0.0324
Not sure or refused	—	—	—	—	-0.0264	0.1062
Age	—	—	—	—	-0.0020	0.0025
Age squared $\times 100$	—	—	—	—	0.0029	0.0025
Female	—	—	—	—	0.0500*	0.0141
Married	—	—	—	—	-0.0169	0.0188
Number of children	—	—	—	—	0.0068*	0.0034
Any children living at home	—	—	—	—	0.0004	0.0170
Family income category:						
Income < \$30,000	—	—	—	—	—	—
\$30,000 \leq income < \$50,000	—	—	—	—	-0.0571*	0.0172
\$50,000 \leq income	—	—	—	—	-0.0386*	0.0185
Not sure or refused	—	—	—	—	-0.0527*	0.0208
Urban ^d	—	—	—	—	0.0054	0.0150
Mean (standard deviation) of index:	0.72	(0.24)				
F-statistic:	6.31		2.86		13.26	
R ² :	0.016		0.024		0.290	
Number of observations:	1,200		1,200		1,168	

Notes: The conditional generosity index is the number of questions the respondent answered in such a way as to increase tithable income divided by the number of questions for which the respondent did *not* answer "not sure." The index does not include Questions 11 and 12.1/12.2.

^a Fraction of questions respondent answered "not sure," excluding Questions 11 and 12.1/12.2.

^b The average percentage of all survey respondents answering "not sure" to the questions that the respondent answered "not sure."

^c The second and third specifications include interaction terms for the advice variables.

^d Salt Lake, Utah, Weber, or Davis County.

* Statistically significant at the 5-percent level.

[†] Statistically significant at the 10-percent level.

pothesis. Assuming that the costs of gathering information are not prohibitive, the main competing explanation for why some people remain unsure about which items should be tithed is that they *want* to be uncertain about what should be tithed. For example, there are few alternative explanations for why people who have sold their homes remain uncertain about the tithability of those gains (see Table 6).

We test Rabin's hypothesis more formally in Table 12. In specification (ii) of Table 12, we regress the conditional generosity index on the various advice variables. As Rabin's theory predicts, individuals who seek advice from Church leaders, friends, spouses, or other family members are more generous in their tithing donations on average. While the R^2 value for this regression is small, the coefficients on three of the four advice variables are statistically significant. In specification (iii) of the table, which adds controls for individual characteristics, only the family-member-advice variable remains significant, while the other coefficients fall by more than 50 percent. In Table 11, where the dependent variable is the generosity index as opposed to the conditional generosity index, only the spouse-advice variable is significant.

What explains the differences among these three specifications? First, Table 11 reveals that individuals who seek advice are more likely to be uncertain. The generosity index confounds this correlation, while the conditional generosity index does not.¹⁷ Secondly, individuals who seek advice appear to be those individuals who are more involved in the LDS Church. For example, seeking advice from a Church leader is strongly positively correlated with whether or not an individual attends church three times or more each month ($\rho = 0.18$, p -value = 0.001). One interpretation is that members who are regular churchgoers have a preference, and not a constraint, to be moral, so that they are precisely the respondents who are more likely to ask for advice. Viewed in this light, adding

¹⁷ In general, the estimated coefficient from any covariate that is correlated with the uncertainty index suffers from omitted-variable bias in Table 11. For example, using the generosity index masks the fact that females are more generous than males when controlling for the fact that females are also more uncertain (compare Tables 11 and 12).

church-activity measures into the regression partially controls for individuals who have a preference to be moral.

IV. Conclusion

Does where you stand depend on where you sit? The results from our survey are mixed. In contrast to previous studies on self-serving biases in other domains, our survey reveals that tithable income definitions are not strongly motivated by the potential for financial gain. We find surprisingly little evidence that an individual's financial position influences tithing beliefs. Individuals' experience with gifts and inheritances, the stock market, unemployment, tax-deferred pension plans, and self-employment all have little effect on how individuals would tithe (respectively) gifts and inheritances, stock gains and losses, unemployment benefits, retirement-plan contributions and withdrawals, and health-insurance expenditures for the self-employed. Only in the tithing treatment of capital gains from a home do we find solid evidence of self-interested tithing behavior.

However, we observe large self-serving biases based on religious motivations, so that individuals with a strong attachment to the LDS Church have a very different view of what counts as income for tithing purposes. Respondents who have served a mission, participate in church social events, hold a volunteer calling, and attend church regularly define the income base to include almost twice as many income items on average compared to less involved members. As previous research predicts, self-serving biases show up more for questions which respondents view as ambiguous, and individuals who display more uncertainty in answering the questions are biased toward minimizing the tithable income base. Finally, our survey lends support to Rabin's (1995) hypothesis that individuals who are constrained to be moral avoid seeking advice about tithing that might cause them to feel they should increase their tithing donations.

Our research on tithing practices does not imply that individuals will not protect their self-interest by professing to hold beliefs that benefit them. Rather, our research focuses on how self-interest influences beliefs at the subconscious level. We find that, when thinking about the

tithe, Latter-Day Saints possess the ability to sort out their financial self-interest from a general standard of what is right or fair. While it is possible that our results do not generalize to other groups and issues,¹⁸ our survey nonetheless provides an interesting comparison to the literature that finds individuals are unable to filter out their own interest in a variety of other settings.

APPENDIX

We hired Western Wats Research Center, a professional survey company with offices in Provo, Utah, and Orem, Utah, to conduct our phone survey on tithing practices. One advantage of using a company operating out of Utah is that a majority of the interviewers were LDS Church members and hence familiar with the tithing system of the LDS Church. The survey had a quota of 1,200 completed interviews with Latter-Day Saints residing in Utah, with additional quotas set for each county in proportion to its population. Additionally, each county had a minimum quota of at least one completed interview, regardless of population size. The quotas for the four largest counties were: Salt Lake (502), Utah (183), Davis (132), and Weber (110).

Western Wats first randomly generated a county-stratified list of 12,000 telephone numbers, with the expectation that a large fraction of these numbers would be either disconnected or business numbers and hence unusable. Indeed, by the end of the survey, a third of the numbers were known to be unusable. Using random-digit dialing, numbers from all counties were dialed each day, alternating between Ballot A and B of the survey. If the phone line was busy, the appropriate respondent was not available, or the phone was not answered, the phone number was called again until at least three attempts had been made over the ten days of interviewing. Interviewers stopped dialing or redialing numbers from a given county when the county quota

¹⁸ For example, most researchers believe that self-serving biases are extremely prevalent in the general population, even though clinically depressed individuals (Lauren Alloy and Anthony Ahrens, 1987) and, in selective instances, women (Eleanor Maccoby and Carol Jacklin, 1974) do not exhibit self-serving biases.

TABLE A1—SAMPLE DISPOSITION

Category	Number
Eligible	2,787
Completed	1,200
Refused	1,541
Respondent terminated	46
Not eligible	1,182
Not LDS	1,051
Self-reported: not active LDS	122
Self-reported: non-tithing payer	9
Eligibility unknown at end of survey	3,803
Dialing attempts requiring a callback	12,027
Respondent not available	4,255
Phone line busy	819
No answer/answering machine	6,953
Unusable	4,156
Business	1,089
Language barrier	122
Disconnected	2,945
Average length of call:	10 min. 4 sec.
Incidence (eligible/[eligible + not eligible]):	70.2 percent
Response rate (completed/eligible):	43.1 percent

was met. Details on the final sample disposition are provided in Table A1.

The survey was administered using Computer Assisted Telephone Interviewing (CATI), in which interviewers read the questions off a computer screen and entered responses on a keyboard as the survey progressed. Respondents were called during the period of May 7–21, 1996 on weekday evenings (except Mondays), and on Saturdays. We determined that it was inappropriate to call respondents on Sundays and on Monday evenings. Most active Latter-Day Saints spend a large amount of time on Sundays in church-related activities, while Monday night is officially designated by the LDS Church as “Family Home Evening,” a time for Latter-Day Saints to engage in family-oriented activities. Calling on either Sundays or Monday evenings would potentially result in a biased sample, since many active Latter-Day Saints would likely be unavailable or refuse to answer a survey on these days. Potential respondents to our survey had to meet the following screening requirements: they had to be (i) the male or female head of the household, (ii) 18 years of age or older, and (iii) a self-reported member of the LDS Church. Additionally,

during the initial screening of candidates, any potential respondent who volunteered that he or she was not an active member of the LDS Church or did not tithe was not interviewed.

To ensure consistent and accurate interviewing, we supplemented the general training of interviewers provided by Western Wats with instructions specific to our survey. We developed two documents for the survey company: a short interviewer instruction manual and a primer on concept definitions. The interviewer instructions provided specific responses to common questions respondents might have about the survey, alerted interviewers to the fact that tithing can be a sensitive issue for some, and discussed questions requiring special attention. The concept-definitions manual provided more detailed definitions for the variables embedded in our survey questions. Most of the demographic questions asked in our survey were modeled after the Current Population Survey (CPS); for example, the education categories match current CPS definitions. Indeed, many of the demographic questions were copied verbatim from the CPS, as were many of the written instructions provided to interviewers. These two training documents are available from the authors upon request.

To monitor and assist the training of interviewers, Ransom attended the two training sessions provided to interviewers on the first two nights of calling and remained to observe actual calls. Dahl monitored survey calls via a three-way phone line on three of the other interviewing evenings. In the months preceding the survey administration, the authors and five volunteers pretested early and final versions of the survey instrument on a total of 40 randomly selected Utah residents. Additional pretesting of the final version was performed by the Western Wats Research Center.

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