

The Impact of Economic Narratives on Household Debt: Evidence from Religious Sermons

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Abstract. We investigate whether economic narratives in religious sermons influence household economic decisions. Leveraging geographic variation in membership density of The Church of Jesus Christ of Latter-day Saints, we examine whether regions with more Church members exhibit less indebtedness when Church leaders speak about debt avoidance in worldwide religious broadcasts. We show that the household debt-to-income ratio is lower in regions with more Church members during years with debt-avoidance sermons, and several additional analyses corroborate our conclusions. Our models suggest that this effect is economically meaningful, emphasizing the importance of considering narratives alongside traditional determinants when studying economic decisions and outcomes.

Keywords: narrative economics · religion · sermon · debt

JEL Classification: D14 · G5 · N3

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“The history of economic thought, however valuable, tends to study the pinnacles of economic theorizing by great authors, not the popular thinking of millions of people. It tends to study treatises on optimal government interventions in markets rather than how ordinary folks every day make economic decisions, driven by alternating feelings of inspiration or hesitancy.”

– Robert Shiller, *Narrative Economics*

1. Introduction

Explaining the concept of narrative economics, Shiller (2019) urges researchers to study “popular narratives that affect economic behavior” (p. 3). While it seems intuitive that narratives embedded in stories, discussions, and anecdotes encountered by ordinary people could impact their economic choices, the general absence of such factors from models of individuals’ decisions and aggregate economic outcomes deserves attention. In other words, our understanding about which economic decisions are potentially influenced by narratives remains limited; we need better evidence on how narratives compare to other determinants of important economic outcomes. Our objective is to advance the narrative economics literature by studying whether, and to what extent, economic narratives in religious sermons affect economic outcomes in communities where these narratives circulate.¹

Prior research about narratives tends to focus more on politics than economics. For example, several studies consider the effects of radio, television, or movie broadcasts on political attitudes, ethnic animosity, and voting behavior (e.g., DellaVigna and Kaplan 2007; Enikolopov et al. 2011; DellaVigna et al. 2014; Yanagizawa-Drott 2014; Adena et al. 2015; Wang 2021; Ang 2023; Esposito et al. 2023). Notably, this research primarily examines propagandists spreading misinformation, fomenting fear, or influencing political preferences in times of societal turmoil. While these papers emphasize the general importance of narratives, our aim is to shed light on the degree to which more subtle narratives influence individuals’ day-to-day economic decisions.

In our view, sermons provide a useful laboratory for exploring the potential economic effects of narratives circulating among the “ordinary folks” mentioned in the epigraph—those whose decisions

¹ Following Shiller (2019), we use “narrative” to refer to “a story or representation used to give an explanatory or justificatory account of a society, period, etc.” (*Oxford English Dictionary*). Thus, “economic narratives” are stories or representations that help explain economic decisions.

ultimately impact aggregate economic outcomes. Sermons are a plausible source of behavior-influencing narratives because one reason churchgoers listen to sermons is to receive moral guidance (e.g., Shiller 2019). This reasoning suggests that topics emphasized in religious sermons could affect congregants' everyday decisions. However, it is unclear whether churchgoers would respond to *economic* narratives in sermons because they may view economic topics as more mundane and less connected to their underlying morals. Stated differently, people typically attend church to receive spiritual guidance—not economic advice. Moreover, even if some churchgoers do respond to economic topics in sermons, it is not clear whether their responses would be potent enough to influence regional economic outcomes. As a result, studying whether economic discussions in sermons affect economic outcomes expands extant knowledge about the types and sources of narratives that could potentially impact the economy.

We focus on religious sermons delivered during semiannual worldwide broadcasts of The Church of Jesus Christ of Latter-day Saints' general conferences, which happen every year in April and October.² When these conferences are held, regular local Church meetings are cancelled for the week, and members are encouraged to watch or listen to the conference broadcast. During general conferences, “Church leaders from around the world share messages or sermons focused on the living Christ and His gospel. Viewers learn how to find peace, hope, and joy in Jesus Christ; how to strengthen families by following Jesus’s teachings; and how to receive personal guidance and inspiration from God.”³ While most sermons focus on core Christian principles like faith, repentance, service, or salvation, speakers sometimes touch on other societal issues such as education, government, health, or most importantly for our purposes, avoiding debt.

For example, in the October 1998 general conference, Church president Gordon Hinckley gave a sermon about debt and emphasized the following statement from a previous Church president: “If there is any one thing that will bring peace and contentment into the human heart, and into the family, it is to live within our means. And if there is any one thing that is grinding and discouraging and disheartening, it is to

² While sometimes referred to as the “Mormon Church” or the “LDS Church”, the Church requests that these terms not be used. In this paper, we refer to “the Church” and “Church members” when not using the Church’s full name.

³ <https://www.churchofjesuschrist.org/learn/general-conference?lang=eng>

have debts and obligations that one cannot meet.”⁴ These types of messages are important from a narrative economics perspective because Church members occasionally hear debt-avoidance narratives from their trusted religious leaders. We aim to investigate whether these narratives detectably decrease indebtedness (either paying off more debt or taking on less new debt) in areas with more Church members.⁵

Like many settings in finance and economics, one of the primary obstacles in studying the effects of narratives is the difficulty in disentangling the causal direction between narratives and economic outcomes. We focus on The Church of Jesus Christ of Latter-day Saints’ general conference sermons because they provide several advantages for identifying the potential impact of narratives on economic outcomes. First, these sermons are delivered simultaneously to all parts of the world during general conference events, and the sermon topics are not pre-announced by Church leaders. The upshot is that at certain points in time, Church members watch general conference broadcasts and hear debt-avoidance sermons, allowing us to treat the emphasis on debt-avoidance narratives as quasi-exogenous with respect to any particular geographic region.

Second, narratives can have a stronger impact on individuals’ economic decisions when the narratives are associated with famous or trusted people (e.g., Shiller 2019). Nearly every debt-avoidance sermon in our sample is given by one of the Church’s most senior leaders, many of whom serve in worldwide leadership roles (and thus speak in general conferences) for decades. As a result, Church members are very familiar with, and likely feel significant respect and trust toward, these religious leaders who deliver debt-avoidance advice. Third, it is common for general conference sermons to form the basis of Sunday school discussions in local Church congregations for several months after the conclusion of each conference. Church members are also explicitly encouraged to study the sermons after each conference concludes. (Video, audio, and text versions of the sermons are available online shortly after each conference concludes, and the transcripts are also printed in the Church’s monthly magazine.) These institutional

⁴ <https://www.churchofjesuschrist.org/study/general-conference/1998/10/to-the-boys-and-to-the-men?lang=eng>

⁵ Rather than considering how religiosity *itself* affects economic decisions (e.g., Bryan et al. 2021; Demiroglu et al. 2021), we investigate the impact of economic narratives circulating among an established religious community at different times.

details are important because they imply that debt-avoidance narratives can spread and even strengthen among Church members (and potentially their neighbors or coworkers) after a general conference.⁶

Finally, these sermons about avoiding debt tend to be delivered in a spirit of helpful advice rather than in an attitude of strict enforcement of rigid rules (Table OA.2 provides examples).⁷ This style of speaking is important because in order for our findings to advance understanding about narrative economics, any detectable effects of the sermons should arise from the natural circulation of the narratives among Church members and their communities rather than from a perception of forced compliance to avoid some sort of penalty imposed by a central authority.⁸

We use textual topic modeling to analyze the Church’s general conference sermons from 2001 to 2020, and we find that in seven of our 20 sample years (35%), at least one sermon touches on debt avoidance (see Table OA.1 for more details on our textual analysis method). Our identification strategy relies on the comparison of these debt-sermon years with non-debt-sermon years while simultaneously exploiting variation in the density of Church members across geographic regions—we analyze both metropolitan statistical areas (MSAs) and counties. Our results indicate that in years when debt avoidance is discussed in general conference, geographic areas with more Church members exhibit significantly less indebtedness as captured by the regional debt-to-income ratio, relative to regions with fewer Church members. This effect appears to be economically significant: In debt-sermon years, a one-standard-deviation difference in Church membership density (i.e., using a benchmark of zero Church members versus an MSA with 21% or a county with 34% Church members) corresponds to a relative decrease in the debt-to-income ratio (for the region with more Church members) that is 11.3% to 12.7% of the ratio’s standard deviation. As a point of reference, this effect size is comparable to our estimates of the effect on the debt-to-income ratio of a one-

⁶ Household debt decisions are affected by social connections (Georgarakos et al. 2014) and peers’ financial difficulties (Kalda 2020), suggesting that debt-avoidance behavior could spread through communities where households are exposed to debt-avoidance sermons.

⁷ Tables labeled with “OA” appear in the online appendix.

⁸ As a contrasting example, Bursztyn et al. (2019) conduct a field experiment showing reduced credit card delinquency at an Islamic bank *when the bank itself* contacts late-paying customers with messages that frame debt repayment in a moral context.

standard-deviation increase in the house price index. Since house prices are considered important drivers of household debt (e.g., Mian and Sufi 2011), our results suggest that narratives can play a significant role in household decisions that influence regional economic outcomes like indebtedness.

To better contextualize these results, we consider whether regions with more (less) Church members are characterized by households paying down relatively more (less) existing debt or by taking on relatively less (more) new debt during debt-sermon years. While debt-avoidance sermons may lead Church members to exhibit both behaviors, our results seem to be driven by households in regions with more Church members taking on relatively less new debt during debt-sermon years. This result is notable because many of the debt-avoidance sermons in our sample occur in the years leading up to the 2008 financial crisis, when household indebtedness was increasing across the board. Our data show that in these debt-sermon years, the increase in household debt was much smaller in regions with higher numbers of Church members. One interpretation of this pattern is that Church members responded to debt-avoidance narratives by being more cautious about taking on new housing-related debt, compared to non-members. Supporting this interpretation, we show that our findings are concentrated in mortgage and HELOC debt.

To provide more support for our inferences, we perform two bootstrapped placebo analyses. First, we randomly assign pseudo-debt-sermon years and re-estimate our models 1,000 times; second, we randomly assign Church membership density to regions and again re-estimate our models 1,000 times. These placebo tests yield statistically insignificant results on average and strongly support our main findings. Next, we find consistent results when we replace the debt-sermon indicator in our models with either the duration of the debt-avoidance message within each sermon or the number of debt-related articles appearing each year in the Church's monthly magazine. This evidence allays concerns that our results are not attributable to the debt-avoidance narrative and are instead driven by some omitted factor correlated with the occurrence of debt-avoidance sermons.

Taken together, our results suggest that economic narratives in religious sermons can meaningfully influence household financial decisions. These results are an important addition to the emerging narrative economics literature for several reasons. First, our evidence is consistent with Shiller's (2019) argument

that narratives shape individuals' economic decisions and should be considered in models of economic outcomes. Second, we provide insight about empirical settings that may permit researchers to treat certain narratives as quasi-exogenous and examine the economic impacts of narratives. Third, our results emphasize the importance of economic narratives arising from trusted sources at particular points in time. While other papers explore the effects of messages or events in certain areas or among certain groups, individuals in these settings may self-select to receive the narrative based on anticipated content they want to hear.⁹ In our setting, churchgoers listen to sermons for spiritual guidance and end up hearing about debt avoidance, thereby taking us a step closer to causal inference by mitigating selection bias.

Finally, our study adds to prior research exploring the effect of religiosity on economic outcomes (e.g., Hillary and Hui 2009; Hess 2012; Cai and Shi 2019; Bryan et al. 2021) by highlighting that (1) narratives can be an important mechanism underlying these effects, and (2) the effects of religiosity on economic outcomes may change as different narratives diminish or intensify over time within religious communities. In summary, our findings confirm the basic tenets of the narrative economics hypothesis while extending our collective understanding about both the economic outcomes that are sensitive to narratives and the sources of narratives that influence individuals' economic decisions.

2. Research design and sample

Because we cannot directly observe household indebtedness of Church members, we use regional data on Church membership density and indebtedness to test whether (and to what extent) the Church's general conference sermons about debt avoidance affect indebtedness. More specifically, we employ a differential exposure design by creating MSA-year and county-year panel datasets to estimate the following model:

$$DTI_{i,t} = \beta_0 + \beta_1 Member\%_i \times DebtSermon_t + \sum_{k=1}^{k=n} \beta_{2,k} Control_{k,i,t} + \gamma_i Region_i + \alpha_t Year_t + \varepsilon_{it} \quad (1)$$

In equation (1), i refers to each region (i.e., MSA or county), and t denotes each sample year. Our dependent variable is DTI : the aggregate household debt-to-income ratio for each region-year (see Table OA.1 for all

⁹ For example, Chopra (2021) finds that household expenditures decrease after exposure to Dave Ramsey's radio show about overconsumption.

variable definitions). Debt-to-income ratios are commonly used to study household indebtedness (e.g., Mian and Sufi 2011; Dumitrescu et al. 2022). *Member%* is the share of the regional population belonging to The Church of Jesus Christ of Latter-day Saints as of the year 2000, which is one year before our sample period starts. Measuring Church membership at a single point in time before the sample period begins helps “reduce familiar endogeneity concerns in differential exposure designs” (Breuer 2022, p. 49). *DebtSermon* is an indicator equal to one for years in which at least one debt-avoidance sermon was given during the Church’s general conferences.¹⁰

We include region and year fixed effects in addition to controlling for the following constructs at the region-year level that are related to indebtedness (e.g., Dumitrescu et al. 2022): the natural log of the gross domestic product (*lnGDP*), the unemployment rate (*Unemployment%*), the house price index (*HousePriceIndex*), and the natural log of the population size (*lnPopulation*). If debt-avoidance sermons lead to less indebtedness in regions with more Church members, we expect the estimated β_1 (our coefficient of interest) to be significantly negative.

As shown in Table 1 Panel A, our data spans the years 2001 to 2020 and includes eight U.S. states: Arizona, California, Hawaii, Idaho, Nevada, Oregon, Utah, and Washington. Church member density is highest in these states, allowing us to focus on regions in which Church members’ behavior could plausibly influence economic outcomes like the debt-to-income ratio.¹¹ Importantly, Church membership density still varies widely among counties and MSAs within these states (see *Member%* in Table 1 Panel B).

Table 1 shows that our data panels respectively contain 62 MSAs (1,240 MSA-years) and 156 counties (3,120 county-years) with non-missing data to estimate equation (1). One advantage to using MSAs and counties is that their distributions differ across states. For example, California represents 40% of our MSA-years, but only 24% of our county-years. Thus, similar results for both region types increases

¹⁰ For debt-avoidance sermons given during an October general conference (this occurs twice in our sample), *DebtSermon* = 1 for the next year (it is unlikely that economic outcomes for a calendar year would reflect reactions to a sermon given as late in the year as October).

¹¹ The Church of Jesus Christ of Latter-day Saints has approximately 6.8 million members in the U.S.; approximately 67% of the Church’s U.S. members reside in our eight sample states (<https://newsroom.churchofjesuschrist.org/facts-and-statistics/country/united-states>).

confidence in the findings. Table 1 Panel B presents summary statistics for the variables in equation (1). Panel A shows that seven of our 20 sample years have $DebtSermon = 1$. It is notable that many of the $DebtSermon$ years occur in the run-up to the 2008 financial crisis; we explore the implications of this pattern in Section 3.

3. Main results

Table 2 Panel A presents results of estimating equation (1). The $Member\% \times DebtSermon$ coefficients are significantly negative (column (1) for MSAs and column (2) for counties). These results suggest that in years when leaders of The Church of Jesus Christ of Latter-day Saints speak about avoiding debt, regions with more Church members have relatively lower household indebtedness as captured by DTI . Importantly, the effect magnitudes are similar across MSAs and counties ($Member\% \times DebtSermon$ coefficients = -0.0038 and -0.0046, respectively). To illustrate, we compare hypothetical MSAs with $Member\% = 0$ versus $Member\% = 21.48$ (i.e., a one-standard-deviation difference in $Member\%$); the results suggest that in debt-sermon years, the higher- $Member\%$ MSA would exhibit a DTI that is relatively lower by 0.0816, which is approximately 11.3% of DTI 's standard deviation for MSAs. Performing a similar comparison for counties (i.e., a one-standard-deviation difference in $Member\%$ is 33.51 for counties), the results point to DTI being relatively lower by 0.1541 for the higher- $Member\%$ county in debt-sermon years, which is approximately 12.7% of the DTI standard deviation for counties. As a point of reference for assessing economic significance, the results in Table 2 Panel A suggest that a one-standard-deviation increase in $HousePriceIndex$, ceteris paribus, corresponds to an increase in DTI that is between 10.8% and 29.1% of the standard deviation of DTI (based on counties and MSAs, respectively). Since house prices are an important determinant of household debt (e.g., Mian and Sufi 2011), the effect of debt-related sermons on DTI appears to be economically meaningful.

All told, the results in Table 2 Panel A are consistent with debt-avoidance narratives in sermons influencing indebtedness in regions where more people are exposed to the sermons. However, the negative $Member\% \times DebtSermon$ coefficient estimates could reflect households paying down relatively more

existing debt or taking on relatively less new debt during debt-sermon years.¹² To discover which behavior likely drives our results, we first compare average *DTI* in debt-sermon years versus non-debt-sermon years and in regions with *Member%* above versus below the sample median. As shown in Table 2 Panel B, *DTI* is much higher in debt-sermon years (regardless of *Member%*), but the increase in *DTI* relative to non-debt-sermon years is much larger in regions with low Church membership. These results suggest that in regions with more Church members, households acquired relatively less new debt during debt-sermon years, which is noteworthy since many of the debt-avoidance sermons occurred in the run-up to the 2008 financial crisis, when household debt (especially related to housing) was increasing across the country.

To provide more context, we investigate the effect of debt-avoidance sermons on housing debt versus other types of debt. Table 3 presents results of estimating equation (1) with four different dependent variables: *lnMortgage*, *lnHELOC*, *lnAutoLoan*, and *lnCreditCard* (we use a subset of MSAs due to data availability). These variables are the natural log of the average debt-type balance (in each MSA-year) among borrowers with each type of debt (i.e., mortgages, home equity lines of credit, automobile loans, and credit cards, respectively). In Table 3, the *lnMortgage* and *lnHELOC* models show significantly negative coefficient estimates for *Member%×DebtSermon*, suggesting that, relative to regions with fewer Church members, communities with more Church members exhibit significantly lower mortgage and HELOC balances in debt-sermon years. We do not observe a significant *Member%×DebtSermon* coefficient in the *lnAutoLoan* or *lnCreditCard* models.

Viewed alongside Table 2, one interpretation of these results is that Church members responded to cautionary narratives about indebtedness by taking on relatively less housing debt during the run-up to the 2008 financial crisis. In other words, while it is unlikely that Church members en masse paid down mortgages and HELOCs upon hearing debt-avoidance sermons, they could have responded to those narratives by being more cautious about new housing-related debt. To gauge the plausibility of this

¹² Because *DTI* is a ratio, we consider numerator versus denominator effects. Consistent with our interpretation of the main results, Table OA.3 shows a significantly negative (insignificant) *Member%×DebtSermon* coefficient when *lnDebt (lnIncome)* is the dependent variable.

interpretation, we return to the aforementioned comparison of two hypothetical MSAs: one with $Member\% = 0$ and the other with $Member\% = 21.48$, where the latter's DTI would be relatively lower by 0.0816. Viewed alongside our MSA sample average of 2.28 for DTI (Table 1 Panel B), \$44,231 for average household income (Table OA.11), and \$160,919 for the average mortgage balance (Table OA.11), our results seem plausible; they can be explained by approximately one in ten Church-member households responding to debt-avoidance sermons by not obtaining an average mortgage.¹³

One potential concern is that our results are driven by some omitted driver of indebtedness instead of debt-avoidance sermons. To allay this concern, we perform two tests. First, we consider the extent to which indebtedness is discussed in each sermon. The intuition is that lengthier debt-avoidance discussions might be perceived as more important, or discussed more often by Church members; thus, longer (shorter) discussions about indebtedness could have more (less) influence on indebtedness. We replace $Member\% \times DebtSermon$ in equation (1) with $Member\% \times \ln DebtSermDuration$, where $\ln DebtSermDuration$ is the natural log of one plus the length (in seconds) of the portion of the sermon devoted to debt-avoidance topics. Results are reported in Table 4 Panel A, where we observe significantly negative coefficient estimates for $Member\% \times \ln DebtSermDuration$.

Second, we consider the number of debt-related articles appearing each year in the Church's *Ensign* magazine (the magazine is published online and in print each month and contains articles on various topics written both by Church leaders and members). We take this approach for three reasons. First, we observe a positive correlation of 0.45 (untabulated) between our $DebtSermon$ indicator and $\ln DebtMagArticles$ (the natural log of one plus the number of debt-related *Ensign* articles each year), which is prima facie evidence that debt sermons can lead to debt-avoidance narratives circulating among Church members. Second, like $\ln DebtSermDuration$, $\ln DebtMagArticles$ serves as additional proxy for the strength of the debt-avoidance narrative at different points in time. Finally, unlike the debt sermon duration measure, debt-related

¹³ In debt-sermon years, the average household debt for an MSA with $Member\% = 21.48$ would decrease by \$3,609 ($\$44,231 \times 0.0816$) relative to $Member\% = 0$. Thus, household debt for Church members (those exposed to the sermons) should decrease by \$16,802 ($\$3,609 \div 0.2148$), which is approximately 10% of the average mortgage balance.

magazine articles can also appear in years without general conference debt sermons. As a result, *lnDebtMagArticles* provides us with another method of capturing variation in debt-avoidance narratives across time for Church members. Table 4 Panel B reports results after replacing *Member%×DebtSermon* with *Member%×lnDebtMagArticles*, and we observe significantly negative coefficient estimates in both columns. Taken together, the results in Table 4 support our conclusion that debt-avoidance narratives from religious sources can influence household indebtedness.

4. Additional analyses

We perform placebo tests based on two separate bootstrap approaches in which we randomly assign *DebtSermon* to years and *Member%* to regions, and re-estimate the models from Table 2 Panel A 1,000 times. For each specification, the bootstrapped *Member%×DebtSermon* coefficients are approximately zero on average, and the Table 2 Panel A coefficients are extreme outliers in the distributions of the bootstrapped coefficients (see Table OA.4). These results strengthen our inference that the circulation of debt-avoidance narratives in sermons leads to lower indebtedness. To alleviate any remaining concern that our results are due to higher-*Member%* regions reacting to economic conditions differently than lower-*Member%* regions in *DebtSermon* years (i.e., instead of reacting to debt-avoidance sermons), we include the interactions of *Member%* with the control variables from our original model. None of these additional interaction terms loads significantly, while *Member%×DebtSermon* remains significantly negative (see Table OA.5).

We also exclude observations from Utah, Idaho, or both Utah and Idaho to ensure that our results are not driven by outliers (the largest values of *Member%* occur in Utah and Idaho). We continue to find significantly negative *Member%×DebtSermon* coefficients (see Table OA.6). We also consider several alternative specifications. First, when using models like ours, an alternative, more conservative approach is to use lagged dependent variables instead of unit fixed effects (Angrist and Pischke 2009). When controlling for the lagged value of *DTI* (and the main effect of *Member%*) instead of region fixed effects, we continue to find significantly negative *Member%×DebtSermon* coefficients, strengthening our confidence in the main results (see Table OA.7).

Next, instead of measuring *Member%* from the year 2000 and holding it constant for each region throughout the sample period, we estimate *Member%* for each region-year. Our inferences are unchanged with the *Member%×DebtSermon* coefficients remaining significantly negative (see Table OA.8). We also consider data from the Association of Religion Data Archives (www.theARDA.com) as an alternative source for measuring Church membership density. This data is not available at the region-year level but is available for the year 2000, allowing us to use our primary research design keeping *Member%* fixed for each region. Our inferences again remain unchanged (see Table OA.9).¹⁴

5. Conclusion

Collectively, our evidence suggests that debt-avoidance narratives in religious sermons impact household debt. Our results emphasize the importance of subtle narratives beyond the realms of politics and propaganda typically studied in prior research, and our findings add to the emerging narrative economics literature that has focused primarily on narratives in newspapers (e.g., Bertsch et al. 2021; Goetzmann et al. 2022). While in this study we only investigate one specific economic narrative (debt avoidance) circulating among a particular community (members of The Church of Jesus Christ of Latter-day Saints), our approach underscores the importance of understanding how individual decision-makers could be affected by the ebb and flow of various narratives in their own communities and social networks. Stated differently, it seems worthwhile to better understand how specific communities' economic decisions are shaped by narratives. With the increasing prevalence of narratives pertaining to various economic settings, especially driven by the ubiquity of social media, future research might consider how narrative effects vary based on their source, content, audience, and method of circulation. These studies would advance our understanding of how narratives compare to traditional determinants of economic behavior in various organizations that are heavily influenced by individuals' collective decision-making processes, including communities, corporations, and governments.

¹⁴ ARDA data also allows us to use all states, but these additional regions have very few Church members, which materially reduces the standard deviation of *Member%* from 21.48 (33.51) to 9.13 (8.77) in MSAs (counties). Nevertheless, the expanded sample yields negative *Member%×DebtSermon* coefficients (see Table OA.10).

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Table 1
Sample Composition and Summary Statistics

Panel A: Sample years and states

Year	<i>DebtSermon</i>	State	MSAs (62 per year)		Counties (156 per year)	
			N	Percent	N	Percent
2001	0	Arizona	100	8.06	240	7.69
2002	1	California	500	40.32	740	23.72
2003	0	Hawaii	20	1.61	80	2.56
2004	1	Idaho	100	8.06	560	17.95
2005	1	Nevada	60	4.84	140	4.49
2006	1	Oregon	160	12.90	420	13.46
2007	1	Utah	80	6.45	500	16.03
2008	0	Washington	220	17.74	440	14.10
2009	1					
2010	0					
2011	0					
2012	0					
2013	0					
2014	0					
2015	0					
2016	1					
2017	0					
2018	0					
2019	0					
2020	0					
Total	7	Total	1,240	100	3,120	100

Panel B: Summary statistics

	N	MSAs (62 per year)			Counties (156 per year)			
		Mean	SD	Med	N	Mean	SD	Med
<i>DTI</i>	1,240	2.28	0.72	2.13	3,120	2.42	1.21	2.10
<i>Member%</i>	1,240	11.07	21.48	4.08	3,120	26.76	33.51	6.88
<i>DebtSermon</i>	1,240	0.35	0.48	0.00	3,120	0.35	0.48	0.00
<i>HousePriceIndex</i>	1,240	687.44	298.85	614.54	3,120	523.33	327.90	446.77
<i>GDP</i>	1,240	52053.25	117992.92	12341.91	3,120	21335.19	59579.00	3426.54
<i>Unemployment</i>	1,240	7.33	3.61	6.55	3,120	6.70	3.30	6.07
<i>Population</i>	1,240	936.17	1869.92	275.29	3,120	389.50	970.17	97.69

Notes: Panel A presents sample years and states for MSAs and counties. Panel B presents summary statistics for variables used in equation (1) for MSAs and counties. For *GDP* and *Population*, we present raw values (in millions and thousands, respectively), but we use the natural log of both variables when estimating equation (1). Table OA.1 provides variable definitions.

Table 2
Debt-avoidance Sermons and Household Debt

Panel A: Differential exposure model		
Column:	(1)	(2)
Dependent variable:	<i>DTI</i>	<i>DTI</i>
Region type:	MSA	County
<i>Member%</i> × <i>DebtSermon</i>	-0.0038*** (-4.390)	-0.0046*** (-6.150)
<i>HousePriceIndex</i>	0.0007*** (3.604)	0.0004*** (2.853)
<i>lnGDP</i>	-1.0638*** (-4.137)	-0.8407*** (-3.835)
<i>Unemployment</i>	0.0478*** (3.882)	0.0587*** (4.865)
<i>lnPopulation</i>	1.1924** (2.562)	0.9611*** (2.672)
Region and year fixed effects	Yes	Yes
N	1,240	3,120
Adj. <i>R</i> ²	0.875	0.893

Panel B: Mean debt-to-income (<i>DTI</i>) by <i>Member%</i> and <i>DebtSermon</i>				
Region type:	MSA		County	
	N	<i>DTI</i>	N	<i>DTI</i>
Low <i>Member%</i> in years with <i>DebtSermon</i> = 0	403	2.32	1,014	2.50
Low <i>Member%</i> in years with <i>DebtSermon</i> = 1	217	2.71	546	2.81
High <i>Member%</i> in years with <i>DebtSermon</i> = 0	403	2.07	1,014	2.22
High <i>Member%</i> in years with <i>DebtSermon</i> = 1	217	2.19	546	2.25
Full sample	1,240	2.28	3,120	2.42

Notes: Panel A presents results from estimating equation (1) using either MSAs or counties. Table OA.1 provides variable definitions. Robust standard errors are clustered by region (i.e., MSA or county); *t*-statistics are presented in parentheses with ***, **, and * indicating significance at 1%, 5%, and 10%, respectively. Panel B presents mean values of the debt-to-income ratio (*DTI*) for observations grouped by years with *DebtSermon* = 0 versus *DebtSermon* = 1 and low (below-or-equal to the sample median) versus high (above-median) Church membership density.

Table 3
Debt-avoidance Sermons and Different Types of Household Debt

Column:	(1)	(2)	(3)	(4)
Dependent variable:	<i>lnMortgage</i>	<i>lnHELOC</i>	<i>lnAutoLoan</i>	<i>lnCreditCard</i>
Region type:	MSA	MSA	MSA	MSA
<i>Member%</i> × <i>DebtSermon</i>	-0.0008*** (-3.011)	-0.0007** (-2.519)	-0.0002 (-1.179)	0.0000 (0.184)
Controls	Yes	Yes	Yes	Yes
MSA and year fixed effects	Yes	Yes	Yes	Yes
N	904	904	904	904
Adj. <i>R</i> ²	0.974	0.955	0.933	0.946

Notes: This table presents alternative estimations of equation (1) with outcome variables capturing amounts of various types of debt (mortgages, HELOCs, auto loans, and credit cards in each column, respectively). These results rely on a subset of MSAs due to data availability. The same controls from Table 2 Panel A are included. Table OA.1 provides variable definitions. Robust standard errors are clustered by region (i.e., MSA or county); *t*-statistics are presented in parentheses with ***, **, and * indicating significance at 1%, 5%, and 10%, respectively.

Table 4
Replacing the *DebtSermon* Indicator with the Duration of Debt-avoidance Sermons or the Number of Debt-avoidance Church Magazine Articles

Panel A: The duration of debt-avoidance sermons and household indebtedness

Column:	(1)	(2)
Dependent variable:	<i>DTI</i>	<i>DTI</i>
Region type:	MSA	County
<i>Member%</i> × <i>lnDebtSermDuration</i>	-0.0007*** (-4.340)	-0.0008*** (-6.093)
Controls	Yes	Yes
Region and year fixed effects	Yes	Yes
N	1,240	3,120
Adj. <i>R</i> ²	0.875	0.893

Panel B: The number of debt-avoidance Church magazine articles and household indebtedness

Column:	(1)	(2)
Dependent variable:	<i>DTI</i>	<i>DTI</i>
Region type:	MSA	County
<i>Member%</i> × <i>lnDebtMagArticles</i>	-0.0019*** (-3.767)	-0.0027*** (-3.960)
Controls	Yes	Yes
Region and year fixed effects	Yes	Yes
N	1,240	3,120
Adj. <i>R</i> ²	0.872	0.890

Notes: This table presents alternative estimations of equation (1) after replacing *DebtSermon* with *lnDebtSermDuration* (the natural log of one plus the duration—in seconds—of the debt-related portion of each debt-avoidance sermon) in Panel A, and *lnDebtMagArticles* (the natural log of one plus the number of debt-avoidance articles appearing each year in the Church's monthly *Ensign* magazine) in Panel B. Table OA.1 provides variable definitions. Robust standard errors are clustered by region (i.e., MSA or county); *t*-statistics are presented in parentheses with ***, **, and * indicating significance at 1%, 5%, and 10%, respectively.