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Press and Pulpit: Competition, Co-operation and the Growth of Religious Magazines in Antebellum America

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Abstract

Sociologists have long been interested in how interactions among the diverse groups that constitute modern societies shape group mobilization efforts, including the use of group media. We advance research on this topic by analyzing the growth of magazines affiliated with religious groups in antebellum America, when the nation was becoming a modern society. We draw on the sociology of religion, organizations, and media to develop hypotheses linking the growth of denominational magazines to inter-denominational competition, intra-denominational fragmentation, denominations' geographic dispersion, and denominational resource sharing across locations. We test these hypotheses using dynamic techniques on a unique dataset that includes all religious denominations and denominational magazines in the United States between 1790 and 1860. Because our analysis focuses on tools for mobilization – magazines – it avoids the definitional dependency between explanation and outcome that has plagued much research on religious groups. Our results show that denominations published magazines in response to both inter-denominational competition and geographic expansion. However, they used magazines in a manner more consistent with a theory of resource sharing than with ethnic-competition and religious-economies theories. And contrary to expectations, we find that intra-denominational fragmentation did not contribute to the growth of antebellum religious magazines. Our analysis not only links interactions between religious groups to broader group processes, it also offers fruitful ways to extend the analysis of other kinds of groups.

> The kingdom of God is a kingdom of means. …. Preaching of the gospel is a Divine institution – "printing" no less so. …. They are kindred offices. The PULPIT AND THE PRESS are inseparably connected. …. The Press, then, is to be regarded with a sacred veneration and supported with religious care. The press must be supported or the pulpit falls. (Editorial in the *Christian Herald* 1823, quoted in Hatch 1989: 142; emphasis in the original)

Sociologists have long recognized the significance of communications media as key supports for the diverse groups that constitute modern societies (Park 1940; Olzak and West 1991; Calhoun 1998; Barnett and Woywode 2004). In contrast to mass media, which are marked by universalism, group media are affiliated with and oriented toward particular audiences, such as political parties, ethnic groups, religious communities, and members of particular occupations (Fine and Kleinman 1981; Blau 1998). Group media are akin to social-movement organizations in that they are powerful instruments for community-building, recruitment, indoctrination, solidarity, and contestation with other groups (Olzak and West 1991). They help construct shared meaning systems within groups – not just the ideologies that underpin group identities, but also shared understandings about authority, membership criteria, and practices. And they allow sponsoring groups to draw sharp distinctions between members and nonmembers, and to reinforce those distinctions through repetition. These features make group media excellent sites for understanding competition, co-operation, and differentiation within and between groups (Olzak and West 1991; Olzak 1994; Blau 1998; Barnett and Woywode 2004).

This paper extends research on group dynamics and group media by studying the interplay between the diverse religious groups that populated the United States before the Civil War and the expanding religious press of that era. During this period, religious periodicals were at the epicenter of American culture, and they were the primary platforms through which the religious groups of the period communicated, mobilized adherents, and competed (Marty *et al.* 1963; Hatch 1989; Kaufman 2002; Nord 2004). Religious leaders of all stripes embraced the press because "getting into print became the primary way to prescribe and contest values during the nineteenth century" (Moore 1989: 219). As a result, the number of religious magazines exploded from seven in 1800 to 149 in 1830 and 328 in 1860. By the 1830s, religious magazines

had become "the grand engine of a burgeoning religious culture, the primary means of promotion for, and bond of union within, competing religious groups" (Hatch 1989: 125-126).

Understanding what propelled this growth offers fundamental insight into group dynamics and group media at a time when the United States was becoming a modern society. More specifically, this is an ideal case for extending research on religious mobilization. The debate about how competitive interactions between religious groups affect their mobilizing efforts (*e.g.*, Finke and Starke 1998; Chaves and Gorski 2001) has tended to focus narrowly on whether the association between competition and mobilization is positive or negative, and has ignored other factors that might prompt mobilizing efforts. Research on this topic has also been limited by use of measures of mobilization based on member commitment that are mathematically related to measures of competition and so produce spurious associations (Voas, Olson, and Crockett 2002). And reliance on cross-sectional analyses have made it difficult to rule out alternative explanations (Montgomery 2003; Koçak and Carroll 2008). Our analysis overcomes all of these limitations: we conduct a dynamic analysis of a key resource through which denominations mobilized adherents, our measure of that resource is independent of our measure of competition, and we include in our analysis not just competition, but also other important factors. In doing so, we connect religious mobilization theoretically to a general set of prototypically modern group processes.

Four lines of reasoning offer explanations of why denominational groups mobilized to create media outlets in response to antebellum denominationalism: the model of inter-group competition in religious-economies and ethnic-competition theories (Finke and Stark 1988, 1992; Olzak and West, 1991; Olzak 1994), the ecological model of social movements and subcultural differentiation (Liebman, Sutton, and Wuthnow 1988; Carroll and Swaminathan 2000), the view of media as an integrative response to the problem of solidarity among modern, translocal groups (Park 1940; Anderson 1991), and the model of religious groups as affiliational structures that share resources across locations (Chaves 1993). All four lines of reasoning view denominational media as tools for attracting and retaining members, but they offer sharply

divergent accounts of which social processes explain the growth of religious media. There are two reasons for this. First, they have different conceptions of how denominations compete and co-operate, and of which aspects of social context shape competition and co-operation. Hence they direct attention to different axes of historical development: inter-denominational competition, intra-denominational fragmentation, geographic dispersion, and denominations' organizational integration. As we elaborate below, all four of these processes were highly salient in antebellum America.

Second – and less thoroughly appreciated – these lines of thought attend to mobilization processes at different levels of analysis, either local religious communities or the national religious field. Most previous studies of group media and mobilization have analyzed how geographically local factors affect mobilizing within a locality (*e.g.*, Carroll and Huo 1986; Finke and Stark 1988; Stark and McCann 1993; Olzak 1994; Blau 1998; Barnett and Woywode 2004; Koçak and Carroll 2008). Such an approach assumes, either by theoretical premise or methodological fiat, that the factors driving mobilization are local, that mobilizing actions are locally oriented, and that localities are independent of one another (Cunningham and Phillips 2007). Such assumptions elide both the translocal structure of modern groups and the extralocal orientation of mobilization in modern societies. Modern groups use media to forge connections or share resources across locations, rather achieve goals within particular locations (Anderson 1991; Dayan 1998). Moreover, the antebellum era we study saw the nationalization of American religion: the growth of denominations beyond regional strongholds and the emergence of a national field of religious culture and competition (Ahlstrom 1972; Goen 1985; Hatch 1989; Newman and Halvorson 2000). In this era, denominations expanded geographically and were transformed from loose affiliations based on common creed and religious authority into *bona fide* organizations that drew resources from far-flung congregations to perform educational, charitable, missionary, and religious marketing functions on a nationwide basis (Chaves 1998; Nord 2004). Therefore, in the antebellum era, religious competition and co-operation were likely to have played out across a national field, rather than within local communities.

To fairly test these theoretical alternatives, we analyze the dynamics of denominational magazine growth at both the local and national levels of analysis. We are attentive to local dynamics, we but do not assume *a priori* that all religious dynamics are local. We begin by discussing each of the four arguments about religious mobilization in turn, and use each to develop predictions (some complementary, others competing) about the growth of religious magazines. We note whether each prediction relates to processes within local communities or the national religious field. We then detail our empirical approach, including how we measure competitive and co-operative forces, and how we analyze data to clarify causality. Finally, we present results and discuss their implications for religion and for group dynamics more generally.

Explaining Denominational Magazine Growth

Religious Economies Theory: Inter-denominational Competition

Local competition. Religious-economies theory holds that religious organizations are similar to for-profit firms in that both compete in market economies: for-profit firms for customers, religious organizations for adherents (Finke and Stark 1988, 1992, 1998; Stark and Iannaccone 1994; Finke, Guest, and Stark 1996). This theory imports ideas from microeconomic models of firm behavior and adopts a clear rational-choice perspective. It holds that competition from rival faiths forces denominations to work hard to recruit and retain adherents, resulting in energetic and entrepreneurial mobilization efforts. Growth of denomination-specific resources like magazines fuels competitive mobilization because these media are instruments for recruitment, indoctrination, and contestation with other groups (Koçak and Carroll 2008). Indeed, magazines served as a primary vehicle through which antebellum religious leaders pursued the sorts of marketing and mobilization efforts that supply-side theorists view as both necessary stimulants for religious commitment and inevitable outcomes of religious competition (Stark and Bainbridge 1987). For this reason, religious-economies theory predicts denominations should support more magazines as their environments subject them to more intense competitive pressures.

Competition in American religion was intensified during the antebellum era. Disestablishment, upstart churches, and bitter sectarianism all set off efforts to recruit new members and retain existing ones (Ahlstrom 1972; Hatch 1989; Finke and Stark 1992). Religious groups competed ideologically over theological tenets and strategically for members. Magazines of the era contain ample evidence that their founders were driven by perceived competitive threats from rival faiths. For instance, the founders of *The Spirit of the Pilgrims*, a Congregational publication founded in 1827, explained in their prospectus that their primary motivation was to counter the growing popularity of the upstart Unitarian movement, which orthodox Congregationalists saw as their closest competition, by debating what the founders perceived as Unitarian slanders against Congregationalism:

> Misrepresentations, the most palpable and injurious, of the doctrines, preaching, and motives of the orthodox [Congregationalist], have been common for many years; and the continual repetition of them has by no means ceased. The apparent object has been to keep the members of Unitarian congregations from entering the doors of an orthodox church; and this, to a very unhappy extent has been the effect hitherto. There are not a few proofs, however, that these misrepresentations are soon to recoil upon their authors with unexpected violence ... Unitarians have a magazine published here, upon which they spare no labor, and which is constantly employed in promoting their cause. We must have the means of meeting them on this ground ... They have found it necessary to make strenuous efforts to keep up the publication and circulation of their magazine; and surely, with our views of truth and duty, we cannot do less than they.

Such bellicose intonations were common in magazines associated with a wide range of denominations, reflecting intense competition as well as magazines' value for mobilizing adherents (Olzak 1994). But according to religious-economies theory, even those magazines with less explicitly competitive purposes will emerge from the same basic competitive mobilization processes, as denominations seek to differentiate themselves from rivals and appeal to a wide range of potential "customers" in the market for faith. If this argument is correct, then magazines will be increasingly likely to be launched in markets where denominations face increasing competitive pressure – that is, where denominational pluralism is rising, meaning that an increasing number denominations hold increasingly even positions in the religious market:

> *Hypothesis 1: As the level of inter-denominational competition in a location increases, the number of magazines a denomination publishes there will increase.*

Local market position. In addition to effects of local competition on denominational magazine publishing, religious-economies theory predicts an effect of local market position. This prediction is grounded in the same basic logic underlying hypothesis 1. While dominant churches can afford to be complacent, embattled minority churches must work hard to retain and recruit members, and they must mobilize their smaller resources more intensively (Stark and McCann 1993; Iannaccone and Stark 1994). The two arguments are complementary: whereas hypothesis 1 taps competitive forces that derive from the ecology of each local religious market, here we tap into a denomination's position within each local market, and therefore its impetus to respond actively to local competitive forces. The former is a characteristic of a particular market (it will be constant for all participants in that market), while the latter is a characteristic of a particular participant in a particular market (it will vary across participants in that market).

Cross-sectional research has found that churches' responses to competition (innovation, donation rates, and volunteering rates) are inversely proportional to their representation in local populations (Zaleski and Zech 1995; Stark 1998; Perl and Olson 2000). According to proponents of religious-economies theory, these results indicate more active, entrepreneurial, and vigorous mobilization efforts by denominations with weak market positions (Finke and Stark 1998). The longitudinal implication of this cross-sectional argument is that, over time, denominations will mobilize more resources toward building and sustaining ideological platforms like magazines as their local market positions weaken:

> *Hypothesis 2: As a denomination's share of a local market decreases, the number of magazines it publishes there will increase.*

Note that the preceding argument concerns only the *impetus* to mobilize, not the *capacity* to do so. If we take capacity into account, the relationship between changes in market position and changes in the number of magazines published may be opposite to what is predicted in hypothesis 2, since declining market share may indicate diminishing capacity to sustain magazines. Similarly, to the extent that a denomination's magazines succeed in attracting and

retaining adherents, its increasing market share may subsequently spawn additional magazines by expanding the pool of resources available to support religious media.

There is a second complication to consider. Whereas past studies have treated denominational pluralism in local markets and denominations' market positions as alternative measures of competition (*e.g.*, Finke and Starke 1998), these two factors are neither causally nor empirically independent. Causally, competitive threats to a denomination's core strongholds are likely to stimulate strong competitive responses, while even intense competition is likely to elicit little response from a denomination with only a small stake in a market. Empirically, the level of competition is a function of the positions of all incumbents. When a denomination's market share is large, the aggregate market share of its rivals must be small, and competition will range from weak to moderate, as the large focal denomination or it plus a few large others dominate the market. But when a denomination's market share is small, competition can range from weak (one or a few rival denominations dominate the market) to strong (the focal denomination and all of its rivals have about the same market position). Taken together, these points imply that a denomination's reaction to competition in any local market will depend *jointly* on the level of competition in that market and its position in that market. If so, the negative impact of market share predicted above will be stronger when competition is more intense. The longitudinal implication is that as competition intensifies, the impact of market share will change from weakly negative (or zero) to strongly negative:

> *Hypothesis 2a: The negative impact of local market share on the number of denominational magazines published will be amplified as local inter-denominational competition increases.*

Extensions to Religious-Economies Theory

Proponents of religious-economies theory have argued that faiths compete for adherents locally. This assumes both that the actions of religious leaders are locally oriented and that local religious markets are independent. But there are reasons to believe such a localized approach fails to capture key dynamics of competitive mobilization. Most basic is the fact that in the

antebellum era, large denominations like the Baptists, Methodists, Dutch Reformed, and Presbyterians spread westward, as did upstart faiths like the Disciples of Christ, Unitarians, and Universalists. As a result, religious competition and the geographic scope of religious leaders' orientation became increasingly nationalized (Ahlstrom 1972; Goen 1985; Hatch 1989; Newman and Halvorson 2000). For instance, Smith (1963: 77) spoke of the "nationalization of Baptist action" driven by missionary activity as early as the 1820s. A national, rather than local, focus is particularly likely in building resources like periodicals because of their ability to project ideas, opinions, and shared meanings across space (Anderson 1983; Calhoun 1998; Starr 2004). Accordingly, we extend the religious-economies model in two ways: first, we consider the potentially extralocal orientation of denominations' competitive actions; second, we consider the interdependence of their religious publishing activities across local markets.

Extralocal competition. One particularly under-studied aspect of inter-denominational competition concerns the strategic interdependence of actions across multiple markets (for an exception, see Montgomery [2003]). Since denominations, like all organizations, have finite resources, they must decide how to allocate those resources across the markets in which they compete. Extending the religious-economies argument, we expect that if competition plays out at the national level, denominations will mobilize more resources in markets where they face stiffer competition and fewer resources in markets where they face less competition. If extralocal competition (competition in markets outside the focal location) is stronger than local competition, we expect that denominations will siphon off resources, including resources to support denominational publishing, from the local community to bolster their competitive stance elsewhere. This suggests that, after controlling for local competition, as extralocal competition increases, magazine publishing efforts in any local market will be reduced:

> *Hypothesis 3: As the level of inter-denominational competition outside a focal location increases, the number of magazines a denomination publishes there will decrease.*

National market share. If competition plays out across the nation rather than within local communities, religious leaders' orientation would be national, rather than local. If so, media mobilization would occur in response to overall (national) market position, rather than local market position. This implies that the competitive dynamics in the locations where denominational magazines are published are incidental; what matters instead is denominations' overall positions within the national field. This suggests that denominations will publish more magazines as their national market position becomes more tenuous.

> *Hypothesis 4: As a denomination's share of the overall (national) religious market decreases, the number of magazines it publishes nationally will increase.*

Note that if we find support for both hypotheses 2 and 4, then any observed effect of national market share likely reflects the aggregation of local competition. If, however, we find support for hypothesis 4 but not for hypothesis 2, then we can conclude that competition actually played out at the national level, not the local level.

Multi-market contact and mutual forbearance. If we conceive of denominations as organizations that compete in multiple interdependent markets, it is logical to consider how competitive actions in one market are shaped by relations with rivals in others. This idea is at the center of a strand of microeconomic theory that has not yet been incorporated into religious-economies theory: multi-market contact and mutual forbearance. The basic tenet of this theory is that the more firms meet rivals in multiple markets, the more they tend to forbear from competing aggressively with those rivals (Edwards 1950; Bernheim and Whinston 1990). Thus, whereas the original version of religious-economies theory assumes that competitive threats spur mobilization, multi-market contact theory holds that responses to competition in any single market are tempered by the potential consequences of this response in other markets. In other words, organizations that meet rivals in many markets pick their battle sites carefully.

This idea has a long history in both sociology and economics. Writing about social relations in general, Simmel (1950: 286-291) argued that the potential for co-operation among rivals increases when they interact in multiple domains, since each will gain by allowing the

other to be superordinate in some domains in exchange for similar treatment in other domains. This hypothesis of reciprocal subordination and superordination is grounded in a mechanism of latent vulnerability: because potential competition (possible harm from aggressive rivals) is greater among rivals who meet in multiple domains than among rivals who meet in a single domain, realized competition (actual harm from aggressive rivals) is weaker. Fear of great reciprocal harm forestalls opponents who meet in multiple domains from using their strongest weapons against each other. In economics, Edwards (1955) echoed Simmel's argument in regard to large firms, and proposed that firms will not take aggressive action against competitors in one market if they fear retaliation from those competitors in other markets. When two firms meet in several markets, each has an incentive to stake out certain markets as its sphere of influence and to refrain from competing aggressively in the spheres of influence of its rival, as long as its own sphere is similarly respected (Porter 1981; Bernheim and Whinston 1990). Multi-market contact thereby facilitates the development of live-and-let-live policies: each firm respects its competitors' turf for fear of retaliation in its own territory. In contrast, firms that have little multi-market contact with local competitors are not likely to forbear from aggressive competition because they do not fear widespread retaliation.[1]

This dynamic was indeed seen in antebellum churches, most famously in joint efforts by the Presbyterian and Congregational churches, beginning in 1801, to ward off upstart Baptist and Methodist missionaries in the northwest (Ahlstrom 1972). This line of reasoning suggests that, net of all else, when a denomination faces increasing multi-market contact with rivals, its strategic behavior becomes embedded in increasingly dense webs, which constrain its actions, so it will be inclined to forbear from aggressively mobilizing adherents by publishing magazines:

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[1] Note that multi-market contact is conceptually distinct from local competition because the former is a characteristic of *the organization in the market*, while the latter is a characteristic of *the market*. One could imagine two different markets with the same number of incumbent denominations and the same level of local competition, but in one a denomination meets many multi-market rivals (and few single-market rivals), while in the other it meets few multi-market rivals (and many single-market rivals).

Hypothesis 5: As the level of multi-market contact between a denomination and the rivals it meets in a local market increases, the number of magazines the denomination publishes there will decrease.

The level of competition in the focal market may moderate the impact of multi-market contact. Mutual forbearance may be greatest in markets where local competition is weakest because that those are where one or a few large organizations control most of the markets, and collusion and mutual forbearance from competition is substantially easier for a few oligopolists than for many rivals (Bernheim and Whinston 1990). Hence, mutual forbearance may diminish as local competition intensifies and oligopolistic control declines:

Hypothesis 5a: The impact of multi-market contact on the number of denominational magazines published in a local market will be attenuated as local religious competition intensifies.

Organizational Ecology and Social Movements: Intra-denominational Competition

Whereas religious-economies theory focuses attention on mobilization due to competition between denominations, an alternative perspective informed by ecological and social-movement theory points to the role of cleavages within denominations, which can mobilize dissenters to create media to support their splinter groups. Basically, social movements mobilize oppositional identities to create alternatives to established forms of organizations (Carroll and Swaminathan 2000). Such dynamics have been seen in a wide variety of organizations, including microbreweries, nouvelle cuisine restaurants, specialized auditing firms, and boutique wineries (for a review see Carroll, Dobrev, and Swaminathan [2003]). All of these forms of organization emerged from social movements that contested established practices.

Religious organizations follow similar dynamics. The remarkable profusion of American churches and sects is due mostly to the splintering of existing denominations, not the fabrication of entirely new ones (Ahlstrom 1972; Butler 1990; Carwardine 1993). During the antebellum era, schisms occurred in the Episcopal, Presbyterian, Congregational, Universalist, Methodist, Lutheran, Quaker, Baptist, Mennonite, and Dutch and German Reformed churches. Denominational fragmentation has most often been driven by social movements of disaffected

subgroups, who mobilize grievances and distinctive identities to create new sects that more closely accord with their particular beliefs, extra-religious (political) positions, and desire for autonomy from centralized religious authorities (Liebman, Sutton, and Wuthnow 1988; Bainbridge 1997; Sutton and Chaves 2004).

Ecological theory holds that the intensity of competition between organizations increases with the similarity of organizations' resource requirements (Hannan and Freeman 1989). Thus, within any denomination, competition will increase in the aftermath of schisms that generate new sects, because these sects are generally more similar to their "parent" church than they are to other faiths. For instance, the Reformed, Cumberland, and Associate Presbyterian churches were more similar, in terms of theology and membership, to the original Presbyterian church than to the Episcopalian, Congregationalist, Methodist, or Baptist churches (Alhstrom 1972).

The competition within a denomination that results from schisms should spur the launch of new magazines for two reasons: it increases the number of distinct subgroups of readers (Carroll and Huo 1986) and it mobilizes existing subgroups (Barnett and Woywode 2004). Research on ideological conflict has shown that competitive mobilization through media is most intense between ideologically proximate groups: those that are similar enough to occupy the same general resource space, but different enough to prevent solidarity and co-operation (Barnett and Woywode 2004). Proximate challenges elicit particularly strong counter-mobilization efforts because they threaten ideological groups' basic identities and domain claims. Internecine religious conflicts are particularly likely to spawn new media because media are not simply incarnations of alternative moral or political visions but also political instruments in ongoing struggles over claims to truth, purity, and heritage.

Taken together, these ideas imply that the increased use of media as platforms for religious conflict and competition may stem less from competition *between* denominations than from discord *within* denominations. Given the fractious history of American religion, we expect that the growth of denominational magazines during the antebellum period reflected internal fragmentation driven by competition between different viewpoints within denominations:

Hypothesis 6: During periods of intra-denominational discord, the number of magazines a denomination publishes nationally will increase.

Note that the causal direction in this hypothesis is opposite to the hypothesis proposed in a recent study of the late nineteenth and early twentieth centuries, which conceived of periodicals as resources available to challengers and predicted, but did not find, that periodicals spurred schisms (Sutton and Chaves 2004). This conceptualization misconstrues the relationship between magazines and denominations, at least during the antebellum era. At that time, most religious magazines were affiliated with and controlled by denominations or large subdenominational groups (*e.g.*, regional organizations), and so were not resources that challenger groups could freely appropriate. Indeed, editorialists often complained that religious periodicals were almost entirely captured by sectarian interests. Analysis of a random sample of founders of religious magazines launched between 1840 and 1860 showed that 27 were associated with a particular denomination. Of the 21 magazines for which we could obtain biographical data on founders, 19 were founded by ordained ministers or official denominational organizations. Only two were founded by laity, and both by men of wealth. Taken together, contemporary debates and this empirical analysis indicate that like ethnic or party media, antebellum religious magazines should be viewed as quasi-social-movement organizations that functioned as expressions of or instruments for particular groups, rather than as resources that dissenting groups can take over (Olzak and West 1991; Barnett and Woywode 2004).

Geographic Dispersion and Connective Mobilization

Whereas religious-economies and ecological theory suggest that denominations publish periodicals primarily to defend existing market share and steal additional market share from competitors, either rivals in other denominations or upstarts within their own, a third approach treats media as tools for forging community in a pluralistic and spatially dispersed society. Media theorists have long argued that ethnic and religious media serve an integrative function, bonding geographically dispersed groups together (Park 1940; Calhoun 1998). Geographic dispersion increases demand for media because they literally mediate between people, weaving

"invisible threads of connection" (Starr 2004: 24), creating communities whose far-flung members share values, interests, and identities (Park 1940; Anderson 1983). For instance, heightened levels of media consumption among members of diasporic immigrant groups in Europe is well documented (Dayan 1998). Media scholars thus replace a theory of mobilization that relies almost entirely on competition to one that centers on co-operation and connection.

From this perspective, the growth of denominational magazines can be seen as an integrative response to the expansion and dispersion of denominations across ever-broader swaths of space. In antebellum America, rapid westward migration uprooted individuals and forced religious groups to confront the challenge of organizing and integrating communities across increasingly long distances. One response was to create mediated connections through periodicals. For instance, Goen (1985: 60) argued that high levels of geographic dispersion led even such politically decentralized groups as the Baptists to support an unusually large number of periodicals during the early decades of the century. In an era when originality was not a fully established publishing principle (Haveman 2004), the fact that periodicals reprinted much of each others' material meant that separate publications all tended to promote a common denominational consciousness and frame of reference (Goen 1985).

Denominational magazines also served as instruments for bonding and coordinating far-flung religious leaders. Even as denominations became increasingly nationalized, basic conditions of life in antebellum America limited the feasibility and effectiveness of direct communication among preachers and between preachers and their flocks. There were few preachers and the populace was spread thinly, especially in early years and along the frontier. Mathews (1969) estimated that after the Revolution, there were only 1,499 clergy in the new nation to serve some 3.3 million people scattered over 823,000 square miles. Travel was slow and arduous, even after canals were built in the 1810s and railroads in the 1830s. For example, as late as 1860, travel from New York City to Charleston took two or three days; from New York City to Lexington, three or four days (Hindle and Lubar 1986: 148-149).

Because there were few preachers to lead the geographically dispersed faithful and because travel was difficult, religious leaders could not depend solely on sermons to fight their theological battles or inculcate the tenets of their faith on their followers: they had to rely on magazines to carry and reinforce religious messages. This was the impetus for the formation of the Episcopal *Churchman's Repository* in 1820, as the editors' introduction explained:

> The want of a religious publication, that should be particularly serviceable to Episcopalians in this section of the Country, has long been acknowledged by all, who have reflected upon the situation of our churches. They are few in number, are scattered over an extensive territory, and are generally so distant from each other, that some of them are almost exclusively confined to the ministrations of their respective pastors. It is difficult therefore to have often those ministerial exchanges which operate ... towards the more extensive benefit of their parishes. From these evils are apt to flow much ignorance ... and a great want of union and zeal…

This magazine sought to offer an antidote to geographic isolation by reinforcing shared identities and disseminating information among preachers, which the founders hoped would coordinate and enrich this denomination's activities.

If the growth of religious magazines was due to their connective mobilization function, then two closely related dimensions of denominations' geographic expansion are relevant. First, increasing *spatial scale* should heighten the importance of translocal technologies for coordinating and integrating communities. Simply put, spreading to more locations necessitates publishing more magazines to bind coreligionists together. Second, increasing *dispersion* of a denomination's congregations and clergy across locations should require more compensating connective tissue of the sort that magazines provide. This should both expand the circulation of existing magazines and promote launching new ones. These dimension of spatial expansion are conceptually and empirically distinct: a faith may have outposts in many locations, but the majority of its adherents may be concentrated in a single area or spread evenly across locations. Thus, we offer two independent predictions:

> *Hypothesis 7: As the number of locations in which a denomination is present increases, the number of magazines it publishes nationally will increase.*

Hypothesis 8: As the dispersion of a denomination's congregations across locations increases, the number of magazines it publishes nationally will increase.

Resource Sharing

The fourth and final perspective on the growth of religious magazines points to their role as vehicles for redistributing uneven resource endowments across space (Chaves 1993). According to this argument, denominations mobilize slack resources from their core strongholds to create organizational infrastructures, such as denominational magazines distributed nation-wide that support adherents' faith in locations where they are most socially isolated and therefore most vulnerable to overtures from proselytizers in rival denominations. The key distinction between this model and the three we discussed above lies not in the proximate catalysts thought to spur mobilization (competition, disconnection, *etc.*), but rather in how these problems generate organizational responses and patterns of organizational growth. In other words, the distinction lies in the theory of action: in the causal mechanisms invoked, not the causal factors studied. First, rather than viewing religious organizations as unitary entities (national churches) or solitary communities (individual congregations), this model of resource sharing is predicated on a conception of denominations as structures that amass and allocate resources drawn from multiple congregations to pursue common purposes. This is a precursor to the agency structures that Protestant denominations developed after the Civil War, as they took on the functions formerly served by external non-denominational and inter-denominational agencies like mission societies, boards of publications, and Sunday-school societies (Wright 1984; Chaves 1993). Rather than focusing on the traditional role of denominations as ecclesiastical authorities *over* congregations communicated through magazines, this model recognizes that denominations *relied on* congregations for resources to support magazine publishing. Indeed, the denominational publishing efforts that began in the eighteenth century represented the earliest instance of "a fundamental characteristic of modern denominationalism…: the gathering of local and regional efforts into comprehensive organizational unity" (Smith 1962: 78).

Second, by highlighting internal differentiation, the resource-sharing perspective points to the importance of mismatches between regions with demand for magazines (where market share was low) and regions where denominations possessed sufficient resources to support magazines (where market share was high). The reason why antebellum denominations might experience such mismatches can be found in the work of scholars who stress the role of social reinforcement in religious adherence. Religious pluralism weakens established religious institutions by diluting the homogenous social networks that sustain religion's plausibility as objective reality (Berger 1967). Pluralism should harm all denominations, but the challenges of social reinforcement in pluralistic religious settings are particularly acute for minority denominations, since their adherents have fewer day-to-day interactions with coreligionists (Perl and Olson 2000: 15); the resulting social isolation can undermine religious beliefs (Berger 1967). In support of this line of reasoning, previous research has found a positive relationship between denominational market share and the proportion of coreligionists among an individual's close social ties (Blum 1985; Olson 1998), which indicates that local religious minorities tend to be more isolated from the social fabric of their faiths, despite universal human tendencies toward enclaving and homophily.

Religious media offer solutions to this problem insofar as they facilitate efforts to project religious canopies beyond particular geographic locations. Thus we predict that denominations will be especially likely to publish magazines to reinforce the faith of their members whose local minority positions afford them little day-to-day reinforcement from fellow coreligionists. Denominations may also launch periodicals to bolster their fledgling competitive position in markets that are far from their primary geographic base. Whether driven by solidaristic or competitive motives, the key point is that religious magazines offer ways to compensate for disparities in resources between low-market-share regions where resources are most needed and high-market-share regions where resources are most available. For instance, the founding of the Congregationalist *Christian Monitor* in 1814 reflected such intra-denominational resource sharing. Explaining their rationale for forming yet another Congregationalist periodical in New

England, this magazine's founders pointed to the need to direct media resources to a large state in which the Congregationalists had relatively few churches:

> Periodical publications have an extensive influence upon the minds morals and happiness of men… But do any of these publications have an extensive circulation in the District of Maine? ... The natural consequences of this state are forgetfulness of God and divine things, ignorance, error, profanity, a disregard of the Sabbath and the institutions of religion, immorality, and impiety. The means by which these evils must be arrested are the preaching of the gospel and the circulation of religious periodicals. The first of these can, at present, be but partially enjoyed. *But, by the patronage and exertions of the well-disposed, a religious publication may be widely circulated and have a most beneficial effect upon the morals and religious state of this section of the Union.* (emphasis added).

This suggests that denominations will be more likely to mobilize resources from one area for the benefit of coreligionists in other areas as the inequalities between them grow. It is within such disparate contexts that groups simultaneously possess both the local resource concentrations necessary to produce magazines and a dispersed population in need of the social integration and community reinforcement that religious media offer. This implies that widening disparities in a denomination's market position across localities should drive magazine growth:

> *Hypothesis 9: As the disparity in a denomination's market share across locations increases, the number of magazines it publishes nationally will increase.*

If magazines grow in response to efforts to share denominational resources across locations, then resources should flow from rich to poor regions. This implies that, magazine publishing should be concentrated in areas where denominations have the most slack resources – where their market share is highest. Market share can be calculated in two ways: relative to other denominations in a particular location (the traditional way we think of market share), or relative to other locations where the focal denomination operates (meaning a location's share of the denomination's congregations). Thus we make two parallel predictions about market share:

> *Hypothesis 10: As denomination's share of a local market increases, the number of magazines it publishes there will increase.*

> *Hypothesis 11: As the fraction of a denomination's congregations in a local market increases, the number of magazines it publishes there will increase.*

Note that this line of argument directly contradicts religious-economies theory . Although both models attribute mobilization to the embattled positions of minority groups, religious-economies theory holds that this results from the disciplining effects of local competition (*e.g.*, Stark and McCann 1993), whereas the resource-sharing argument points to the existence of organizational infrastructure to direct services to one area using resources drawn from another. Thus hypothesis 2 suggests mobilization will reflect efforts of church leaders in embattled low-share locations, while hypothesis 10 predicts mobilization will be concentrated in core high-share strongholds.

Summary and Comparison

As noted at the outset, the four lines of argument discussed here emphasize different causal factors and make predictions at different levels of analysis. Table 1 summarizes the predictions and notes which level of analysis each prediction relates to: either a subnational location or the national field. With the exception of hypotheses 2 and 10, which are directly competing, none of the other hypotheses are mutually exclusive.

[Table 1 about here]

Research Design

Sampling Plan

We tested these hypotheses by modeling the growth of magazines affiliated with American religious denominations from 1790 to 1860. Our analysis starts in 1790 because that is the first year for which good data are available on many of our explanatory variables. Only five religious magazines were published before this date, so our analysis covers almost all of the antebellum history of this religious resource. Our study ends in 1860, the year before the Civil War broke out. This tremendous sundering of political community disrupted many activities of religious organizations, including their publishing efforts. This period represents an ideal context for testing all four theoretical models of group mobilization, because at that time religious periodicals were a critical strategic tool for religious groups (Marty *et al.* 1963; Hatch 1989;

Kaufman 2002; Nord 2004) and because at that time, religious groups became truly national organizations (Ahlstrom 1972; Goen 1985; Hatch 1989; Newman and Halvorson 2000).

We analyzed all 22 denominations founded before 1860 for which we were able to find state-level data: Adventist, Baptist, Catholic, Church of God, Congregational, Disciples of Christ, Dunker, Dutch Reformed, Episcopalian, German Reformed, Jewish, Lutheran, Mennonite, Methodist, Moravian, Mormon, Presbyterian, Quaker, Shaker, Swedenborgian, Unitarian, and Universalist. Despite their great variety, all of these groups embraced print media, publishing at least one magazine during this period. Our analysis excluded several very small faiths for which we could find no data: Christadelphians, Plymouth/River Brethren, Brethren in Christ, the Society of the Publick Universal Friend, and the United Brethren in Christ.

We conducted analyses at two levels because the causal processes we probe operate at two levels: in particular localities and across the nation. Previous research on religious organizations has defined the locations within which competition occurs as municipalities, counties, or states (Chaves and Gorski 2001). We defined locations as states, for three reasons. First and most basic, it was extremely difficult to find complete, serially and cross-sectionally reliable state-level data on this time period; it would be virtually impossible to piece together complete and reliable data on smaller geographic units. Second, empirical tests have shown that the size of the geographic unit analyzed makes little difference (Chaves and Gorski 2001). Third and most important, religious magazines had circulations far beyond their places of publication. One-quarter of religious magazines' titles made explicit claims about their geographic scope; of these, 24% claimed national scope, 35% claimed to serve a multi-state region such as New England, 16% claimed to serve a state, and 25% claimed to serve a single county or municipality. Among those whose titles signaled a local audience, many were based in large cities and had widespread readers; this was true even early in our study period.

For the state-level analysis, our data comprised one observation per denomination per year for every state in which the denomination had congregations; for the national-level analysis, they comprised one observation per denomination per year. We studied each denomination

starting in 1790 (for denominations founded before that date) or the year each was founded. For the state-level analysis, the start of each denomination-state time series depended on two events: the state must have entered the Union and a denomination must have had at least one congregation in the state.

Data and Measures

Dependent variable. The outcome we studied is the number of magazines affiliated with a given denomination (in a given state) in a given year. Whereas much organizational research analyzes foundings and failures separately, we focused on growth in the number of magazines because we are not interested in the dynamics of individual magazines, but rather in the growth of denominations' infrastructures, to which each magazine contributes. Moreover, this approach builds on previous research on another important denominational resource, Sunday schools (Finke and Stark 1988; Koçak and Carroll 2008).

Data for the dependent variable are based on a saturation sample encompassing virtually every magazine published in the United States from colonial times to the onset of the Civil War (Haveman 2004). We excluded non-religious and inter-denominational publications, leaving a total of 832 magazines affiliated with 22 denominations. For magazines that were available in archives, we coded denominational affiliation on the basis of magazines' contents and prospectuses; for magazines that were not available in archives, we relied on bibliographies (*e.g.*, Albaugh 1994). By denominational affiliation we mean avowed identity, perspective, or target audience, not necessarily formal ties with official denominational bodies. As noted above, however, the overwhelming majority of denominational magazines were founded by religious professionals and were formally affiliated with denominations.

Independent variables. We based measures of market structure and denominations' market positions on state-level data on congregations assembled from various primary and secondary sources (see King and Haveman [2008] for a full description of these data sources). We linearly interpolated counts for years with missing data. The relative number of

congregations is a commonly used measure for the relative presence of denominational adherents. Ideally, we would conduct analyses using both congregation- and member-based measures, but membership data simply do not exist for most of the time period we study. Examining the period 1890 to 1926, Koçak and Carroll (2008) reported that both sets of measures yielded similar results, especially among the Protestant denominations that dominated the antebellum era. One potential problem with using counts of congregations to measure market share is that some denominations tend to have larger congregations than others. But this does not pose a major problem since we use within-denomination estimators (regression models with fixed denomination effects), which obviate biases that might result from systematic differences in congregational size across denominations (Perl and Olson 2000: 19).[2]

To test the local-level main effects of competition (hypotheses 1 and 3) and its moderating effects (hypotheses 2a and 5a), we measured local and extralocal competition. Our measure of *local competition* is the commonly used denominational pluralism index, which is the Blau (1977) index of heterogeneity, the complement of the Herfindahl index of concentration:

$$\text{Pluralism}_{\text{mt}} = 1 - \sum_i \left(\frac{\#\,\text{congregations}_{imt}}{\sum_i \#\,\text{congregations}_{imt}} \right)^2 ,$$

where *i* indexes denominations, *m* indexes state markets, and *t* indexes time. Although this measure has been criticized for producing artifactual correlations between pluralism and religious participation (Voas, Crocket, and Olson 2002), this does not happen in our analysis because our dependent variable (number of magazines published) is not composed of the same social units as the pluralism index (the relative number of congregations). A proposed alternative

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[2] Congregation-based measures might be skewed if, within any denomination, the number of members per congregation varied over time: if declining adherence prompted the closure of congregations for some denominations but not others, or if growth in local market share was absorbed in existing congregations for some denominations but not others. To check this possibility, we compared national growth rates between 1776 and 1850, in terms of both congregations and members, using data from Newman and Halvorson (2000) and Finke and Stark (1992). For all major denominations, ratios of congregation growth to member growth were of a similar magnitude, ranging from 0.97 to 1.47.

measure of competition based on partial orders (Montgomery 2003) is not suitable because it cannot provide a single commensurable statistic that summarizes a denomination's overall position in multiple markets across time and space. We measured *extralocal competition* by summing the number of congregations in each denomination across all states *except* the focal state and then calculating pluralism. Both measures are specific to each annual observation on each denomination in each state.

We tested local-level hypotheses 2, 2a, and 10 by measuring denominations' positions in each state market, using denominational *market share* in each state each year. We tested national-level hypothesis 4 by calculating the *average national market share*, calculated across all states where the denomination has congregations in the focal year. We experimented with other measures of market position: average market share weighted by the proportion of a denomination's congregations in each market, average market share rank, and proportion of states in which a denomination is the largest. Models estimated using all of these measures yielded similar results to those shown here.

We tested local-level hypotheses 5 and 5a by calculating the aggregate intensity of *multi-market contact* between each denomination *i* and those multi-market rivals *j* operating in the focal state market *m* at time *t* (MMC_{imt}):

$$MMC_{imt} = \frac{\sum_{j \neq i} \left[MMR_{ijt} \times D_{jmt} \times \frac{\sum_{n} \left(D_{int} \times D_{jnt} \right)}{\sum_{n} D_{int}} \right]}{\sum_{j} D_{jmt}},$$

where MMR_{ijt} is an indicator variable set equal to one if denomination *j* is a multi-market rival of denomination *i* at time *t* and zero otherwise, D_{imt} (D_{jnt}) is an indicator variable set equal to one if denomination *i* (*j*) has congregations in state market *m* at time *t* and zero otherwise. Because this measure is complex, we discuss its components. We start by counting the markets where denomination *i* meets other denominations *j* at time *t* ($\Sigma_n D_{int} \times D_{jnt}$). We scale this count by the number of markets in which denomination *i* operates ($\Sigma_n D_{int}$) to calculate a proportion (range

zero to one). The next step is to condition this proportion on two facts: (1) denomination *j* operates in market *m* at time *t* (D_{jmt}=1), and denomination *j* is a multi-market rival of denomination *i* at time *t* (MMR_{ijt}=1). The final step is to sum this conditional proportion across all rivals of denomination *i* (all other denominations *j*) in market *m* and scale it by the number of such rivals, both multi- and single-market. The resulting variable represents the number of multi-market contact points per local rival per extralocal market. It ranges from zero, when a denomination has no multi-market contact with local rivals at time *t*, to one, when a denomination *i* meets all local rivals *j* in all other markets where *i* competes at that time. This measure is similar to the one used in previous research on multi-market contact and mutual forbearance among for-profit firms (Barnett 1993; Haveman and Nonnemaker 2000).

We tested national-level hypothesis 6 with a time-varying binary indicator of the incidence of denominational schism (*schism dummy*). Schism was a typical response to major denominational discord during the antebellum era (Liebman, Sutton, and Wuthnow 1988; Bainbridge 1997; Sutton and Chaves 2004). This indicator spanned a four-year time window around each schismatic event: the two years before the schism occurred, the year of the schism, and the following year. This measure thereby captured the effects of mobilization prior to schisms as well as the effects of differentiation in the immediate aftermath of schisms. Note that in measuring denominational discord this way, we treated denominations that experienced a schism as continuing to constitute a single denomination, whose stock of periodicals is expected to grow precisely because of its increased internal variety. For instance, Northern and Southern Methodist magazines were both coded as Methodist.

We tested national-level hypothesis 7 by measuring each denomination's *spatial scale* as the number of states where it had congregations. We tested national-level hypothesis 8 by measuring the *spatial dispersion* of each denomination's adherents in each year with the degree to which its congregations were spread evenly across states. We summed the squared proportion of a denomination's total congregations in each state and subtracted the total from one, thereby forming an index of geographic market heterogeneity (Blau 1977). To test national-level

hypothesis 9, we calculated the disparity in market share across states, specifically, the difference between a denomination's maximum market share and its median shares in all the states where it is present (*market-share disparity*). This measure captures the absolute difference between a denomination's biggest stronghold and its typical market.[3] Finally, to test national-level hypothesis 11, we calculated the fraction of each denomination's congregations that were in each state market each year (*focal-state share of denominational congregations*).

Model Specification and Estimation Methods

State-level analyses. Our dependent variable in this analysis was a count: the number of religious magazines affiliated with a denomination in each state and year. Accordingly, we estimated Poisson regressions, where each observation on each state is assumed to be drawn from a Poisson distribution whose fundamental parameter is λ_{ist}:

$$\Pr[Y_{ist} = y_{ist}] = \frac{\exp[-\lambda_{ist}]\lambda_{ist}^{\ y_{ist}}}{y_{ist}!},\ y_{ist} = 0,1,2,\ldots,$$

where y_{ist} is the number of magazines affiliated with denomination *i* published in state *s* at time *t*.

Note that we used the Poisson distribution not to count events, but rather to count attributes of a social unit – not the number of magazines *founded*, but rather the number *published*. Therefore, we were modelling a growth process: change over time in the number of denominational magazines published in each state. Growth processes are typically subject to state dependence: past size generally affects future size, over and above changes in causal factors. For instance, past magazine publishing efforts may have created a community of writers who were interested in creating additional outlets for their work and whose existence reduced the cost of publishing more magazines in the future. To capture such dynamics, we estimated models that included the lagged dependent variable (Heckman and Borjas 1980).

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[3] An absolute measure captures market-share disparity better than a relative measure. To understand why, consider a denomination with market share maximum 1.5% and median .5%. While the maximum is three times the median, the congregation is still a small minority. Bear in mind that we use market-share disparity in models that estimate variation over time within each denomination and that control for denominational size.

One aspect of these data further complicated estimation: each denomination could have congregations in multiple states, and each state could be home to multiple denominations. Thus we were dealing with cross-classified data, not hierarchically clustered (nested) data (Goldstein 1987; Rabe-Hesketh and Skrondal 2008: 472-508). To accommodate this data structure and to deal with the fact that the dependent variable was a count, we estimated event-count models with latent, crossed unit effects for denomination and state; the first latent effect controlled for unobserved theological or governance factors that might affect a denomination's propensity to publish magazines, while the second controlled for unobserved location-specific factors that might impede or impel m publishing. Thus, the models we estimated took this general form:

$$\lambda_{ist} = \exp[\alpha y_{ist\text{-}1} + \boldsymbol{\beta}'\boldsymbol{x}_{ist\text{-}1} + \zeta_i + \zeta_s] \ ,$$

where y_{ist} is the dependent variable (the number of magazines affiliated with denomination i published in state s at time t), $y_{ist\text{-}1}$ is the lagged dependent variable, $\boldsymbol{x}_{ist\text{-}1}$ is a vector of lagged explanatory and control variables, ζ_i is the latent effect for denomination i, and ζ_s is the latent effect for state s.[4] The latent effect ζ_i is shared across all years for a given denomination i and the latent effect ζ_s is shared by all denominations in a given state s. We used the xtmepoisson command in Stata 10 with the special group designation *_all* to treat the entire dataset as the highest-level group and take into consideration the fact that these data were cross-classified, not hierarchically clustered (Rabe-Hesketh and Skrondal 2008: 475-478).

National-level analyses. Again we modelled a growth process for a count variable. But because we aggregated data on denominational publishing efforts across many states, our dependent variable for this analysis was much larger than for the state-level analysis: the average number of magazines published was 5.4, and the range was 0 to 44. For one-third of annual observations, the number of magazines published was more than three. Accordingly, we

[4] We also estimated negative-binomial models using xtnbreg, with population-average effects for each denomination-state pair, robust standard errors, and a first-order serial autocorrelation correction. We discuss this alternative estimation strategy in the robustness checks section below.

estimated linear regressions rather than Poisson regressions, specifically fixed-effects (FE) models containing the lagged dependent variable:

$$y_{it} = \alpha y_{it-1} + \boldsymbol{\beta}' \boldsymbol{x}_{it-1} + \gamma_i + \varepsilon_{it} ,$$

where y_{it} is the dependent variable (the number of magazines published by denomination *i* across all states at time t), y_{it-1} is the lagged dependent variable, $\boldsymbol{x}_{ist-1}$ is a vector of lagged explanatory and control variables, γ_i is the denomination-specific fixed effect, and ε_{it} is the error term.

Models of this sort present estimation difficulties because the lagged dependent variable is correlated with denomination-specific effects and standard techniques to purge denomination-specific effects (differencing or time-demeaning) create correlations between the transformed lagged dependent variable and the transformed disturbance. In such situations, ordinary-least-squares estimates can be substantially biased (Nickell 1981; Kiviet 1995). Several methods can circumvent this problem. We adopted a fixed-effects instrumental-variable (FE-IV) approach and followed the standard practice of instrumenting y_{it-1} with y_{it-2} since the latter was highly correlated with the former but not with the time-demeaned idiosyncratic error. We confirmed our choice of instrument with a Sargan test of the instrument's validity; we also compared the first- and second-stage R^2 to ensure adequate instrument strength.[5] Estimation proceeds via two-stage least squares (2SLS), using the xtivreg2 routine in Stata 10 (Schaffer 2007). In the first stage, we regressed the lagged dependent variable on the instrument and all exogenous variables. In the second stage, we regressed the resulting predicted values for the dependent variable on the exogenous variables. Because denominations varied greatly in size and number of magazines published, we corrected for heteroskedasticity. Because unobserved factors that varied greatly between denominations and that changed slowly over time might have influenced the outcome, we corrected for serial autocorrelation. This is especially important in models that include the lagged dependent variable, as these did, because serial autocorrelation not only introduces errors

[5] Denomination size may be endogenous. If magazines did help denominations grow, as both historians and contemporaneous champions have claimed, then the causal dynamics may be recursive. To assess this possibility, we re-estimated the 2SLS model, treating denomination size as endogenous. The c statistic test of the instrument's exogeneity revealed at most marginal evidence of endogeneity (p=.11).

whose effects bias estimates on the lagged dependent and independent variables, it also confounds the error term with the effect on the lagged dependent variable. Finally, we estimated robust standard errors.

Three considerations motivate our use of the 2SLS FE-IV estimator over alternatives.[6] First, it is well-tailored to the structure of our data (max T=70, N=22). While generalized-methods-of-moments (GMM) estimators are a popular strategy to reap efficiency gains by exploiting additional moment conditions in large N, small T datasets (Arellano and Bond 1991; Bond 2002), their appropriateness for estimating longer panels is less clear. Monte Carlo tests have shown that even a non-instrumented FE estimator outperforms GMM in terms of both bias and efficiency when T is 30 or more (Judson and Owen 1999). Second, the FE-IV estimator provides more consistent estimates of average effects when the units under study – here, denominations – have heterogeneous responses to explanatory variables (Murtazashvili and Wooldridge 2008). This may be relevant here since previous research has found evidence of denominational variation in response to competition (Blau, Redding, and Land 1993). Third, 2SLS possesses the virtue of simplicity, relative to GMM.

Discounting Alternative Explanations: Control Variables

State-level models. We controlled for *denomination size* (total number of congregations in the focal state in the focal year) and *denominational growth rate* in the focal state (a five-year moving average) to capture the possibilities that denominations published more magazines when they grew larger and when they expanded more rapidly. We also controlled for several factors that can be expected to influence the number of magazines published. We controlled for *state population* (in millions) to capture basic demand for periodicals. We obtained decennial data from Bogue (1985) and interpolated linearly to create annual data points. We also controlled for the *percent state urban population*, meaning the percentage of the state's population in places

[6] We experimented with the other estimation strategies mentioned here; we report the results of these experiments in the robustness checks section below.

with over 2,500 inhabitants, because we reasoned that magazines would find greater support in states with many city-dwellers than in states with mostly rural populations. To construct this variable, we used data on municipal populations (Purvis 1995; U.S. Bureau of the Census 1998). We used the best measure of economic conditions available for this time period, an *index of industrial production* (Davis 2004), and corrected for inflation using a historical deflator index (McCusker 2001). We also controlled for the increasing support that magazines received from the post office, using the rate charged to distribute magazines in the mail (*magazine postage rate*). Data for this measure came from postal histories (Rich 1924; Kielbowicz 1989; John 1995).

We tried other controls, but multicollinearity prevented some models from converging. Number of post offices and miles of postal roads in the state, which captured state-specific support for magazines from the expanding postal network, were highly correlated with state population (r = .94 and .83, respectively). Maximum printing speed, immigration, and number of colleges, which captured advances in printing technology, increasing population diversity, and the increasingly literate reader base, were highly correlated with the index of industrial production (r = .96, .74, and .97, respectively). Even when models containing some of these variables converged, including them created problems: high correlations among regressors in non-linear multiplicative models like these can not only inflate standard errors, but also bias point estimates (Althauser 1971).

National-level models. These include a similar set of controls, calculated for the country as a whole: *denomination size* (total number of congregations across all states), *denominational growth rate* (a five-year moving average), the *index of industrial production*, and the *magazine postage rate*. We also controlled for several factors that we could not include in the state-level analysis: because these models are linear-additive, multicollinearity among controls should bias only standard errors, not point estimates. We included the *miles of postal roads* in the country, to incorporate more information about the increasing support magazines received from the post office, using data from postal histories (Rich 1924; Kielbowicz 1989; John 1995). We compiled

data on the *maximum printing speed* (in sheets per hour) from printing-industry histories (Thomas 1874 [1970]; Berry and Poole 1966; Moran 1973), to capture advances in printing technology that made it increasingly easy to launch and maintain magazines. We controlled for total annual *immigration* to the United States, which indicates increasing religious, ethnic, and linguistic diversity, which in turn promotes denominational magazine growth through product differentiation. Finally, we controlled for the expansion of education, and thus increases in the literate reader base, with a time-varying count of *colleges*, using data from Marshall (1995).

Results

State-Level Analysis

Table 2 presents descriptive statistics on all variables in our state-level analysis, while Table 3 shows the results of this analysis. Model 1 in Table 3 shows the model containing only control variables. As expected, the lagged dependent variable, the number of denominational magazines published in the focal state the previous year, has a significant positive effect. Both the index of industrial production and the postage rate for magazines have effects in the expected directions, positive and negative, respectively. But surprisingly, the denominational growth rate has a significant negative effect on the growth of denominational magazines published, as does the percentage of people in the state living in urban areas.

[Tables 2 and 3 about here]

Model 2 adds five variables to test all main-effect hypotheses robustly. Local competition has a significant positive effect on the number of denominational magazines published: the more denominations with congregations in a particular state, and the more even their shares of that state market, the more magazines the typical denomination published there. This result supports hypothesis 1. Two perspectives on religious denominations, religious-economies theory and resource-sharing theory, made opposing predictions about the effect of local market share on mobilization. We see a significant positive effect of local market share, which confirms hypothesis 10 (resource sharing) and disconfirms hypothesis 2 (religious

economies). Extralocal competition, the level of denominational pluralism in all states other than the focal state, has a significant positive effect. This unexpected result runs counter to the prediction of hypothesis 3, which predicted a denomination would be less likely to mobilize through magazines in one location if it faced more intense competition elsewhere. In combination with the expected positive effect of local competition, the unexpected positive effect of extralocal competition indicates that competition anywhere, either inside or outside the focal state, spurred denominations to mobilize the faithful through denominational media.

The effect of multi-market competition is, as expected, to induce denominations to forbear from proselytizing by reducing the number of magazines they published. This significant negative effect supports hypothesis 5. Finally, the share of a focal denomination's congregations located in the focal state has a significant positive effect on the number of denominational magazines published. This result supports hypothesis 11. Taken together, these results indicate that as a particular state became more important to a denomination – either as more of its congregations were located there or as its share of that state's religious market increased – the denomination worked harder to mobilize adherents by publishing more magazines in that state.

Models 3 to 5 add interactions between local competition, on the one hand, and local market share and multi-market contact, on the other hand, to test hypotheses 2a and 5a. Models 3 and 4 add one interaction at a time, while Model 5 includes both, which allows us to test the robustness of these moderated effects. The results of our test of hypothesis 2a are complicated by the main effect of local market share: we saw, in model 2, that the effect of market share was positive, as predicted by the resource-sharing theory, not negative, as predicted by religious-economies theory. We see, in models 3 and 5, that this effect was apparent only when local competition was strong: the coefficient on the main effect of market share is nonsignificant and the coefficient on the interaction with local competition is positive and significant. Finally, models 4 and 5 both show a significant positive coefficient on the interaction between local competition and multi-market contact. This pattern of results supports hypothesis 5a, and

indicates that the tempering effect of multi-market contact was weakest when and where high levels of competition rendered mutual forbearance infeasible.

Table 3 also shows the estimated standard deviations for the latent denomination- and state-specific effects. Across all models, the denomination-specific effect varied much less than the state-specific effect: in model 1, the estimated variance on the former was less than one-third of the variance on the latter, and in models 2 to 5, it averaged just over one-sixth. This indicates that differences across states had much bigger impacts on the scale of denominational publishing efforts than did differences across denominations. In other words, variations in context shaped the growth of religious media far more than did variations in theology.

National-Level Analysis

Table 4 presents descriptive statistics on all variables in our national-level analysis, while Table 5 shows the results of this analysis. Model 1 in Table 6 includes just the control variables. There were no real surprises here. Instrumented values of the lagged dependent variable clearly had a strong positive effect. As expected, denominations published more magazines as they grew larger and as the postal network expanded; both of these variables reflect the increasing availability of resources to support magazine publishing. But net of size, none of the other controls exert significant effects, which may be due to some high correlations among time-varying controls.

[Tables 4 and 5 about here]

Model 2 adds all theoretical variables to test all main-effect hypotheses robustly. Overall (national) market had a significant negative effect, which supports hypothesis 4. This finding suggests that weakening overall competitive positions mobilized denominations to publish more magazines, whereas strengthening competitive positions made denominations less apt to expand their publishing efforts. This result is robust to an alternative measure of overall market share, which measures the focal denomination's share across all states where it had congregations (instead of all states in the Union). In results not reported here, we also found that the more

states where a denomination was the largest incumbent, the less likely it was to expand its magazine offerings, further confirming the religious-economies prediction that majoritarian religious organizations competed less vigorously than minority ones. In light of the positive effect of local (state-level) market share in the state-level analysis, the negative effect of overall (national) market share suggests that antebellum religious leaders were oriented less locally than religious economies theory has assumed.

Contrary to hypothesis 6, the effect of denominational schisms was not significant. This indicates that periods marked by schisms, which indicate heightened intra-denominational conflict, did not see increases in the number of denominational magazines. Analyses of magazine founding rates (rather than number of magazines published) using negative-binomial methods also showed no effects of the schism dummy on rates. This result makes us confident that the lack of effect in Table 5 is not due to insensitivity of the dynamic model to this period indicator. We experimented with adjusting the time window to see if the effects of intra-denominational conflict were confined to the period of tension preceding a schism or to their immediate aftermath, but all specifications netted the same null result. Despite the fact that religious historians consider intra-denominational conflicts to be a defining feature of the antebellum era (Ahlstrom 1972; Butler 1990; Carwardine 1993), our analysis simply does not support the idea that the growth of denominational magazines during this period reflected competition within fragmenting denominations.

Consistent with hypothesis 7, the effect of the number of states where a denomination had at least one congregation (spatial scale) was positive and significant. This supports the claim that denominational magazines grew in response to the challenges of organizing the faithful across ever larger geographic areas. The fact that the positive effect of spatial scale is independent of the effect of denomination size (number of congregations) suggests that that the former variable taps into spatial-scale expansion, not denominational growth in general. In contrast, the dispersion of congregations across states had a nonsignificant effect, which fails to support hypothesis 8. We experimented with other dispersion measures in place of the basic

Blau index. We tried scaling the Blau index by the number of states, as well as adjusting it to account for uneven population dispersion *within* the various states where a given denomination operated. Both of these measures netted similarly nonsignificant results. Together, tests of hypotheses 7 and 8 suggest that denominations' geographic spread was important for the development of their magazine-publishing efforts, but what mattered was the absolute scale of expansion rather than the degree to which congregations were unevenly spread across states.

Last, we see a nonsignificant effect of the disparity between a denomination's maximum and median market share, which fails to support hypothesis 9. This indicates that disparities among denomination's local (state-level) competitive positions did not spur them to publish more magazines, which undermines the resource-sharing argument that denominational magazines compensated for the challenges of operating in locations where market position varied greatly in strength, by spreading socio-religious resources.

Robustness Checks

We conducted a variety of robustness checks in addition to the alternative variable measures discussed above. We first considered the argument made by many scholars of American religion that interactions between the Jewish and Catholic faiths, on the one hand, and Protestant faiths, on the other, differed from interactions among various Protestant faiths (*e.g.*, Ahlstrom 1972; Blau, Redding, and Land 1993). Throughout the nineteenth century, Catholics resisted religious assimilation and were suspected of serving a foreign potentate. It is not surprising, then, that correlates of religious commitment differ between Catholics and Protestants (Wuthnow and Christiano 1979), and that the Catholic Church has been shown to respond differently to religious competition than Protestant denominations (Blau, Redding, and Land 1993). For their part, Jews were viewed as suspect and many Christians organized to convert them. Moreover, Catholic and Jewish congregations often have different structures than Protestant congregations, which could affect the validity of deriving market-share measures from counts of congregations (Koçak and Carroll 2008). For instance, Protestant congregations tends

to be relatively equal in size across space, while urban Catholic parishes were often larger than their rural counterparts. And Jewish congregations, unlike Protestant ones, distinguished between pewholders, contributors, and shareholders. Although Jews never constituted more than a tiny fraction of the population, and Catholics did not constitute a large fraction of the population until the very end of our study period, and even then many commonly cited figures for number of Catholic parishes and adherents have been found to be inflated (Finke and Stark 2005: 117-121; Conkin 1995: 131), we re-estimated both state- and national-level models including only Protestant denominations. The results of these analyses, which are not shown to save space but which are available upon request, were the same as those shown here.

We also experimented with different estimators. For the state-level analysis, we estimated negative-binomial models with population-average effects for each denomination-state pair, robust standard errors, and a first-order serial autocorrelation correction.[7] This estimation strategy has the advantages of handling overdispersion in the dependent variable and explicitly correcting for any autocorrelation that remained after the fixed effects were taken into consideration. But it has three disadvantages. First, it specifies only marginal distributions, not full distributions, so it cannot compare outcomes within clusters (here, particular denominations in particular states in particular years) but rather between each observation and the average observation in the population – in other words, between an observation and an observation picked at random from the population (Neuhaus, Kalbfleisch, and Hauck 1991). Second, it does not allow us to deal with endogeneity. Third, it assumes that, net of the estimated effects of the explanatory and control variables, each denomination's publishing efforts in each state were independent of its publishing efforts in other states, and that the actions of different denominations in each state were independent, both of which are unlikely to be true. Notwithstanding these limitations, we report that the results of this analysis, which are not shown here to save space but which are available upon request, were the same as that shown here for all

[7] Another option is the xtnbreg command with conditional fixed effects. Alas, the fixed-effects estimator does not accommodate robust standard errors or serial autocorrelation corrections.

variables of interest except multi-market contact. That variable had a marginally significant negative main effect (p=.072) and a nonsignificant interaction with local competition.

For the national-level analysis, we checked estimator robustness by experimenting with other estimators. First, we used a restricted, two-step GMM estimator proposed by Arellano and Bond (1991), testing and correcting for heteroskedasticity and autocorrelation, and estimating robust standard errors (Newey and West 1994). This approach dispenses with instrumenting and instead uses a bias approximation to adjust the coefficient estimates; it estimates standard errors via bootstrapping. Second, we tried Kiviet's bias-corrected least-squares-with-dummy-variables estimator, extended for use in unbalanced panels (Kiviet 1995; Bruno 2005). Both alternative methods yielded results that are basically identical to 2SLS; these are shown in Table 5as Models 3 and 4.

Summary. While these findings confirm the predictions of several of hypotheses, they also invite further questions. One notable ambiguity concerns the opposite effects exerted by changes in denominational market share at the state and national levels of analysis: positive at the state level and negative at the national level. This pattern of results indicates that while denominational magazines grew in response to diminishing overall market share in the increasingly competitive national religious field, these responses were concentrated in states where denominations were growing stronger relative to their local rivals. This apparent paradox is actually consistent with the resource-sharing model of religious mobilization: magazines grew as a compensating reaction as denominations in resource-rich areas sought to address overarching challenges their faith faced.

One possible objection to this interpretation is that since the state-level models used FE estimators, the results actually show that magazines grew in times and places where a denomination's market share was *growing* – not where it was the largest. To clarify this issue, we re-examined the cross-sectional relationship between market share and magazine growth. Figures 1 and 2 plot magazine foundings between 1800 and 1860 against two measures of denominational market strength. Figure 1 plots the local (state) market-share rank of the

denomination founding each magazine. It shows that the founding denomination was usually the predominant faith in the states where new magazines were launched. Figure 2 plots the absolute difference between a denomination's local (state) market share in the state where it founded a magazine and its maximum market share that same year across all states. Although some denominational magazines were founded in relatively low-market-share locations, Figure 2 clearly indicates that denominations usually founded magazines in the state where they possessed the greatest market share. Thus, contrary to the religious-economies claim that religious organizations behave more vigorously where they constitute a smaller portion of the population, locally dominant denominations were disproportionately active in establishing print media. Together with the longitudinal regression results, these cross-sectional patterns provide further evidence to support the resource-sharing model, and suggest that the impetus to mobilize may be spatially disconnected from the site where mobilization occurs.

[Figures 1 and 2 about here]

Discussion and Conclusion

Implications for the study of religious mobilization. This paper studies how competition and co-operation within and between American religious groups in the antebellum era drove the growth of denominational magazines. Like all group media, denominational magazines are powerful instruments for recruitment, indoctrination, solidarity, and contestation (Marty *et al.* 1963; Hatch 1989; Kaufman 2002; Nord 2004; Koçak and Carroll 2008). Denominational magazines reinforce theological and moral messages, communicate news about members, and contest other denominations' theological and secular claims. Because people who read magazines are aware that others, often in distant locations, are doing the same thing at approximately the same time, magazines help construct shared meaning systems within religious communities – not just theologies, but also shared understandings about organizational authority, membership criteria, and worship practices. They allow sponsoring denominations to draw sharp

distinctions between the lapsed and the saved, between the true and the fallen church, between sacred and debased practices, and to reinforce those distinctions through repetition.

Our choice of outcome – the growth of denominational magazines – avoids a thorny problem that has plagued most studies of religious mobilization, namely definitional dependency between explanatory and outcome variables. Most previous studies have predicted religious participation (the number of adherents of different denominations) as a function of competition (and, occasionally, co-operation). But the most common empirical indicator of competition and co-operation (religious pluralism, meaning the relative number of adherents in different denominations) has a clear mathematical relationship to the measure of religious participation (Voas, Olson, and Crockett 2002). Because the explanatory variable is mathematically related to the outcome, any observed relationship between the two is likely to be spurious. In contrast, our dependent variable is the strength of group media (specifically, the number of denominational magazines published), so its measure was independent of our measure of competition and co-operation (the relative number of congregations in different faiths).

Our analysis breaks new ground in the study of religious mobilization in several ways. Theoretically, we link religious mobilization to four more general models of why social groups expand their mobilizing efforts: the model of ethnic- and religious-group competition (Finke and Stark 1988, 1992; Olzak and West 1991), which we extend beyond its original local focus to consider interdependencies across space; the ecological model of how social movements spur organizational differentiation and the creation of new niches (Carroll and Swaminathan 2000); the view of media as connective threads that build modern translocal groups (Park 1940); and the model of religious organizations sharing pools of resources across locations (Chaves 1993). We thereby advance debates about religious mobilization beyond the narrow question of whether it increases or decreases with local inter-denominational competition.

All four of these lines of reasoning view denominational magazines as resources for attracting and retaining members, but they emphasize very different causal mechanisms: inter-denominational competition, intra-denominational fragmentation, geographic dispersion, and

affiliational linkages. Moreover, these lines of reasoning assume religious competition and co-operation play out at different levels of analysis: within local communities or across a national field. To fairly test predictions of all four lines of reasoning, we were careful to faithfully capture observable indicators of underlying causal mechanisms and to make explicit what have often been implicit assumptions about geography. Therefore, we conducted analysis at two distinct levels: the local community (the state) and the national field. We also applied dynamic techniques to longitudinal data, so we were able to carefully assess causality, which is an advance on previous, mostly cross-sectional research.

At the local level, we found only partial support for the original (locally focused) version of religious-economies theory. Local competition increased the number of denominational magazine published, as expected. But local market share had a positive effect on denominational publishing, not the expected negative effect, and this effect was seen only when local competition was strong. We also found partial support for our extensions of religious-economies theory: although multi-market contact dampened religious publishing, as expected, extralocal competition had an unexpectedly positive effect on denominational publishing. In contrast to the spotty support for religious-economies theory, we found strong support for the conception of denominations as organizations sharing resources across locations. The positive main effect of local market share was consistent with this conception, as was the positive effect of the fraction of a denomination's congregations in the local market.

At the national level, we found support for the first extension of the religious-economies perspective: national market share reduced number of denominational magazines published, which indicated that inter-denominational competition operated at the national level (although not at the local level). We found no support for the argument that intra-denominational discord would promote denominational magazine publishing, and mixed support for the argument that denominational magazine publishing expanded to counter geographic disconnection: there was no impact of schisms, and while there was a positive effect of spatial scale, there was no effect of spatial dispersion. Finally, we found no support at the national level for the resource-sharing

argument, as the gap in market share between denominations' strongholds and their typical local markets had no impact on the number of denominational magazines published. This contrasts with the strong and consistent local effects of resource sharing.

Taken together, these results indicate that we must shift our thinking about religious mobilization. Most basically, we must be explicit about the geographic scope of these processes and must consider factors beyond pure competition. In particular, we must recognize that religious organizations are just that – organizations – which means they have the potential to transfer resources across units, so as to support weak units by drawing on strong ones.[8] Moreover, we must recognize that religious organizations choose their battle site strategically: they forbear from aggressive mobilization efforts in locations where they meet many powerful multi-market rivals. Finally, we demonstrate how careful dynamic analysis can adjudicate among causal factors, and so offer a template for future research.

The bigger picture: Beyond religious mobilization. Religion is but one sphere of life where groups have responded to diversity by creating particularistic, group-specific media. In addition to denominational magazines, America has hosted a wide variety of political organs, media for speakers of minority languages and members of minority ethnic groups, and professional and trade journals. Our analysis linked the process of religious mobilization to more general processes of group dynamics that apply not just to religious denominations, but also to ethnic and linguistic communities, political factions, and professions and other specialized occupations. Most studies of group media, like debates about religious mobilization, have treated responses to competitive and co-operative forces as if they were localized (for a similar assessment, see Cunningham and Phillips 2007). We have demonstrated empirically the power of thinking outside the local box by showing how modern, geographically dispersed

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[8] We hasten to note that empirical support for the theory of denominations as multi-location organizations that share resources between units is suggestive, not conclusive. In order to definitively prove the validity of this theory, one would have to gather geographic data on the circulation of magazines and other denominational media. Unfortunately, such data simply do not exist for the antebellum era.

groups use media to forge community and redistribute resources across great distances. This is important because many modern groups that are national in scope manage relations across space through internal differentiated, with federated structures that comprise nested national, regional, and local units (Schlesinger 1944; Skocpol 1997). These structures allow them to develop resources like group media that not only forge community within local units, but also bond group members across an entire nation (*e.g.*, Park 1940; Anderson 1983 [1991]; Calhoun 1998). Our analysis also suggests that such structures facilitate transferring resources from rich to poor units (Chaves 1993). This implies that future research on many different kinds of organized groups – racial/ethnic communities, political factions, and professions and other specialized occupations – should assess not only outcomes within local communities, but also outcomes between communities and across larger regions.

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Table 1: Summary of Predictions about Religious Magazine Publishing

Perspective	**H**	**Level of Analysis**	**Independent Variable(s)**	**Predicted Effect on DV**
Religious Economies – Original Formulation	1	Local	Local market competition (Blau index of denominational heterogeneity)	↑
	2	Local	Local market share	↓
	2a	Local	Local market share × local competition	↓ → 0 → ↑
Religious Economies – Extended to Consider Extralocal Competition	3	Local	Extralocal competition (all markets except the focal one)	↓
	4	National	Average market share across all locations where the denomination has congregations	↓
Religious Economies – Extended with Multi-Market Contact Theory	5	Local	Multimarket contact	↓
	5a	Local	Multimarket contact × local competition	↓↓
Organizational Ecology/Social Movements	6	National	Intra-denominational discord (schism dummy)	↑
Media as Community-Building Resources	7	National	Number of locations	↑
	8	National	Dispersion across locations (Blau index)	↑
Religions as Organizations Sharing Resources across Locations	9	National	Market-share disparity across locations (maximum – median)	↑
	10	Local	Local market share	↑
	11	Local	Fraction of the denomination's congregations in location	↑

Table 2: Descriptive Statistics for State-Level Analysis

	Variable #	1	2	3	4	5	6	7	8	9	10	11	12
	Mean	.430	88.1	.173	.756	.121	62.7	10.1	.742	18.9	.099	.814	.078
	Standard Deviation	1.15	172.	.477	.666	.124	54.1	31.0	.098	9.47	.140	.173	.124
	Minimum	0	.5	-.667	.047	0	4.82	2	.237	1	0	.425	0
	Maximum	13	2,341	24	3.88	.633	159	300	.871	34	.868	2	.972
1	Number of Denominational Magazines												
2	Denomination Size (Number of Churches)	.550											
3	Denominational Growth	-.039	-.053										
4	State Population/1,000,000	.448	.301	-.046									
5	Percent State Urban Population	.261	.017	-.082	.243								
6	Index of Industrial Production	.148	.156	.040	.316	.332							
7	Magazine Postage Rate (cents)	-.040	-.033	-.010	-.063	-.064	-.195						
8	Local Competition	.169	.004	-.091	.301	.378	.098	.000					
9	Extralocal Competition	.204	.394	.071	-.037	.050	.456	-.092	-.153				
10	Market Share in the State	.169	.594	.006	-.159	-.116	-.095	.017	-.254	.379			
11	Multi-Market Contact	-.240	-.297	.002	-.168	-.093	.054	-.008	-.199	-.540	-.229		
12	State Share of Denominational Churches	.210	.140	-.056	.312	.128	-.153	.031	.262	-.394	.015	.198	

Note: This table is based on 14,389 state-year observations on 22 American denominations between 1790 and 1860.

Table 3: Poisson Regression Models (with Crossed Unit Effects) of the Number of Magazines Published by Each Denomination in Each State in Each Year

	(1)	(2)	(3)	(4)	(5)
Lagged Number of Denominational Magazines	.321***	.306***	.302***	.309***	.305***
in the State	(.007)	(.008)	(.008)	(.008)	(.008)
Denomination Size	-.075	-.908***	-1.02***	-.897***	-1.02***
(Number of Churches in the State/1,000)	.074	(.092)	(.097)	(.092)	(.097)
Denominational Growth Rate in the State	-.126**	-.063	-.060	-.059	-.056
	(.049)	(.049)	(.048)	(.048)	(.048)
State Population/1,000,000	.040	.290***	.316***	.278***	.306***
	(.047)	(.050)	(.050)	(.0450)	(.050)
Percent State Urban Population	-.820*	-2.24***	-2.08***	-2.34***	-2.18***
	(.342)	(.373)	(.374)	(.375)	(.376)
Index of Industrial Production	.393***	.444***	.429***	.454***	.436***
(constant $1860/100)	(.055)	(.074)	(.074)	(.074)	(.074)
Magazine Postage Rate (cents/100)	-.176*	-.173**	-.172**	-.170**	-.169*
	(.070)	(.071)	(.071)	(.071)	(.071)
Local Competition		3.76***	2.78***	-.221	-1.77
(Blau Index for the State)		(.377)	(.455)	(1.21)	(1.26)
Extralocal Competition		.023***	.023***	.022***	.023***
(Blau Index for all Other States)		(.005)	(.005)	(.005)	(.005)
Market Share in the State		2.58***	.194	2.53***	-.187
		(.187)	(.683)	(.188)	(.711)
Multi-Market Contact		-1.60***	-1.55***	-5.52***	-5.91***
		(.228)	(.229)	(1.17)	(1.18)
State Share of Denominational Churches		2.33***	2.26***	2.24***	2.15***
		(.144)	(.145)	(.146)	(.147)
Local Competition × Market Share			3.82***		4.33***
			(1.05)		(1.08)
Local Competition × Multi-Market Contact				5.12***	5.72***
				(1.49)	(1.51)
Constant	-2.69***	-4.90***	-4.26***	-1.83*	-.765
	(.277)	(.457)	(.484)	(.996)	(1.03)
Standard Deviation of the Latent	.683	.474	.463	.481	.469
Denomination-Specific Parameter	(.115)	(.086)	(.084)	(.088)	(.086)
Standard Deviation of the Latent State-	1.26	1.15	1.14	1.14	1.13
Specific Parameter	(.190)	(.177)	(.177)	(.176)	(.175)
Log-likelihood	-7,984.	-7,519.	-7,512.	-7,513.	-7,504.
Wald χ^2	5,281.	5,577.	5,567.	5,586.	5,570.
Number of Observations	13,990	13,975	13,975	13,975	13,975

Notes: This table presents the results of mixed Poisson regressions of the number of magazines published by a denomination in each state and year for 22 American denominations from 1790 to 1860. These models include crossed latent effects for state and denomination. Standard errors are in parentheses below parameter estimates. * indicates p<.05, ** p<.01 and ***p<.001, two-tailed t tests.

Table 4: Descriptive Statistics for Variables Used in National-Level Analysis

	Variable #	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	Mean	4.97	10.1	.045	45.9	.066	1.08	.229	1.14	82.4	.052	.057	13.3	.822	.165
	Standard Deviation	7.95	23.0	.104	50.2	.076	.728	.551	1.01	63.2	.081	.232	9.09	.187	.219
	Minimum	0	.015	-.286	4.17	.002	.038	.020	.096	16	.000	0	2	.083	.000
	Maximum	44	192.	2	158	.2	.251	3.00	2.82	258	.375	1	35	1	.999
1	Number of Denominational Magazines														
2	Denomination Size (# Churches/1,000)	.830													
3	Denominational Growth	-.024	-.028												
4	Index of Industrial Production	.466	.268	-.003											
5	Maximum Printing Speed (pages/hour)	.460	.267	-.016	.980										
6	Postage Rate for Magazines ($)	.496	.273	-.006	.934	.919									
7	Postal Roads (millions of miles)	-.163	-.079	.004	-.252	-.236	-.329								
8	Immigration	.453	.246	.008	.802	.824	.853	-.290							
9	Number of Colleges	.470	.270	-.010	.973	.940	.961	-.269	.788						
10	National Market Share	.567	.796	-.038	-.052	-.050	-.060	.026	-.056	-.055					
11	Schism Dummy (yes=1)	.161	.153	-.028	.029	.016	.071	-.031	.040	.060	.182				
12	Spatial Scale (# states)	.770	.648	-.023	.371	.374	.371	-.104	.361	.361	.627	.130			
13	Spatial Dispersion (Blau index)	.277	.246	.064	-.008	-.004	-.010	.002	-.011	-.010	.298	-.026	.421		
14	Market-Share Disparity	.213	.320	-.013	-.127	-.128	-.142	.054	-.145	-.127	.596	.087	.509	.180	

Note: This table is based on 1,314 annual observations of 22 American religious denominations between 1790 and 1860.

Table 5: Analysis of the Number of Magazines Published by Each Denomination Each Year

	(1)	(2)	(3)	(4)
Modelling Strategy	2SLS FE-IV		2S GMM	B-C LSDV
Lagged Number of Denominational Magazines	.925***	.881***	.879***	.924***
(instrumented)	(.012)	(.017)	(.017)	(.023)
Denomination Size (total # churches /100)	.024***	.040***	.041***	.029***
	(.004)	(.006)	(.006)	(.007)
Denominational Growth Rate	.216	.141	.296	.181
	(.225)	(.324)	(.507)	(.426)
Index of US Industrial Production	-.345	-.330	-.330	-.387
(constant $1860/1009)	(.487)	(.494)	(.494)	(.668)
Maximum Printing Speed	1.52	.005	-.020	.586
(# pages per hour/100,000)	(2.14)	(2.23)	(2.25)	(3.00)
Post Roads//100,000	.594**	.607***	.609***	.519**
	(.189)	(.204)	(.206)	(.264)
Magazine Postage Rate ($/100)	-206	-2.59	-2.72	-2.37
	(5.93)	(6.07)	(6.10)	(6.91)
Immigration/1,000,000	.410	-.125	-.009	-.0006
	(.597)	(.672)	(.068)	(.089)
Number of Colleges/100	-.275	-.311	-.308	-.305
	(.303)	(.313)	(.317)	(.405)
National Market Share (Blau index)		-5.24***	-5.35***	-3.64*
		(1.64)	(1.65)	(2.12)
Schism Dummy (yes=1)		-.219	-.218	-.228
		(.139)	(.140)	(.162)
Spatial Scale (number of states)		.052***	.053***	.045***
		(.015)	(.015)	(.014)
Spatial Dispersion (Blau index)		.457	.470	.237
		(.557)	(.567)	(.951)
Market-Share Disparity		.369	.367	.338
		(.304)	(.307)	(.420)
Number of Observations	1,346	1,314	1,309	1,314

Notes: This table presents regressions of the number of magazines published by a denomination in a each year for 22 American denominations from 1790 to 1860. Models 1 and 2 present two-stage least-squares fixed-effects, with instrumental variables models (2SLS FE-IV), corrected for serial autocorrelation and heteroskedasticity. As robustness checks, models 3 and 4 present results using other estimation strategies – two-stage generalized method of moments (2S GMM) cin model 3 and bias-corrected least squares with dummy variables (B-C LSDV) in model 4. Standard errors are in parentheses below parameter estimates. * indicates p<.05, ** p<.01 and ***p<.001, two-tailed t tests.

Figure 1:
Frequency Plot of Denominational Market-Share Rank in State where Magazine was Founded

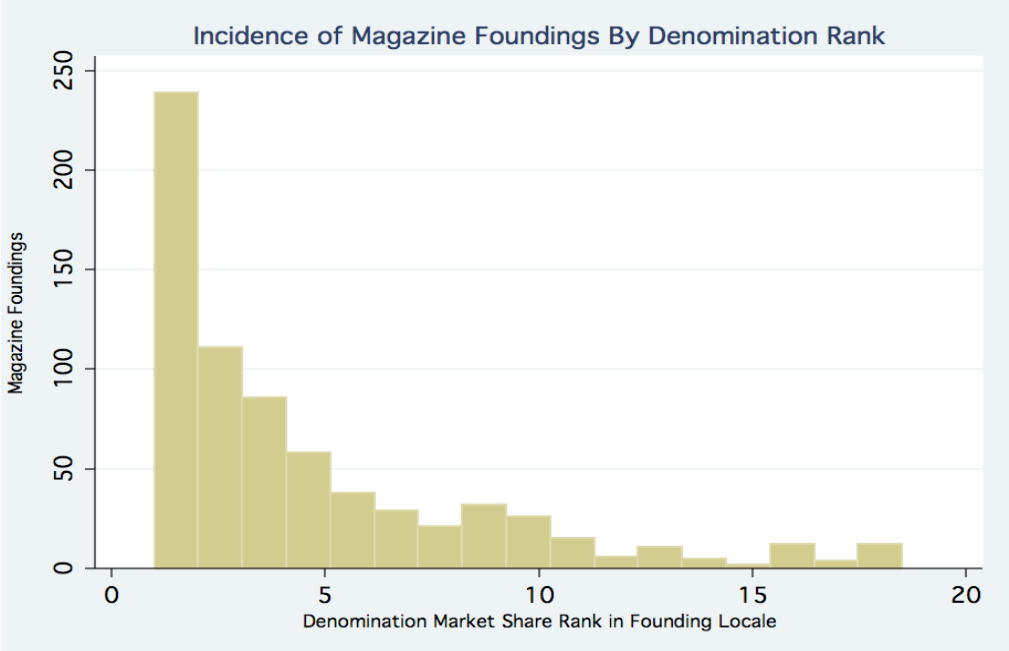


Figure 2:
Denominational Market Share in States where Magazines Were Founded, Relative to the Denomination's Maximum Share across All States

