Exporting Christianity:

Governance and Doctrine in the Globalization of Protestant Denominations

Gordon H. Hanson
UC San Diego and NBER

Chong Xiang
Purdue University and NBER

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Abstract. In this paper, we use data from the World Christian Database to examine the factors that affect the expansion of Protestant denominations internationally. Most of the denominations are headquartered in the United States or the United Kingdom. Denominations are more likely to enter countries that are larger, richer, English speaking, formerly colonized by Britain, or closer to their headquarters operations. Controlling for country characteristics, stricter denominations are more likely to be present in a country than less strict ones. Greater public spending on social welfare makes Protestant denominations less likely to be present in a country, with the negative impact being larger for stricter denominations. These results support Iannaccone's (1992) theory that strictness in religious doctrine enhances the capacity of a group to provide collective goods and services for its members. We build a model of competition between denominations based on incomplete contracts and the delegation of authority. Preliminary empirical results support the theory, in that more decentralized denominations, in which pastors have more authority over church operations, are more likely to be present in countries in which the marginal product of pastor effort appears to be higher.

1. Introduction

In non-western countries, the practice of Christianity has long been dominated by the historical church or churches associated with current or former colonial powers. As recently as 1970, the Catholic, Eastern Orthodox, and Anglican Churches together accounted for 85% of affiliated Christians outside of Western Europe and North America (Barrett, Kurian, and Johnson, 2001).[1] The era of dominance by the traditional church, however, appears to be ending. Concomitant with the globalization of markets for goods and services, alternative forms of Christian worship are spreading internationally (Brouwer, Gifford, and Rose, 1996).

Leading the charge are not established Protestant denominations, most of which were created during the two hundred years following the Reformation, but newer movements associated with strict religious doctrine, including Pentecostals, charismatics, Mormons, and Jehovah's Witnesses, all of which originated in the United States during the last century and a half.[2] In Latin America, where over 80% of the region still identifies as Catholic, the share of the population affiliated with nontraditional churches grew from 8% in 1970 to 18% in 2005.[3] Over the same period in Sub-Saharan Africa, where over 30% of the population is Catholic, Orthodox, or Anglican, the share of the population affiliated with nontraditional churches grew from 18% to 30%. Even in Asia, where Christianity has never been strong, the population share associated with nontraditional churches increased from 2% to 7%. On their own, Pentecostal and related churches claimed 295 million members in 2005, accounting for 14% of all Christians, up from 4% in 1970. Yet, the success of new forms of Christianity is not universal. Nontraditional churches have a small presence in Eastern Europe and Russia, a continuing absence in the

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[1] The shares for individual religions were 63.6% for the Catholic Church, 19.6% for the Orthodox Church, and 2.1% for the Anglican Church.

[2] The success of newer religious groups in capturing market share from more established denominations is a familiar pattern in the United States over the last two centuries (Finke and Stark, 2005).

[3] Data are from http://www.worldchristiandatabase.org.

Middle East and North Africa, and a declining market share in Western Europe.

While the recent globalization of Christianity has attracted intense academic interest from other social sciences (Robbins, 2004), it has received less attention from economists. This is surprising given that the spread of Christianity has occurred through international trade in services that is largely market mediated. Freer international trade in religion affects economic development by challenging national religious elites and their political allies (Freston, 2001), injecting new ideas and organizational strategies into countries (Robbins, 2004), and altering the provision of social services (Clarke, 2006). What explains the success of new forms of Christian worship in markets long controlled by the traditional church? Are there identifiable features of denominations that account for their capacity to attract adherents internationally? Are standard tools of economic analysis suitable for answering these questions?

In this paper, we examine the factors that determine the presence of Protestant and nontraditional Christian denominations across national markets. We treat denominations akin to multinational enterprises, which choose which markets to enter based on the combined objectives of attracting members and generating revenues.[4] We focus on three attributes of a denomination that affect its membership. One is its overall attractiveness to believers, which we treat as a fixed characteristic similar to the productivity of a firm. A second is organizational structure. Some denominations, such as Lutherans and Methodists, are centralized, placing authority over pastors and church doctrine in the hands of national or international bodies (Chaves, 1993a). Others, such as Baptists and Assemblies of God, are decentralized, with individual congregations controlling the hiring and firing of pastors, religious practices, and ownership of local assets. We use an organizational model based on incomplete contracts (Grossman and Hart, 1986; Hart and Moore, 1990) and the delegation of authority (Aghion and

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[4] See Goff and Trawick (2008) on location decisions and competition among Christian churches across US counties.

Tirole, 1997) to show how the degree of centralization interacts with local market conditions to affect a denomination's performance and then test these predictions empirically. A third attribute of a denomination is its religious doctrine. Iannaccone (1994) suggests that stricter religious groups are more efficient at organizing the collective production of worship services, social activities, and other quasi-public goods. We examine empirically whether the value consumers place on strictness depends on a country's capacity to provide public goods. Data for the analysis are from the World Christian Database, which records the number of affiliated Christians by denomination and country in 1970 and 2005.

Our work brings together three bodies of literature. The first is cross-country analysis of religious behavior. Barro and McCleary (2005) identify the factors that determine which countries have state religions, finding that the likelihood of a religious monopoly is increasing the share of the population that adheres to a single religion, consistent with a Hotelling spatial competition model. In related work, McCleary and Barro (2006) find that the fraction of the population that participates in religious activities is decreasing in per capita income and government regulation of religion and is higher in countries with a state religion. Barro and Hwang (2007) relate rates of conversion to major religions in a country to religious pluralism, absence of state controls on religion, and having a more educated populace. We extend the literature by examining competition among many religious groups, which allows us to estimate the market value associated with different denominational characteristics.

In modeling competition between denominations, we borrow from recent work on organizations in international trade. In our framework, each denomination decides which national markets to enter, based on local market conditions and its own productivity, organizational structure, and religious doctrine. The broad features of a denomination's

organization and doctrine tend to change slowly over time and to be common across the locations in which it is active (Melton, 1989; Chaves, 1993b).[5] Entry into a market is subject to a fixed cost, associated with creating a national ministry, which similar to Melitz (2003) keeps low productivity denominations from entering small countries or countries subject to high entry barriers. To reach adherents in a market, a denomination must attract local pastors to manage individual congregations. Following Antràs (2003) and Antràs and Helpman (2006), we assume that transactions between a pastor (the local manager) and a denomination (the headquarters) are subject to incomplete contracts. Following Aghion and Tirole (1997), we model how the allocation of authority affects the pastor's incentives. In denominations with a decentralized structure, the pastor has greater authority, which increases his incentives to invest in building the congregation; in denominations with a centralized structure, the denominational headquarters has greater authority, which gives it more control over how congregations operate. The model predicts that in environments where the pastor's effort strongly affects the success of a congregation, decentralized denominations tend to have higher market share, while in markets where the denomination's attributes weigh heavily in the congregation's success centralized denominations will tend to capture higher market share. We test these predictions using detailed data on the organizational structure and doctrinal features of denominational families.

Protestant Christian denominations differentiate themselves according to their religious doctrine and the nature of their religious services. While all share a belief in Jesus Christ, they vary in how they translate belief into practice. Stricter denominations emphasize having a personal conversion experience, the inerrancy of the Christian Bible, the imminence of Christ's second coming, the damnation of non-believers, maintaining a high standard of moral behavior,

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[5] See Chaves and Sutton (2004) on the consolidation of US denominations in the 19th and 20th centuries. See Chaves (1993b) on the shift in power from religious authorities to administrative authorities in US denominations over the course of the 20th century, which relates to the tendency for religious groups to secularize over time.

active participation in church services, and seeking to convert others to the faith, all of which impose time costs and social constraints on an individual's lifestyle and complicate interacting not just with non-Christians but with Christians outside of the denomination. Pentecostal and charismatic denominations, in addition, make ecstatic religious practice, including speaking in tongues, an essential feature of worship, which creates further separation from outsiders. Following the logic of Iannaccone (1992), strictness raises the cost to join a congregation and allows members to signal their commitment to the group, which helps denominations overcome free riding in providing services.[6] Many of the services churches offer, including religious instruction, activities for children, and care for members who have fallen on hard times, are club goods, whose provision may be enhanced by strictness. Club goods often compete with social programs run by the government (Hungerman, 2005; Gruber and Hungerman, 2007). We examine whether demand for strictness in religious doctrine is stronger in countries where governments are weak or provision of social insurance is limited. We apply insights from the political economy literature, which suggest that ethnic diversity complicates the provision of public goods (Alesina and La Ferrara, 2005) and is thus an indicator of the demand for strictness.

In section 2, we discuss data on Christian denominations regarding their presence in national markets, religious doctrine and organizational structure. In section 3, we present a model of location choice by Christian denominations. In section 4, we show empirical results from estimating the model. And in section 5, we offer concluding remarks.

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[6] See Berman (2000) for an application of these ideas to ultra-orthodox Jews in Israel.

2. Data and Empirical Setting

2.1 Protestant, Independent and Marginal Christians

The main data for the empirical analysis come from the World Christian Database (WCD). The WCD tracks religious affiliation for major religions and individual Christian denominations in 215 countries, providing numbers of affiliated members and numbers of congregations in 1970 and 2005. Each Christian denomination is identified by its name, tradition (e.g., Baptist, Keswick-Pentecostal, Reformed-Presbyterian), and Christian megabloc. The megablocs include Roman Catholics, Eastern Orthodox, and Anglicans, which constitute the historic or traditional church; Protestants, which constitute most organized Protestant denominations; Independents, which includes churches that have split from Protestant denominations or that are unaffiliated with international church bodies; and Marginals, which are groups outside of the Christian mainstream, the largest of which are the Church of Jesus Christ of Latter Day Saints (Mormons) and Jehovah's Witnesses.[7] Because in many countries Catholic, Orthodox, and Anglican churches were established directly or indirectly by the state (Ekelund, Herbert, and Tollison, 2006), we leave them out of the empirical analysis of location decisions by denominations and focus solely on Protestant, Independent and Marginal groups.[8]

The data show that nontraditional denominations account for most of the recent global growth of Christian churches. Table 1 gives the share of affiliated Christians in the global population by megabloc and the share of each megabloc in the total population of affiliated Christians. The share of affiliated Christians in the worldwide population has remained stable, rising only slightly from 29.1% in 1970 to 30.1% in 2005. However, this stability masks

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[7] Of the 32 million Christians affiliated with Marginal churches in 2005, 40% belonged to the Mormons and 46% to the Jehovah's Witnesses. Other Marginals include the Christian Scientists (3%) and the Unification Church (2%).
[8] We further exclude a handful of Protestant and Independent denominations that were created by schisms from Catholic, Orthodox or Anglican churches but have continued to be closely associated with them through their doctrine and religious practice. The global membership in these schismatic churches is small.

considerable churning within the religious marketplace. The share of the world population associated with Protestant, Independent, and Marginal denominations rose from 8.5% to 12.4% over the period, while the population share for Catholics, Orthodox, and Anglicans fell from 23.2% to 22.1%. In 2005, Protestants, Independents, and Marginals accounted for 40.8% of all affiliated Christians, up from 29.3% in 1970. The entries with negative values for doubly affiliated Christians account for the fact that in some countries Christians are affiliated with more than one church, typically belonging to the Catholic Church and a nontraditional group.[9]

The growth in market shares for Protestants, Independents, and Marginals has come almost entirely outside of Western Europe and North America. Table 2 provides a breakdown of the population share for megablocs by geographic region. The share of the population affiliated with the Catholic, Orthodox, or Anglican churches, which historically has been highest in Europe and Latin America, grew in only three of the seven regions. Growth in the traditional church was strongest in Eastern Europe and the Former Soviet Union, due to the resurgence of Orthodoxy following the fall of communism. For Protestants, Independents, and Marginals, which historically have been strongest in North America, population shares grew in every region, except North America and Western Europe. Excluding Protestants, Independents and Marginals saw their population share grow in every region of the world, highlighting the importance of new forms of worship in the global expansion of Christianity.

2.2 Denominational Families

In the raw WCD data, there are over 6,300 denominations with distinct names. However, these denominations represent a far smaller number of denominational families, which have

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[9] Most doubly affiliated Christians are in Latin America, North America, or Africa. Negative values for disaffiliated Christians indicate church members but who have left the Christian faith, nearly all of whom are in Western Europe.

similar organizational structures and religious doctrines and typically belong to a common international body of some kind (e.g., Baptist World Alliance, Jehovah's Witnesses, International Church of the Foursquare Gospel, Lutheran World Federation, Mennonite World Conference, World Alliance of Reformed Churches, World Assemblies of God Fellowship, World Methodist Council, General Council of Seventh-Day Adventists). To construct aggregates of denominational families, we translate denomination names into English, drop country identifiers from the denomination name, reconcile minor differences in denomination names across countries, and manually cross-check our designation for each denomination with additional information from the WCD website.[10] For a few countries in the sample, our procedure fails because the WCD does not record data on individual denominations and instead groups most of them into an aggregate category designated "union of bodies of different traditions." We drop a country from the sample if more than 20% of affiliated Christians fall into this category. The excluded countries include 6 large nations (Australia, Canada, China, Congo, Germany, and Pakistan) and 10 small ones.[11] In 2005, the excluded countries represented 13% of all affiliated Christians enumerated in the WCD. Further, some denominations have unclassifiable names or belong to unclassifiable traditions (e.g., grassroots churches, monoethnic churches, radio/TV believers, cell-based networks, healing networks, hidden believers in Christ). We also exclude these denominations and traditions, which in 2005 accounted for less than 2% of affiliated Christians worldwide. The resulting sample has 152 denominational families.

Appendix A lists denominational families by megabloc, ranked by membership in 2005. There is enormous variation in denomination size. Among Protestants, Baptists, a mainline

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[10] For instance, Assemblies of God, a major Pentecostal denomination, also appears in the data as Assemblées de Dieu (French), Assemblee di Dio (Italian), Assembléias de Deus (Portuguese), and Asambleas de Dios (Spanish). The English entries appear as Assemblies of God of Fiji, Assemblies of God in Ghana, etc.

[11] The small excluded countries are Bahrain, the Cayman Islands, Liechtenstein, Madagascar, the Maldives, the Marshall Islands, Micronesia, Norfolk Island, Papua New Guinea, and Zambia.

denomination, and the Assemblies of God, a Pentecostal denomination, are the largest, with 51 million and 46 million members, respectively. Baptists are also the largest group among Independent Christians, with 21 million members. The Mormons and Jehovah's Witnesses are the largest Marginal denominations, with 13 million and 12 million members, respectively. Each of these groups is present in over 130 countries. At the other end of the distribution are many small denominations with a few thousand members and presence in only a handful of countries. Figure 1 plots log rank of each denomination in terms of its global membership against its log number of affiliated Christians. The curvature in the relationship is distinct from the log linearity found in the firm size distribution for many manufacturing industries, which tend to exhibit a power law (Gabaix, 2009). For denominations, size increases by more than proportion to rank, indicating the global dominance of the biggest groups. Of the largest 25 denominations, 11 are mainline Protestant, six are Pentecostal or charismatic, and two are Marginals.

Protestant, Independent, and Marginal denominations have emerged from distinct religious traditions. Mainline Protestant denominations include movements brought from Europe to the United States in the 17th and 18th centuries that ultimately established a major US presence. The largest of these are the Baptists, Congregationalists, Episcopalians, Disciples of Christ, Lutherans, Methodists, and Presbyterians.[12] Mainline denominations exhibit varying degrees of internal heterogeneity in religious practice. The vast majority of mainline Methodist denominations belong to the World Methodist Council, making it a relatively homogeneous group theologically. Earlier in its history, conservative Methodists split off from other Methodists as part of the Holiness Movement, which emphasizes the doctrine of sanctification (in which believers cleanse themselves of sin), and many African-Americans split to form the

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[12] Smaller mainline denominations include the Quakers, Moravians, and Reformed Church. Episcopalians, another mainline group, are excluded from the sample given their global association with the Anglican Church.

African Methodist Episcopalian church. Congregationalists, as their name implies, have autonomous congregations which lack ties to overarching governing bodies. Congregations in the Disciples of Christ also are self-governing. Baptists, Lutherans, and Presbyterians, over their histories, have split into sub-denominations some of which are more conservative theologically and associated with evangelical or fundamentalist Christianity (e.g., the Southern Baptist Convention, the Lutheran Church-Missouri Synod, the Presbyterian Church in America) and others of which are more liberal theologically, implying openness to ecumenism and modern ideas toward religion (e.g., American Baptist Churches, the Evangelical Lutheran Church, the Presbyterian Church (USA)) (Melton, 1989). In our sample, mainline denominations have 210 million members globally, or 40.1% of the total (excluding the United States the share is 35.2%).

Pentecostals, and related denominations, are the second largest group of Protestants and Independents. Within the sample, Pentecostals and charismatics account for 184 million members, or 35.2% of all Protestants, Independents, and Marginals (37.8% when excluding the United States). The movement, which began in the United States in the early 1900s, maintains a strict Christian doctrine and espouses a belief that speaking in tongues is evidence that one has been baptized spiritually. Speaking in tongues, and other ecstatic practices including healing and prophesying, are essential features of Pentecostal worship services, which make them distinct liturgically from other Protestant groups (Robbins, 2004). In terms of doctrine, Pentecostals resemble fundamentalist Christian groups, which are also conservative theologically. For the last 100 years there has been an active debate within Christianity over whether to endorse glossolalia. Groups that reject the practice often do so strongly (Melton, 1989). The 10 largest Pentecostal denominations account for 52.0% of all Pentecostal adherents, with another 39.3% of Pentecostals belonging to independent regional churches unrelated to international bodies. The

charismatic movement, which emerged in the United States in the 1960s, is composed of

individuals from mainline Protestant denominations who have embraced speaking in tongues.[13]

Other notable traditions within the Christian mainstream (and their share of the sample)

include fundamentalist churches and evangelical churches outside mainline denominations

(3.4%), the Seventh Day Adventists (3.3%), and the Holiness Movement of conservative

Methodists (2.0%). All are conservative theologically. Evangelical and fundamentalist

Christians reject flexible interpretations of the Bible or the life of Christ, which led to their

earlier separation from mainline Protestantism. The Holiness Movement, with its emphasis on

sanctification, requires an ascetic lifestyle. Adventists, in addition to a strict doctrine, maintain a

vegetarian diet and observe the Sabbath on Saturday, rather than Sunday. The two important

Marginal groups, the Jehovah's Witnesses (2.5%) and Mormons, (2.4%), strongly emphasize

evangelism, which has led to their having a global presence. Because each also recognizes

religious teachings other than the Bible, many Christian groups see them as deviating from core

Christian principles. In addition to their distinct theology, Mormons maintain a strict dietary

regimen, rigid guidelines on charitable giving, and a requirement that young men provide two

years of missionary service. Jehovah's Witnesses have an elaborate theology surrounding the

end of the world and obligates members to go door-to-door seeking to convert non-believers.

The final set of important denominational families consists of independent regional churches that

do not have ties to international church bodies, most of which are in Africa (Meyer, 2004). This

group accounts for 8.1% of the sample.[14] Some of the churches that fall into this category are

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[13] The neocharismatic movement, which emerged in the United States in the 1970s, is similar to charismatics in terms of practice but emerged from independent churches unaffiliated with either mainline Protestants.

[14] This group includes denominations in the Apostolic, Full Gospel, Spiritual, World Faith/Prosperity, and Zionist traditions, as well as grassroots churches and house church networks.

hard to classify, causing us to exclude them from the final sample used for estimation.[15]

2.3 Denominational Doctrine and Governance

In the production of religious services, the church is the equivalent of the factory, the pastor is the factory manager, and, given that worship is a collective activity, congregants are both workers and consumers (Iannaccone, 1998). The role of the denomination is to provide the intellectual property used in production, which includes religious doctrine and a system of governance (Chaves, 1993a). Denominations range in form from loose membership associations to rigidly hierarchical bodies. We code denominations according to the strictness of their doctrine and the nature of their organizational structure, using information from Melton (1989), Barrett, Kurian, and Johnson (2001), the World Christian Database, and denomination websites.

Congregations that belong to a denomination typically share a defined religious doctrine. The doctrine is the system of belief that is in part what attracts potential adherents to church. Christianity is organized around the life and teachings of Jesus Christ as contained in the New Testament of the Christian Bible, in which Christ is portrayed as the Son of God who offers salvation to all who believe in him. There is considerable variation across denominations in terms of what being a Christian means for one's religious practice. Strict religious doctrine includes some or all of the following beliefs: (a) the Bible is the literal word of God and therefore infallible, (b) to become a Christian one must consciously repent one's sins and accept Christ as lord and savior (be "born again"), (c) one should actively try to convert others to Christianity, (d) Christ will return to earth soon and believers should prepare for his second coming, (e) those who have not converted are damned to a life in hell, and (f) one should dress

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[15] Non-denominational groups account for 1.4% of the sample. The remaining groups of denominational families, each of which accounts for less than 0.5% of affiliated Christians, include the Salvation Army, Mennonites, Christian Scientists, Children of God, Unification Church, Unitarian Universalists, African Independent Deliverance, Swedenborgians, Christadelphians, British-Israelites, Waldensians, and White-led Signs and Wonders.

modestly, avoid smoking or drinking (in excess or in any quantity), keep all sexual activity within marriage, and shun any social or cultural activities that contradict these mores. Our measure of strictness adapts the quantitative measures used by Hoge (1979), Iannaccone (1998), and Ekelund, Herbert, and Tollison (2006).

Appendix B lists the questions we have used to code denomination doctrine. These include elements (a)-(f) above, as well as other components of doctrine that characterize liturgical practice (e.g., Holy Communion), openness to secular teachings, degree of ecumenism, and use of religious texts in addition to the Bible. We construct a base strictness measure according to the fraction of beliefs (a)-(f) that a denomination endorses. We also construct an expanded strictness measure that includes (g) belief in sanctification and (h) emphasis on speaking in tongues or other ecstatic practices. Sanctification, which is espoused by the Holiness Movement, is step beyond the conversion experience in which one is literally purified from past sin (which carries the burden of not sinning again). While elements (a)-(f) are characteristic of denominations that are conservative theologically, many of which emerged out of US evangelical and fundamentalist Christian movements in the 19th century (Melton, 1989), (g) and (h) are more controversial. We include them in an expanded measure of strictness because they impose additional constraints on an individual's lifestyle and social relationships.

In terms of organization, belonging to a denomination means a congregation agrees to govern itself according to a pre-specified structure. There is wide variation in the degree of centralization among denominational governance systems. In the most decentralized denominations, the congregation retains control over the hiring and firing of pastors, religious doctrine, and ownership of church property. The denomination, through national or international bodies, operates at arms' length. It provides congregations with a wide range of services,

including identifying pastoral candidates, providing non-binding guidance on theology, publishing educational material for use in services, training to pastors and lay leaders, extending loans for church construction or expansion, organizing regional or national crusades to reach new converts, and raising funds to support global operations (Chaves, 1993b). In return for these services, congregations pay fees to the denomination.[16] Local churches, in effect, use the denomination as a consulting service. Decentralized denominations include mainline Protestants (Baptists, Congregationalists, Disciples of Christ, Quakers), the Holiness Movement (Church of God (Anderson)), Pentecostals (Pentecostal Church of God, United Pentecostal Church), and Marginals (Unitarian Universalists, Christadelphians).

In centralized denominations, authority resides not in the congregation but higher up in the denominational hierarchy. Denominational bodies above the congregation screen applicants to the ministry, assign pastors to churches, discipline pastors, set religious doctrine for member churches, and control the disposition of church property. The denomination, in effect, has the power to license its brand – including the denomination name, religious doctrine, and government structure – to individual congregations and decide who will manage each congregation. The form of centralized governance structures comes in several varieties. In an episcopal or connectional structure, power resides in the bishopric. The chief authority over congregations within a region is a bishop, who ordains pastors, assigns pastors to churches, adjudicates disputes, and performs various administrative duties. A general council of bishops controls church doctrine. Episcopal denominations include mainline Protestants (Methodists, some Lutherans, Moravians), Pentecostals (International Church of the Foursquare Gospel, Pentecostal Assemblies), Holiness-Pentecostals (Church of God (Cleveland), Church of God of

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[16] In the US, congregations on average keep 79% of the revenues they generate, a share that has remained stable over time (Chaves, 1998).

Prophecy), and Marginals (Mormons, Unification Church).

Somewhat less hierarchical is the presbyterian structure. Power resides in a regional governing body known as the presbytery, which consists of a pastor and an elder from each congregation, as well as other church leaders. The presbytery ordains, installs, and removes pastors; establishes and dissolves congregations; and owns church property. Above the presbytery is a general assembly, which resolves disputes at the presbytery level and settles issues of religious doctrine. Denominational families with a presbyterian structure include mainline Protestants (Presbyterian Church, Reformed Church), Seventh Day Adventists, the Holiness Movement (Christian and Missionary Alliance, Church of the Nazarene, Wesleyan Church), and Pentecostals (Pentecostal Holiness Church).

We characterize the degree of centralization within a denomination along three dimensions: (i) how many levels of the global organization have authority over the congregation on matters of religious doctrine, (ii) whether pastors are appointed by an entity other than the congregation, and (iii) whether the congregation owns church property. We have also collected other information on denominational structure, as listed in Appendix B, including whether pastors need an educational degree to be ordained, whether women can be ordained as pastors, and whether the denomination operations hospitals, colleges, or schools.

It should be clear that there is not an isomorphic relationship between strictness of religious doctrine and the degree of centralization. Some strict denominations have a decentralized structure (United Pentecostal Church) and some have a centralized structure (International church of the Foursquare Gospel). Similarly, some more liberal denominations are decentralized (Quakers), while others are more centralized (Presbyterians). The governance structure of a denomination thus does not follow directly from its religious doctrine. Instead, it

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appears to be an outcome of the denomination's historical origins (Melton, 1989).

2.4 Global Expansion by Denominations

Denominations typically create and maintain a presence in a country through supporting missionaries, organizing a crusade (mass revival meetings), or some other form of global ministry (Brouwer, Gifford, and Rose, 1996). Once it has established itself in a national market, it may grow either by attracting additional members to existing congregations or by adding congregations. Figure 1 shows a plot of the log number of affiliated Christians against the log number of congregations, where each data point represents the worldwide total for a denomination. The strongly linear relationship between affiliated Christians and congregations suggests that global expansion by a denomination occurs more on the extensive margin (adding congregations) than on the intensive margin (adding members to existing congregations). For the later theoretical analysis, it appears that creating and managing congregations is important for determining the overall size of a denomination. If a denomination wishes to expand in a country, it will have to attract additional pastors to run new congregations.

To examine the intensive and extensive margins more formally, we follow Eaton, Kortum and Kramarz (2004) and use the identity, , $N_{dc} \times (M_{dc}/N_{dc}) \equiv M_c \times (M_{dc}/M_c)$, where N_{dc} is the number of congregations for denomination d in country c, M_{dc} is the number of affiliated Christians for denomination d in country c, and M_c is the total number of Christians in country c. We then estimate the following two regressions (with robust t statistics in parentheses):

$$ln\ N_{dc} = \underset{(0.005)}{0.851}\ ln\ M_c + \underset{(0.006)}{0.798}\ ln\ M_{dc}/M_c$$

$$ln\ M_{dc}/N_{dc} = \underset{(0.005)}{0.149}\ ln\ M_c + \underset{(0.006)}{0.202}\ ln\ M_{dc}/M_c$$

where the sample includes Protestant, Independent, and Marginal denominations in sample

countries, for which we have 4,077 observations. By the logic of least squares, across the two

regressions the constant and error terms sum to zero and the coefficients on each variable sum to

one. The magnitude of the coefficients indicates how aggregate variation in market size affects

the number of congregations (the extensive margin) and affiliated Christians per congregation

(the intensive margin). In response to a 10% increase in total market size in a country (M_c), the

number of congregations increases by 8.5% and members per congregation by 1.5%; similarly,

in response to a 10% increase in market share for a denomination in a country (M_{dc}/M_c), the

number of congregations increases by 8.0% and members per congregation by 2.0%. This is

further evidence most adjustment in the size of denominations occurs at the extensive margin,

though adding congregations. Results are similar when we examine Protestant, Independent, and

Marginal blocs separately. Because adding congregations is the primary means through which

denominations expand in a market, attracting pastors is one of their fundamental tasks.

3. Theory

In every country k, there are many local markets for religion, indexed by m. These

markets are in distinct geographical locations. In local market m, a total number of O_k^m

Christians choose from Protestant denominations (which we model below) and traditional

Christian groups (Catholics, Orthodox, and Anglicans), which we leave in the background.

Let U_{ijk}^m be the utility that person i in country k derives from participating in Protestant

denomination j in local market m, which is given by

$$U_{ijk}^m = \alpha_0 e_{jk}^m - \beta p_{jk}^m + M_{jk} + \varepsilon_{ijk}^m, \ M_{jk} = \alpha_j + \delta y_j z_k - \beta t_{jk} \tag{1}$$

In equation (1), e is the effort level by the pastor to serve members and $\alpha_0 > 0$ captures the

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marginal impact of pastor effort on demand. The value of α_0 will vary across markets according to the ability of pastors to reach additional congregants, which in the empirical we assume is related to the quality of communications and transportation infrastructure in a country. p is the price that consumers pay to participate in the denomination (assumed constant across congregations). When p is high, participation requires more resources from consumers (e.g., spent at the church, volunteer work, donations). $\beta > 0$ measures the elasticity of demand. If β is high, demand is elastic. Other values are as follows: M_{jk} is the denomination input into demand, α_j is a denomination fixed effect, t is a trade cost, y captures relevant denomination attributes (doctrine, strictness, provision of social services), z captures country characteristics that condition the value of denomination attributes (presence of state religion, public provision of social services). Finally, ε is an iid extreme value error term. We model trade costs as,

$$t_{jk} = \tau_k + d_{jk} + \eta_{jk}, \tag{2}$$

where τ captures variable trade costs common to all denominations in country k, d captures trade costs in k specific to denomination j (e.g., distance to denomination headquarters), and η is an iid random cost (which allows the ranking of denominations across countries to differ).

Applying results from Anderson, de Palma and Thisse (1992) and Feenstra (2004), we show that the total number of individuals who participate in denomination j is

$$X_{jk}^m = \mu_{jk}^m O_k^m, \; \mu_{jk}^m = exp(q_{jk}^m - \beta p_{jk}^m + M_{jk})/P_k^m, \; P_k^m = \Sigma_j exp(q_{jk}^m - \beta p_{jk}^m + M_{jk}),$$
$$\tag{3}$$

where μ is the market share of denomination j in local market m and P_k^m measures the competitiveness of local market m. By (3), it is straightforward to show that

$$\frac{\partial X_{jk}^m}{\partial p_{jk}^m} = -\beta X_{jk}^m, \; \frac{\partial X_{jk}^m}{\partial e_{jk}^m} = \alpha_0 X_{jk}^m \tag{4}$$

The denomination incurs fixed cost f_k to enter country k. In addition, entry into local market m requires a fixed cost of f_c for establishing a congregation. There is also a variable cost g_k for serving each member of the congregation. Each congregation is staffed by a pastor, who incurs the disutility $c(e)$ for each member in his congregation if his effort level equals e, where we drop subscripts. We assume that

$$c(e) = \frac{h}{2}e^2 ,\qquad\qquad\qquad\qquad (5)$$

where $h > 0$ measures the cost of pastor effort. Results are similar if $c(e)$ is convex and $c(0) = 0$.

The pastor values both the congregation membership, with weight γ, and the monetary income from serving the congregation. Likewise, a denomination values the number of believers it attracts, as well as the monetary income associated with the enterprise in a given country. Let θ be the weight the denomination places on the number of believers. We treat these weights as common across denominations and countries.

We classify the organizational structure of Protestant denominations into de-centralized (D) and centralized (C) forms. Under the D structure, the pastor has more autonomy in running the church than under the C structure. Churches tend to be owned by the local congregation under the D structure, while they are typically owned by the denomination (or an entity between the denomination and the local congregation, such as a presbytery) under the C structure. For ease of exposition, we first focus on authority and then add ownership into the analysis.

3.1 Pure Authority

3.1.1 De-centralized (D) Structure

Due to incomplete contracts, the denomination and the pastor bargain over the joint monetary surplus in local market m, which is $X_{jk}^m(p_{jk}^m - g_k)$. To focus on authority, we assume

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that both parties' outside options are 0 and each party gets half the surplus. In addition,

<u>Assumption 1.</u> Should bargaining fail neither price nor effort can be changed.

In other words, we interpret effort as investment in establishing personal relationships with church members and price as promise made to church members about participation cost.

The pastor receives utility $X_{jk}^m \gamma + \frac{1}{2} X_{jk}^m (p_{jk}^m - g_k) - f_c - X_{jk}^m c(e_{jk}^m)$. The first order condition for effort is

$$c'(e) = he = \alpha_0 [\gamma + \frac{1}{2} (p_{jk}^m - g_k) - c(e)], \qquad (6)$$

where we use (5). Equation (6) says that a higher price provides the pastor with stronger incentives to exert effort. Likewise, the pastor has strong incentives when his effort has large impact on demand (α_0 is high) or when effort cost, h, is low.

Under the D structure, price-setting authority rests with the pastor. The first-order condition for price is then

$$p^D = \frac{1}{\beta} + g + 2[c(e^D) - \gamma]. \qquad (7)$$

Equation (7) says that an incremental increase in effort cost, c(e), leads to a more than one-for-one increase in price. This is due to the hold-up problem under incomplete contracts. The pastor is not fully compensated for his effort since he only captures half of the monetary surplus. To alleviate the hold-up problem, he over-compensates his effort in pricing.[17] The other terms in equation (7) say that price is high if variable cost, g, is high, or if demand is inelastic (β is low).

Equations (6) and (7) imply that

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[17] In the first-best case, where the joint surplus is maximized, $p = g + 1/\beta + c(e) - \gamma - \theta$.

$$e^D = \frac{\alpha_0}{2\beta h}. \tag{8}$$

Equation (8) says that effort remains lower than under first best (in which the effort level is

$\frac{\alpha_0}{\beta h}$); that is, pricing in (7) only partially alleviates the hold-up problem. Equation (8) also says

that pastor effort is high when such effort has a large marginal contribution to demand (α_0 is

high) or when effort cost, h, is low. When demand is inelastic (β is low), the markup is high, and

the price is high (by (7)), which causes the effort level to be high.

The denomination is only active in the markets where pastor utility is non-negative.

Plugging (7) and (8) into pastor utility, the denomination enters local market m if and only if

$$X^D B \geq f_c, \text{ where } B = \frac{1}{2\beta} - \gamma \tag{9}$$

where X^D is given by equation (3) with price and effort level equal to p^D and e^D. Intuitively, the

denomination enters larger markets and markets with low entry costs and variable trade costs.

For sake of rigor, we rewrite the Christian population in local market m as $O_k{}^m = O_k s_m$, where s_m

is the "standard size" of local market m with cdf $G_k(.)$ and pdf $g_k(.)$ and O_k is a shifter reflecting

the total population of country k. It is then the case that $X^D = \mu^D O_k s_m$, where μ^D is given by

equation (3) with price p^D and effort e^D. To aggregate across local markets, we assume that:

Assumption 2. μ^D, the market share of denomination j, is invariant across the markets
where j is present.

Alternatively, one could specify the distribution of market competitiveness, $P_k{}^m$, across local

markets with a country, based on the regional distribution of traditional Christian groups.

Under Assumption 2, equation (9) implies the following threshold size for entry

$$\underline{s}_k^D = \frac{f_c}{BO_k\mu^D}, \; B = \frac{1}{2\beta} - \gamma \tag{10}$$

Equation (10) says that the denomination enters more markets the lower the fixed cost, the larger country k, or the higher the denomination's market share. In country k, the denomination has

$n_{jk}{}^D = \int_{\underline{s}_k^D}^{\infty} g(s_k^m)ds_k^m = 1 - G_k(\underline{s}_k^D)$ congregations and $X_{jk} = \mu^D O_k \int_{\underline{s}_k^D}^{\infty} s_k^m g(s_k^m)ds_k^m$ believers. If

> <u>Assumption 3.</u> The distribution $G_k(.)$ is Pareto with lower bound b and shape parameter a; i.e. $G_k(s) = 1 - (b/s)^a$.

we can show that

$$n_{jk}^D = b^a (\underline{s}_k^D)^{-a}$$

$$X_{jk}^D = \frac{ab^a (\underline{s}_k^D)^{-a+1}}{a-1}$$

$$\frac{X_{jk}^D}{n_{jk}^D} = \frac{f_c a}{B(a-1)}, \; B = \frac{1}{2\beta} - \gamma \tag{11}$$

Equation (11) says that the intensive margin, $X_{jk}{}^D/n_{jk}{}^D$, does not depend on market size or market share, and that all the adjustment of $X_{jk}{}^D$ is through the extensive margin, $n_{jk}{}^D$, consistent with the empirical findings in section 2. These predictions are typical of models with firm heterogeneity (Melitz, 2003). If the country is large, the number of believers is large in each congregation (by (3)), which tends to increase the intensive margin. However, the threshold for entry is low (by (10)) and the denomination establishes more churches, which tends to decrease the intensive margin. Under Assumption 3, these two effects exactly offset.

We can show that[18]

$$ln\mu_{jk}{}^D = \alpha_0 e^D - \beta p^D + a(lnO_k - lnP_k) + M_{jk} - lnP_k, \; M_{jk} = \alpha_j + \delta y_j z_k - \beta t_{jk}$$

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[18] P_k is invariant markets because price, effort level, and market share are all invariant across markets.

$$lnn_{jk}^D = a\ln\frac{Bb}{f_c} + a\ln O_k + a\ln\mu^D$$

$$lnX_{jk}^D = \ln\frac{ab^a}{(a-1)f_c^{a-1}} + (a-1)lnB + a\ln\mu^D + a\ln O_k \tag{12}$$

Finally, the denomination derives variable profits $X_{jk}^m(p_{jk}^m - g_k)/2$ from local market m

and total variable profit $\int_{s_k^D}^{\infty}\frac{1}{2}(p^D - g)X_{jk}^m dG(s_k^m) = \frac{1}{2}(p^D - g)X_{jk}^D$ from country k. Using the

expression for X_{jk}^D in equation (12), we show that denomination j enters country k if

$$ln[\frac{1}{2}(p^D - g)] + \ln\frac{ab^a}{(a-1)f_c^{a-1}} + (a-1)lnB + a\ln\mu^D + a\ln O_k \geq lnf_k. \tag{13}$$

3.1.2 Centralized (C) Structure

Under the C structure, price-setting authority rests with the denomination. The other

elements of the model are the same as under the D structure. To facilitate comparison between

the C and D structures, we hereafter assume that $\theta = \gamma$.

The denomination receives utility $\theta X_{jk}^m + X_{jk}^m(p_{jk}^m - g_k)/2 - f_c$ in local market m,[19] and

chooses the price

$$p^C = \frac{1}{\beta} + g - 2\theta. \tag{14}$$

Equation (14) says that price is lower under the C-structure than under the D-structure. This is

because the cost of pastor effort does not enter into the denomination's utility and so the

denomination does not take effort cost into account in pricing.

The first order condition for pastor effort is still equation (6), except that price is p^C.

Plugging (14) into (6) we obtain

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[19] We also choose to have the denomination bear the church fixed cost, f_c, to simplify the expressions for the entry threshold and total number of churches and believers. Who bears f_c has no effect on our first order conditions.

$$he^C = \frac{\alpha_0}{2\beta} - \frac{\alpha_0 h}{2}(e^C)^2, \ and \ e^C = \sqrt{\frac{1}{\alpha_0^2} + \frac{1}{\beta h}} - 1. \tag{15}$$

Equation (15) says that $e^C < e^D$: the effort level is lower under the C-structure than under the D-structure. Under the C structure, price-setting authority rests with the denomination, which ignores effort cost in pricing. For the pastor, lack of authority aggravates the hold-up problem, creating weak incentives for effort. McMillan and Price (2003) show that in denominations with the C structure, less than 40% congregants feel strongly that their pastor is a good match for the congregation; in denominations with the D-structure, the share is 60%.

The entry threshold, market share, and total number of congregations and believers are[20]

$$\underline{s}_k^C = \frac{f_c}{BO_k\mu^C}, \ B = \frac{1}{2\beta} - \theta$$

$$ln\mu_{jk}^C = \alpha_0\, e^C - \beta p^C + a(lnO_k - lnP_k) + M_{jk} - lnP_k, \ M_{jk} = \alpha_j + \delta y_j z_k - \beta t_{jk}$$

$$lnn_{jk}^C = a\ln\frac{Bb}{f_c} + alnO_k + aln\mu^C$$

$$lnX_{jk}^C = \ln\frac{ab^a}{(a-1)f_c^{a-1}} + (a-1)lnB + aln\mu^C + alnO_k$$

$$\frac{X_{jk}^C}{n_{jk}^C} = \frac{f_c a}{B(a-1)}. \tag{16}$$

The denomination derives variable profits $X_{jk}^m(p^C - g)/2 - f_c$ from local market m and

total variable profit $\int_{\underline{s}_k^C}^{\infty}[\frac{1}{2}(p^C - g)X_{jk}^m - f_c]dG(s_k^m) = [\frac{1}{2}(p^C - g) - \frac{B(a-1)}{ab^a}]X_{jk}^C$ from country

k. Using the expression for X_{jk}^C in equation (16) we show that denomination j enters country k if

$$ln[\frac{1}{2}(p^C - g) - \frac{B(a-1)}{ab^a}] + \ln\frac{ab^a}{(a-1)f_c^{a-1}} + (a-1)lnB + aln\mu^C + alnO_k \geq lnf_k \tag{17}$$

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[20] Note that we assume $\gamma = \theta$.

To compare market share and total numbers of congregation and believers under the C and D structures, we use equations (12) and (16) to show that

$$\ln\frac{\mu^D}{\mu^C} = \alpha_0(\frac{e^D}{2} - e^C) + (M^D - M^C),$$

$$\ln\frac{n^D}{n^C} = \ln\frac{X^D}{X^C} = a\ln\frac{\mu^D}{\mu^C}, \qquad (18)$$

Therefore,

<u>Proposition 1.</u> The de-centralized (D) structure has higher market share, more congregations and more believers than the centralized (C) structure if $M^D > M^C$ and $e^D > 2e^C$, where $e^D = \dfrac{\alpha_0}{2\beta h}$ and

$e^C = \sqrt{\dfrac{1}{\alpha_0^2} + \dfrac{1}{\beta h}} - 1$. $e^D > 2e^C$ is more likely if effort has a larger marginal contribution to demand (α_0 is high), effort is less costly (h is low), or demand is in-elastic (β is low).

The intuition is that under the C structure, both price and effort are lower than under the D structure. While low price tends to increase demand, low effort tends to decrease it. The effect of effort dominates only if the effort level is sufficiently high (the net effect is $\alpha_0 e - \beta p$).

We can use equations (13) and (17) to show that the D structure is more likely to enter if

$$\ln\frac{\frac{1}{2}(p^D - g)}{[\frac{1}{2}(p^C - g) - \frac{B(a-1)}{ab^a}]} + \ln\frac{\mu^D}{\mu^C} = \ln\frac{[\frac{1}{2\beta} - \gamma + \frac{h}{2}(e^D)^2]}{(\frac{1}{2\beta} - \theta)(1 - \frac{a-1}{ab^a})} + \ln\frac{\mu^D}{\mu^C} \geq 0, \qquad (19)$$

where $\ln\dfrac{\mu^D}{\mu^C}$ is given by equation (18). Since price is higher under the D structure,

<u>Proposition 2.</u> If $M^D > M^C$ and $e^D > 2e^C$, the D structure is more likely to enter country k, but if $M^D < M^C$ and $e^D < 2e^C$, the C structure is more likely to enter country k.

Our model has the same flavor as Aghion and Tirole (1997), despite the differences in

setting. The denomination (principal) and pastor (agent) disagree about what price to charge. When the denomination (pastor) has authority he chooses a price that maximizes his utility but is suboptimal for the other party's utility. The denomination's action and the pastor's action are substitutes in the sense that the pastor works harder when the denomination chooses inaction (i.e. does not set price). As a result, the denomination may be better off by delegating authority to the pastor, knowing that the pastor will not pick the price that the denomination prefers.

3.2 Authority and Ownership

In this sub-section we extend our analysis to incorporate ownership. We assume that ownership and authority rest with the same party; i.e. under the de-centralized (D) structure, the local congregation owns the church, but under the centralized (C) structure, the denomination owns the church. In our analysis, as in Grossman and Hart (1986), ownership affects the pastor's incentives by changing his outside option should bargaining fail.

Under the D structure, the denomination's outside option remains 0; should bargaining fail the denomination loses local market m in country k. The pastor, on the other hand, owns the church. Should bargaining fail he converts the church into an independent Protestant church, in which case the denomination input no longer affects demand and the pastor collects the fraction ϕd^D of the monetary surplus, where $d^D = 1/\exp(M_{jk}) < 1$ and $\phi < 1$. Following Antras and Helpman (2004), we interpret ϕ as the quality of legal institutions. ϕ is high, for example, if country k has good contract enforcement, strong legal system, and good protection of intellectual property rights. The denomination then gets the fraction $(1 - \phi d^D)/2$ of the monetary surplus in bargaining and the pastor gets the fraction $(1 + \phi d^D)/2$.

Under the C structure, the denomination owns the church. Should bargaining fail, pastor

effort no longer affects demand and the denomination collects $X_{0k}{}^m(p_{jk}{}^m - g_k)$, where $X_{0k}{}^m =$

$X_{jk}{}^m/\exp(\alpha_0 e_{jk}{}^m)$ and is independent of effort level e. The pastor, on the other hand, has outside

option 0. Let $d^C = 1/\exp(\alpha_0 e^C)$, where e^C is the pastor's optimal effort level under the C structure.

The denomination then gets the fraction $(1 + \phi d^C)/2$ of the monetary surplus in bargaining and

the pastor gets the fraction $(1 - \phi d^C)/2$.

In unreported results, we show that:

<u>Proposition 3.</u> Propositions 1 and 2 hold.

In other words, marginal productivity of pastor effort, α_0, effort cost, h, demand elasticity, β, and

denomination input, M, have the same effects as in sub-section 3.1.[21]

<u>Proposition 4.</u> When country k has a strong legal institution (ϕ is high), the de-centralized (D)
structure is less likely to enter country k than the centralized (C) structure; conditional upon
entry, however, the D structure tends to have a larger market share, more congregations and
more believers.

The intuition of Proposition 4 is as follows. When the legal institution is strong, the pastor's

outside option is good under the D structure. The denomination, however, gets a small share of

the monetary surplus and has a difficult time covering the fixed entry cost f_k. On the other hand,

once entry has occurred, the pastor has strong incentives under the D structure and exerts a lot of

efforts. Market share, membership and the number of congregations are then large.

5. Preliminary Empirical Results

In this section, we present empirical results on the model developed in section 3. We

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[21] When M^D is large, demand is high, but d^D is small and pastor incentives are weak. The effect through demand
dominates and so the D structure is more likely to enter and tends to have a larger membership.

focus initially on the entry conditions contained in equations (13) and (17), which describe the factors that affect whether a denomination will be present in a particular country. Also of interest are the predictions for the number of adherents in equations (12) and (16). Estimating the membership equations is difficult. Affecting the number of adherents in a country are unobserved denominational characteristics, as embodied in the "productivity" term, α_j, and unobserved country characteristics. We collect these unobserved factors in denominational and country fixed effects. Because many denominations choose to enter only a subset of countries, there are many zeros for adherents in the data. The model offers a way to deal with these zeros, as the entry equations in (13) and (17) predict which denominations will have a positive number of adherents in which markets. One could estimate a tobit for the number of adherents, using theory to specify the first-stage equation on entry. However, estimating the second stage tobit is complicated by an incidental parameters problem, in that with unobserved fixed effects maximum likelihood estimates of a tobit are likely to be inconsistent. To begin, we focus empirically on the entry conditions, which we estimate using a linear probability model. The entry conditions are sufficient to test the main predictions of the theory.

As a way of summarizing entry, we first present results on the country characteristics that affect entry, controlling for denomination fixed effects, and turn next to the denominational characteristics that affect entry, controlling for country fixed effects. These initial regressions are descriptive and useful for characterizing the types of markets that attract Protestant denominations and the denominational characteristics that make entry more likely. To test theory more formally, we focus on two predictions. One, which is based on Iannaccone (1992), is that demand for stricter denominations is likely to be stronger in countries where public provision of social services is weaker. We measure provision of social services using the share

of public spending on education and health in GDP, the share of spending on social welfare in GDP, and the extent of ethnic fractionalization in a country. A second prediction, which derives from the incompleteness of contracts in our model, is that decentralized denominations are likely to do better in countries where the marginal product of pastoral effort is higher (since giving pastors higher powered incentives in more important in such markets). We measure the marginal productivity of pastoral effort using population density and the availability of communications and transportation infrastructure in a country.

4.1 Descriptive Results on Entry

For the full sample, there are 143 denominations and 161 countries.[22] We exclude the United States and the United Kingdom, as they are the home country for most denominations in the sample,[23] where we define the home country as the site of the international headquarters for the denomination's highest body. Every country in the sample has at least two Protestant, Independent or Marginal denominations. India has the most denominations present, with 60, South Africa is second with 58, the Philippines is third with 53, and Nigeria is fourth with 50. Most denominations are present in a handful of markets, with only 13.3% of sample observations showing entry has occurred. When we restrict the sample to denominations for which we have coded doctrinal and organizational characteristics, this value rises to 23.2%.

Following from (13) and (17), we expect a denomination to be more likely to enter a market the higher is the overall level of demand (i.e., the level of income that individuals allocate to religion), the lower are fixed entry costs for denominations in a market, and the lower are variable costs of religious participation, associated either with government restrictions on

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[22] There are 213 countries in the WCD data. We lose two observations by dropping the US and UK, 18 by dropping the countries for which the WCD aggregates data across denominations, and another 32 (most of which are very small) because we lack data on their country characteristics.

[23] Additional headquarters countries include Canada, Nigeria, the Philippines, Switzerland, and Zimbabwe.

religion practice and differences in language or culture between the importing country and the headquarters country for the denomination. We control for market size using log population and log per capita GDP, and fixed entry costs and variable costs of religious participation using the Freedom House index of the freedom of expression and belief in a country, an indicator of whether English is the official language in a country, an indicator of whether the country was colonized by Great Britain (and so more familiar with Anglo-Saxon culture, which is the basis for many Protestant denominations), and the distance between the country's main city and the country that is the site for the denominational headquarters.

Cross-country analysis of religion identifies several additional characteristics that affect religious participation. One is the presence of a state religion, which complicates the entry of new religions into a market (McCleary and Barro, 2006); a second is religious pluralism, which may make individuals more open to new religious ideas (Barro and Hwang, 2007); and a third is the intensity of competition between religions, which Finke and Stark (2005) suggest helped increase religious participation in the United States during the 18th and 19th centuries. We include as controls the shares of the population that were Muslim, Christian, Roman Catholic, or Orthodox, each measured in 1970. The importance of Islam captures the presence of state religion and a cultural environment that may be difficult for Christians to penetrate. The Catholic and Orthodox population shares control for the presence of an official or unofficial state Christian church, which may complicate entry by Protestant groups. Adding the overall Christian share as a control, with the Catholic and Orthodox shares in the regression, captures the historical presence of Protestants in the country.[24]

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[24] In unreported results, we controlled for religious pluralism using a Herfindahl Index calculated using the shares of the population associated with each of 18 major religions in 1970 (Agnostics, Atheists, Baha'is, Buddhists, Chinese folk-religionists, Christians, Confucianists, Daoists, Ethnoreligionists, Hindus, Jains, Jews, Muslims, New Religionists, Shintoists, Sikhs, Spiritists, and Zoroastrians). The index is uncorrelated with entry.

Table 3 presents results for regressions in which the dependent variable is a 0-1 outcome on whether a denomination is present in a country in 2005. The regressions control for fixed effects at the denomination level, allowing us to focus on the country characteristics that facilitate entry by Protestant denominations. In column (1), the likelihood of entry is increasing in population but unrelated with per capita GDP. While results on population are stable across specifications, those for per capita income are not, perhaps reflecting the fact that income has opposing effects on religious participation. Higher income makes a market more attractive to denominations in terms of entry but may also promote secularization and lead to less religious participation in society as a whole (McCleary and Barro, 2006). Entry is more likely in countries that are English speaking, that were colonized by Great Britain, or that are closer to the headquarters country for the denomination. These results are similar to findings for the gravity model of trade in goods (Anderson and van Wincoop, 2004), in which geographic and cultural distance makes trade more costly.

In column (2), we add the Freedom House index of freedom of expression and belief, the World Bank doing business indicator of the rule of law, and measures of communications infrastructure (log phone lines per capita) and transportation infrastructure (log road network relative to country surface area, percent of roads that are paved). These variables are unavailable for some countries and cause the sample size to fall modestly. Entry is more likely in countries with great freedom of expression and belief, consistent with McCleary and Barro (2006) and Barro and Hwang (2007) who find that tolerance of religion is positively associated with religiosity. We find that religious freedom promotes entry by individual Protestant denominations. Entry is negative correlated with the rule of law. If the church is a source of private order, demand for religion may be greater in environments where the state is weaker.

In column (3) we add two measures of state provision of services, the share of public spending on education and health in GDP, which captures basic provision of public services, and the share of state spending on social welfare in GDP, which captures public provision of social insurance. Education and health spending are unrelated with entry, suggesting that general provision of social services is unimportant in the demand for religion. However, entry is more likely in countries that spend less on social welfare, a finding consistent with research on the United States that shows the church and the government substitute for each other in the provision of welfare (Hungerman, 2005; Gruber and Hungerman, 2007). Our results show that demand for religion is stronger in countries where the state provides less social insurance.

In the remaining columns, we impose sample restrictions to check the robustness of our findings. In column (4), we restrict the sample to denominations for which we have coded data on doctrine and organization; in column (5), we exclude denominations affiliated with Baptist, Lutheran, or Presbyterian traditions, which are large and heterogeneous denominational families potentially subject to measurement error in coding; and in column (6), we drop denominational families established before 1800, which includes mainline Protestants, as these bodies may have an advantage in entry given their relatively long histories. None of these samples restrictions has a qualitative impact on the results.

In Table 4, the dependent variable is the same as in Table 3, but we now include characteristics of the denomination as regressors, with controls for country fixed effects. The sample size drops as we have coded data on only half of the denominations in the sample. The regressors are the distance variable used in Table 3, a quadratic in the year in which the denomination was founded, indicators for whether the denomination is Marginal or Independent (Protestant is the excluded category), indicators for whether the denomination has a governance

structure that is congregational or episcopal (presbyterian is the excluded category), and measures of the denominations decentralization and strictness. The decentralization variable is the average across three indicator variables: whether the congregation retains control over religious doctrine, whether the congregation appoints the pastor, and whether the congregation controls church property. According to theory, pastors have stronger incentives to invest in effort in denominations that are more decentralized, a prediction we test in the next section.

Strictness affects the demand for religion in part because stricter groups may be more efficient at producing collective goods and services. Our narrow strictness variable is the average across five indicator variables: whether the denomination considers the bible to be infallible, whether the denomination emphasizes having a personal conversion experience (beyond baptism as a child), whether the denomination emphasizes the damnation of non-believers, whether the denomination emphasizes the imminence of Christ's second coming, and whether the denomination considers evangelism to be essential to the practice of religion. The broad measure of strictness takes the average across these five variables plus five others: whether the denomination espouses the doctrine of sanctification (purification from sin), whether the denomination endorses speaking in tongues and other ecstatic practices, whether the denomination restricts drinking and smoking, whether the denomination emphasizes modest dress, and whether the denomination practices shunning or excommunication.

The columns of Table 4 differ according to the sample restrictions imposed and the measure of strictness used. Columns (1) and (4) include the full sample of denominations, columns (2) and (5) drop Baptist, Lutheran and Presbyterian denominations, and columns (3) and (6) drop denominations established before 1800. In all regressions, distance is negatively related to entry. Denominations are less likely to enter the country the farther it is from

denomination headquarters. The quadratic in founding year reveals that older denominations are more likely to enter, with this effect weakening with age. Marginal denominations are the most likely to enter, perhaps reflecting a selection mechanism in the creation of denominations in which the only marginal groups (which by definition are outside the Christian mainstream) that survive are ones with high productivity. Alternatively, Marginal denominations may place a relatively strong emphasis on evangelism. Independent denominations are least likely to enter, perhaps reflecting institutional weakness associated with having separated from a more established denominational body. Decentralized denominations are less likely to enter, as are congregational bodies. This may reflect the tendency for less mature denominations to be more decentralized, with less mature denominations having lower productivity on average. Finally, stricter denominations are much more likely to enter, consistent with Iannaccone's (1998) argument that stricter denominations are stronger.

4.2 Governance, Doctrine and Entry

The decision by a denomination to enter a country depends on many country and denomination characteristics. The last section identifies a number of strong empirical regularities in the data. Protestant denominations are more likely to enter countries that are larger, are English speaking, were previously colonized by the British, are not landlocked, are closer to the denomination's headquarters, allow for greater freedom of expression and belief, have historically had smaller Muslim, Catholic, and Orthodox populations, and provide less social welfare to their populations. The denominational characteristics that favor entry are being older, presbyterian in polity, centralized in organizational structure, and strict in religious doctrine. There are undoubtedly many other important characteristics that affect entry that do not appear in Tables 3 and 4. To test the key predictions of the model, we therefore control for

both country and denomination fixed effects, which means identification comes from the interaction between denomination and country characteristics.

Proposition 2 predicts that more decentralized denominations attract more adherents and are more likely to enter countries where the marginal productivity of pastor effort is higher. This is because a decentralized structure gives pastors greater authority in managing the congregation, allowing him to capture a larger fraction of the surplus that is generated by his effort. Decentralization provides pastors with stronger investment incentives. To test the proposition, we interact the indicator for whether a denomination is decentralized with measures of the quality of communications and transportation infrastructure in a country. The idea is that in countries with a more accessible population, better phone service, wider media coverage, larger road networks, or more available automotive transport, pastor effort to attract adherents is likely to be more effective, making denominations more willing to enter the market.

The results appear in Table 5. Each column shows the interaction between denominational decentralization and a country characteristic. These characteristics capture the geographic concentration of the population (population density, urbanization), communications infrastructure (phone lines per capita, televisions per capita, newspapers per capita), and transportation infrastructure (cars per capita, road network per square kilometer, railroad network per square kilometer, paved roads). All country data are from the World Development Indicators. The sample size varies across regressions owing to the differential availability of infrastructure data. While the importance of decentralization is only weakly associated with population density and urbanization, it is significantly related to all of the measures of communications and transportation infrastructure. The interaction between decentralization and infrastructure supply is positive and precisely estimated for each of the seven measures. These

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results are consistent with Proposition 2. The marginal productivity of preacher effort is likely to be higher in countries with better infrastructure, as better communications infrastructure enhances the capacity of pastors to reach potential congregants and better transportation infrastructure expands the geographic expanse over which a congregation can draw. Decentralized denominations do better in countries in which additional pastor effort would be likely to attract more adherents.

In unreported results, we include interactions between decentralization and log population, log per capita GDP, log distance to denomination headquarters, and whether the country is English speaking. The interaction with decentralization is positive and precisely estimated for population and income and negative and precisely estimated for distance. The inclusion of these additional variables weakens the results for infrastructure, owing to the correlation between per capita GDP and infrastructure availability.

The second theoretical prediction we test is outside our model. Iannaccone (1992) shows that stricter religious groups are more effective at collective action. In the background, one can imagine that after being organized by a pastor congregants jointly produce worship services, educational activities for children, charity efforts, and other quasi-public goods. In equilibrium, the effort congregants provide is increasing in the strictness of the group, which justifies the inclusion of strictness (y) in the utility individuals derive from religious participation in equation (3). The motivation for congregants to provide services that have a mutual insurance quality, such as care for the sick, elderly, or downtrodden, is stronger in countries where the state provides less social insurance, which justifies inclusion of the z term in (3). Hence, we expect that in equilibrium individual demand for strictness will be decreasing in provision of social insurance by the state. To test this prediction, we interact the strictness of the denomination with

the social spending variables used in Table 3, government spending on education and health as a share of GDP and government spending on social welfare as a share of GDP.

The results appear in Table 6. Column (1) shows coefficient estimates for the interaction between the narrow measure of doctrinal strictness and social spending. While the importance of strictness is unrelated to public spending on health and education, it is significantly affected by spending on social welfare. The negative interaction indicates that stricter denominations do worse in countries that devote a higher share of GDP to public spending on social welfare programs. The results in Table 3 suggest that public spending on social welfare makes entry less attractive for Protestant denominations. The results here in Table 6 suggest that this impact is strongest on denominations that have a stricter religious doctrine. These results are further evidence in support of Iannaccone's (1992) theory of the role of strictness in religious life. Countries in which the state provides more social insurance have weaker demand for religious participation, with stricter denominations, who are in theory the ones most efficient in providing collective goods, being hurt the most. Column (2) shows results for the broader measure of strictness, which are qualitatively similar to those for the narrow measure.

Recent literature on political economy examines the capacity of nation states to provide public goods. Alesina and La Ferrara (2005) stress the importance of ethnic homogeneity in collective action. Abundance empirical evidence suggests that ethnically more diverse countries tend to provide less in the way of public goods, a finding that is replicated when looking across cities within a country. Ethnic diversity thus appears to be negatively related with the capability of individuals in a country to organize collectively. In columns (3) and (4) of Table 6, we replace social spending with ethnic fractionalization, as measured by Fearon (2003).[25] Ethnic fractionalization serves as a reduced form determinant of a country's capacity to provide public

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[25] Other measures of ethnic fractionalization perform similarly.

goods. The interaction between either measure of strictness and ethnic fractionalization is positive and precisely estimated, indicating that stricter denominations are more likely to enter countries that are more ethnically fractionalized. These results provide further support for the hypothesis that the demand for strictness is stronger in countries where the state is less able to provide public goods to the population.

In unreported results, we add to the regression interactions between strictness and log population, log per capita GDP, log distance to denominational headquarters, and whether the country has English as an official language, all of which are variables that affect the likelihood of denominational entry into a country in Table 3. The inclusion of these variables does not affect the results on the interaction between strictness and social spending qualitatively. The strictness-social welfare spending interaction remains positive and precisely estimated.

5. Final Discussion

In this paper, we use data from the World Christian Database to examine the factors that affect the expansion of Protestant denominations internationally. Most of the denominations are headquartered in the United States or the United Kingdom. Denominations are more likely to enter countries that are larger, richer, English speaking, formerly colonized by Britain, or closer to their headquarters operations. Controlling for country characteristics, stricter denominations are more likely to be present in a country than less strict ones. Greater public spending on social welfare makes Protestant denominations less likely to be present in a country, with the negative impact being larger for stricter denominations. These results support Iannaccone's (1992) theory that strictness in religious doctrine enhances the capacity of a group to provide collective goods and services for its members. We build a model of competition between denominations based on

incomplete contracts and the delegation of authority. Preliminary empirical results support the

theory, in that more decentralized denominations, in which pastors have more authority over

church operations, are more likely to be present in countries in which the marginal product of

pastor effort appears to be higher.

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Table 1: Share of affiliated Christians in the world population

Megabloc	Share of population		Share of affiliated Christians	
	1970	2005	1970	2005
Roman Catholics	0.181	0.170	0.621	0.564
Orthodox	0.038	0.039	0.130	0.131
Anglicans	0.013	0.012	0.044	0.041
Subtotal	0.232	0.221	0.795	0.736
Protestants	0.057	0.058	0.197	0.191
Independents	0.025	0.061	0.086	0.201
Marginals	0.003	0.005	0.010	0.016
Subtotal	0.085	0.124	0.293	0.408
Doubly affiliated Christians	(0.009)	(0.022)	(0.030)	(0.072)
Disaffiliated Christians	(0.017)	(0.022)	(0.058)	(0.073)
Total	0.291	0.301	1.00	1.00

Table 2: Affiliated Christians by megabloc and region

Region	Megabloc	Share of population 1970	Share of population 2005
North America	Protestants, Independents, Marginals	0.459	0.434
	Catholics, Orthodox, Anglicans	0.301	0.281
Western Europe	Protestants, Independents, Marginals	0.224	0.173
	Catholics, Orthodox, Anglicans	0.673	0.617
Eastern Europe, FSU	Protestants, Independents, Marginals	0.048	0.061
	Catholics, Orthodox, Anglicans	0.471	0.631
Asia, Pacific	Protestants, Independents, Marginals	0.022	0.067
	Catholics, Orthodox, Anglicans	0.031	0.038
Latin America, Caribbean	Protestants, Independents, Marginals	0.080	0.184
	Catholics, Orthodox, Anglicans	0.885	0.831
Sub-Saharan Africa	Protestants, Independents, Marginals	0.178	0.300
	Catholics, Orthodox, Anglicans	0.239	0.308
Middle East, North Africa	Protestants, Independents, Marginals	0.004	0.010
	Catholics, Orthodox, Anglicans	0.055	0.050

Table 3: Country characteristics and entry

	(1)	(2)	(3)	(4)	(5)	(6)
log population	0.035	0.035	0.038	0.06	0.059	0.056
	(11.41)	(11.29)	(10.85)	(10.03)	(9.41)	(8.32)
log pc GDP	-0.001	0.003	0.015	0.029	0.026	0.028
	(-0.43)	(1.03)	(3.13)	(3.28)	(2.89)	(2.87)
English speaking	0.062	0.058	0.059	0.081	0.077	0.072
	(7.67)	(7.28)	(5.17)	(3.59)	(3.30)	(2.73)
British colony	0.023	0.026	0.017	0.045	0.051	0.045
	(3.19)	(3.50)	(1.72)	(2.47)	(2.82)	(2.05)
Landlocked	-0.015	-0.012	-0.011	-0.025	-0.022	-0.034
	(-2.86)	(-2.28)	(-1.70)	(-2.08)	(-1.78)	(-2.51)
log distance to HG	-0.03	-0.026	-0.038	-0.072	-0.074	-0.068
	(-4.18)	(-3.56)	(-4.05)	(-4.95)	(-5.08)	(-4.36)
% Muslim 1970	-0.077	-0.07	-0.103	-0.181	-0.159	-0.169
	(-6.83)	(-6.30)	(-6.81)	(-6.54)	(-6.15)	(-5.59)
% Christian 1970	0.066	0.054	0.037	0.052	0.069	0.066
	(4.74)	(4.07)	(2.08)	(1.48)	(2.02)	(1.87)
% Catholic 1970	-0.022	-0.026	-0.033	-0.043	-0.05	-0.047
	(-1.97)	(-2.38)	(-2.23)	(-1.49)	(-1.69)	(-1.60)
% Orthodox 1970	-0.14	-0.14	-0.14	-0.229	-0.22	-0.199
	(-8.02)	(-8.06)	(-6.53)	(-6.04)	(-5.60)	(-4.59)
Religious freedom		0.004	0.004	0.009	0.009	0.007
		(5.61)	(4.21)	(5.00)	(5.23)	(4.07)
Rule of law		-0.012	-0.019	-0.038	-0.036	-0.035
		(-2.79)	(-2.89)	(-2.99)	(-2.79)	(-2.57)
Eductn, heath exp.			-0.095	-0.177	-0.164	-0.173
			(-1.20)	(-1.21)	(-1.08)	(-1.17)
Social welfare exp.			-0.258	-0.385	-0.364	-0.434
			(-3.22)	(-2.45)	(-2.37)	(-2.69)
Denomination effects	Y	Y	Y	Y	Y	Y
Sample	All	All	All	Coded	No BLP	>1800
R2	0.372	0.374	0.388	0.423	0.44	0.463
N	23019	22733	14014	5782	5488	4606

Dependent variable equals 1 if denomination was present in country in 2005. Asymptotic t-statistics (based on standard errors clustered by denomination) are in parentheses. All regressions include denomination fixed effects. No BLP means Baptists, Lutherans, and Presbyterians are excluded. >1800 indicates denominations founded after 1800.

Table 4: Denomination characteristics and entry

	(1)	(2)	(3)	(4)	(5)	(6)
log distance to HQ	-0.024	-0.026	-0.020	-0.023	-0.024	-0.017
	(-2.92)	(-3.27)	(-2.40)	(-2.69)	(-2.98)	(-2.00)
Founding year	0.679	0.948	-5.676	0.653	0.893	-7.681
	(12.47)	(17.89)	(-9.18)	(12.00)	(16.84)	(-11.97)
Founding year^2	-0.021	-0.029	0.146	-0.020	-0.028	0.198
	(-13.20)	(-18.90)	(8.92)	(-12.69)	(-17.77)	(11.72)
Marginal	0.141	0.176	0.134	0.128	0.158	0.153
	(12.72)	(15.54)	(11.45)	(11.81)	(14.50)	(13.63)
Independent	-0.16	-0.131	-0.202	-0.157	-0.129	-0.202
	(-17.37)	(-13.73)	(-21.72)	(-17.32)	(-13.86)	(-21.71)
Episcopal polity	-0.030	-0.055	-0.054	-0.037	-0.062	-0.046
	(-4.46)	(-7.57)	(-7.91)	(-5.44)	(-8.49)	(-6.49)
Congregational polity	-0.087	-0.082	-0.063	-0.089	-0.085	-0.066
	(-7.77)	(-7.32)	(-5.35)	(-7.86)	(-7.44)	(-5.53)
Decentralized structure	-0.048	-0.099	-0.144	-0.029	-0.07	-0.132
	(-3.26)	(-6.84)	(-8.33)	(-1.92)	(-4.77)	(-7.70)
Strictness (narrow)	0.182	0.229	0.110			
	(17.64)	(22.91)	(10.64)			
Strictness (broad)				0.185	0.228	0.205
				(15.52)	(20.18)	(17.83)
Country fixed effects	Y	Y	Y	Y	Y	Y
Sample	Full	No BLP	>1800	Full	No BLP	>1800
R^2	0.204	0.220	0.220	0.201	0.215	0.229
N	11973	11364	9537	11973	11364	9537

Dependent variable equals 1 if denomination was present in country in 2005. Asymptotic t-statistics (based on standard errors clustered by country) are in parentheses. All regressions include country fixed effects. No BLP means Baptists, Lutherans, and Presbyterians are excluded. >1800 indicates denominations founded after 1800.

Table 5: Interactions between decentralization and infrastructure

Decentralization interacted with:	Coefficient	t-statistic	R^2	N
log population density	0.004	(0.54)	0.419	8742
Urbanization rate	0.092	(1.78)	0.420	8648
log phone lines per capita	0.014	(2.06)	0.423	8554
log newspapers per capita	0.021	(2.78)	0.433	5311
log TVs per capita	0.084	(2.24)	0.429	5405
log cars per capita	0.019	(3.03)	0.423	7520
log road network per sq km	0.019	(3.03)	0.423	7520
log rail network per sq km	0.029	(2.33)	0.443	3948
% roads paved	0.082	(2.40)	0.422	7849

Dependent variable equals 1 if denomination was present in country in 2005. Asymptotic t-statistics (based on standard errors clustered by country) are in parentheses. All regressions include controls for country fixed effects and denomination fixed effects.

Table 6: Doctrinal strictness interacted with social spending

	(1)	(2)	(3)	(4)
Strictness * Health, education spending in GDP	0.175 (0.31)	0.295 (0.46)		
Strictness * Social welfare spending in GDP	-1.076 (3.52)	-1.240 (3.23)		
Strictness * Ethnic fractionalization			0.099 (1.77)	0.119 (1.77)
Strictness measure	Narrow	Broad	Narrow	Broad
Country fixed effects	Y	Y	Y	Y
Denomination fixed effects	Y	Y	Y	Y
R^2	0.414	0.414	0.424	0.424
N	4747	4747	6674	6674

Dependent variable equals 1 if denomination was present in country in 2005. Asymptotic t-statistics (based on standard errors clustered by country) are in parentheses. All regressions include controls for country fixed effects and denomination fixed effects.
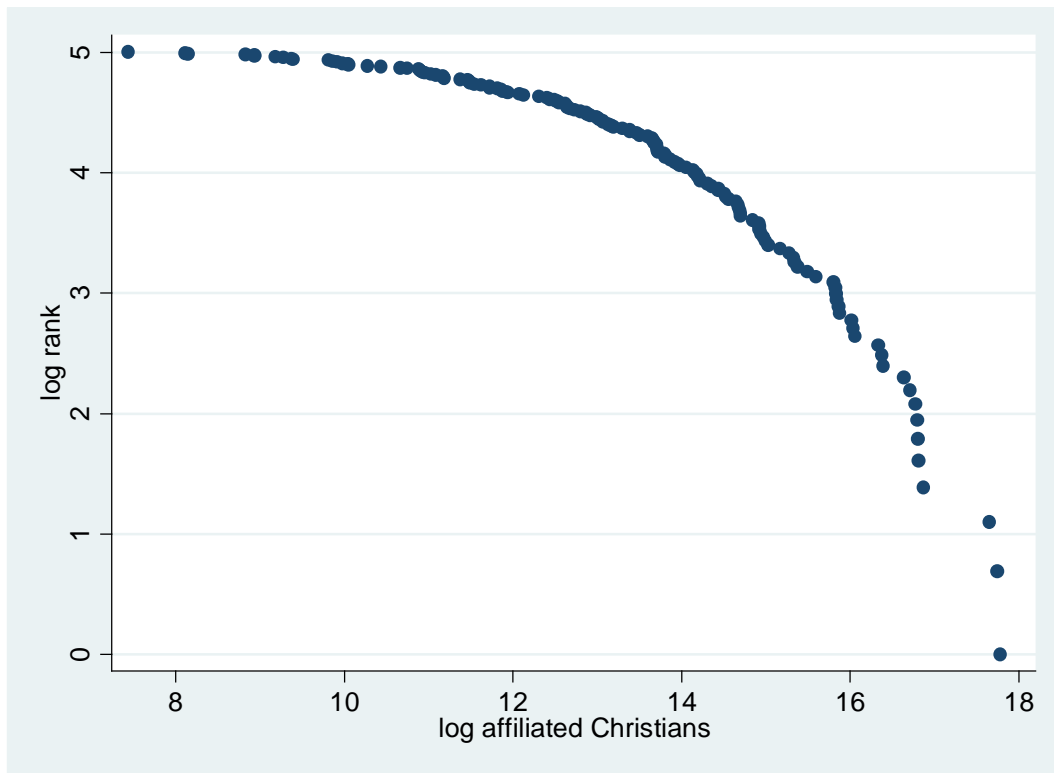
Figure 1: Rank-Size relationship for denominations

Figure 2: Global number of members and congregations by denomination
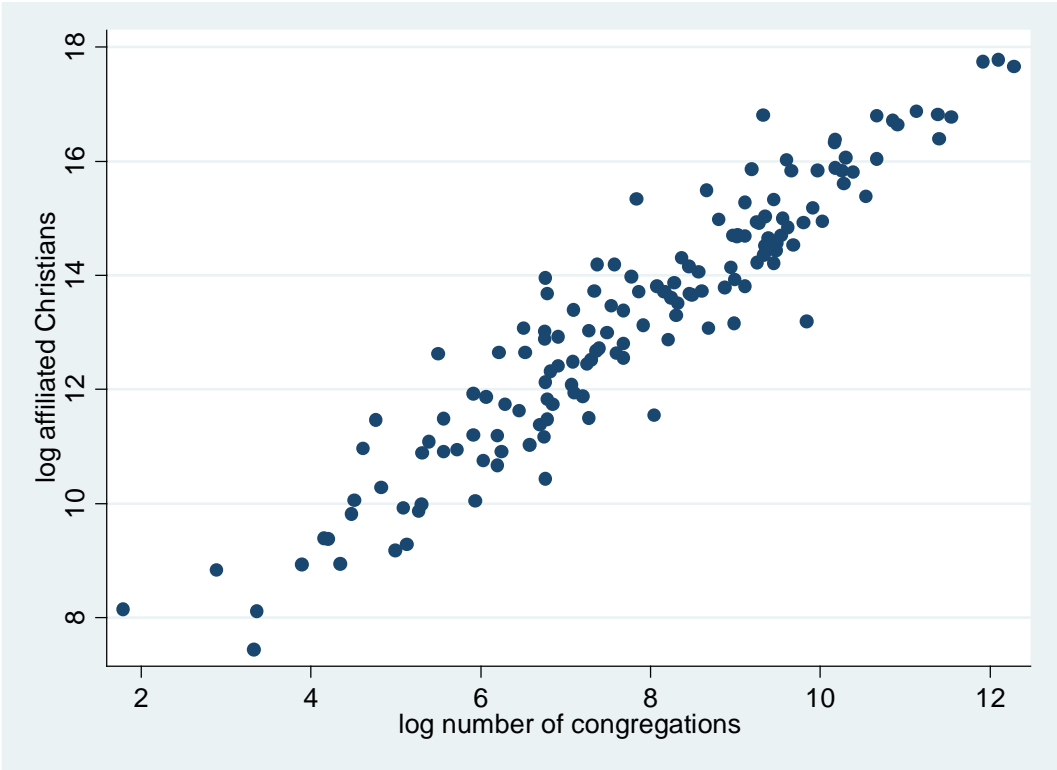
Appendix A: Denomination families and worldwide membership

Denomination	Tradition	N (m)	C	Denomination	Tradition	N(m)	C
Protestants				**Marginals**			
Baptist	Baptist	50.94	156	Jehovah's Witnesses	Jehovah's Witnesses	13.15	197
Assemblies of God	Baptistic-Pentecostal	46.40	136	Latter-day Saints (Mormons)	Mormons	12.37	132
Methodist	Mainline Methodist	19.99	107	Christian Scientist	Christian Science	0.90	50
Evangelical Lutheran Church	Lutheran	19.67	76	Holy Spirit Association	Moonies	0.87	8
Presbyterian Church	Reformed, Presbyterian	18.07	56	Reorganized Latter-Day Saints	Mormons	0.27	11
Adventist	Adventist	16.83	199	Unitarian, Universalist	Unitarian, Universalist	0.27	23
Reformed Church	Reformed, Presbyterian	9.02	57	Christadelphian	Christadelphian	0.03	17
Church of God (Cleveland)	Holiness-Pentecostal	7.51	118	Swedenborgian	Swedenborgian	0.02	12
Lutheran/Reformed	Lutheran	7.45	19				
Evangelical Ch of W Africa	Evangelical	5.33	5	**Independents**			
Foursquare Gospel	Baptistic-Pentecostal	3.89	54	Baptist	Baptist	21.27	83
Lutheran Church	Lutheran	3.37	59	Reformed/Presbyterian	Reformed, Presbyterian	7.88	50
Christian & Missionary Allnc	Conservative Methodist	3.25	43	Church of God in Christ	Regional Pentecostal	7.55	11
African Inland Mission	Nondenominational	3.19	5	Churches of Christ	Disciple, Restorationist	4.78	93
United Pentecostal Church	Oneness-Pentecostal	3.09	81	Celestial Church of Christ	Regional Apostolic	4.58	10
Christian Brethren	Christian Brethren	3.02	108	Church of Christ (Manalista)	Neocharismatic	4.32	4
Apostolic Church	Pentecostal Apostolic	2.80	29	African Methodist Episcopal	Mainline Methodist	3.03	24
Apostolic Faith Mission	Baptistic-Pentecostal	2.43	9	Fundamentalist Baptist	Fundamentalist	3.00	16
Pentecostal Assemblies	Baptistic-Pentecostal	2.41	20	Christ Apostolic Church	Regional Apostolic	2.35	3
Congregationalist	Congregationalist	2.37	39	Evangelical	Evangelical	1.72	40
Church of the Nazarene	Conservative Methodist	2.04	97	AME Zion	Mainline Methodist	1.63	12
Salvationist (Salvation Army)	Salvation Army	2.01	78	African Spiritual	Regional Spiritual	1.49	12
Mennonite	Mennonite	1.87	56	Pentecostal Assemblies	Baptistic-Pentecostal	1.46	6
Evangelical	Evangelical	1.51	65	Church of the Lord (Aladura)	Regional Pentecostal	1.45	4
Swedish Free Mission	Baptistic-Pentecostal	1.41	5	Lutheran	Lutheran	1.27	15
Church of God of Prophecy	Holiness-Pentecostal	1.11	76	Assemblies of God	Baptistic-Pentecostal	1.18	4
Church of God (Anderson)	Conservative Methodist	0.98	47	African Apostolic Ch Maranke	Regional Apostolic	1.15	4
Moravian (Continental Pietist)	Moravian	0.91	28	Methodist	Mainline Methodist	0.99	25
Evangelical Alliance Mission	Evangelical	0.90	25	Deeper Life Bible Church	Regional Pentecostal	0.99	7
Disciples of Christ	Disciple, Restorationist	0.86	14	Christian Methodist Episcopal	Mainline Methodist	0.90	4
Pentecostal Holiness Church	Holiness-Pentecostal	0.85	32	Rhema Bible Church	Word of Faith/Prosp	0.70	4
Pentecostal Church of God	Baptistic-Pentecostal	0.81	17	Calvary Chapel	Charismatic	0.65	2
Elim (UK)	Baptistic-Pentecostal	0.73	21	Little Flock	Neocharismatic	0.59	54
Dunker	Dunker	0.65	7	Every Home for Christ	House Church Network	0.53	14
Friends (Quaker)	Friends (Quaker)	0.47	41	Believers Church	Neocharismatic	0.52	5
Unevangelized Fields Mission	Nondenominational	0.45	8	Congregationalist	Congregationalist	0.50	19
Evangelical Free	Congregationalist	0.44	9	Iglesia La Luz del Mundo	Oneness Pentecostal	0.47	3
Wesleyan Church	Conservative Methodist	0.39	29	African Indep deliverance	African Indep deliv	0.45	3
United Congr Ch of So Africa	Congregationalist	0.31	4	Adventist	Adventist	0.41	16
World Gospel Mission	Conservative Methodist	0.31	3	Christian Brethren	Christian Brethren	0.36	21
Overseas Mission Fellowship	Nondenominational	0.28	4	Iglesia del Principe de Paz	Regional Pentecostal	0.34	4
Evang Covnt Ch of America	Congregationalist	0.18	5	World-Wide Missions	Nondenominational	0.32	22
Exclusive Brethren	Exclusive Brethren	0.14	16	African Israel Church Nineveh	Regional Pentecostal	0.31	3
Norwegian Pentecostal Mission	Baptistic-Pentecostal	0.12	4	Cooneyites	Fundamentalist	0.30	3
Missionary Church	Conservative Methodist	0.12	3	Fundamentalist Presbyterian	Fundamentalist	0.25	4
New Tribes Mission	Fundamentalist	0.11	11	African Brotherhood Church	Nondenominational	0.24	3
Fundamentalist Baptist	Fundamentalist	0.10	4	Eglise Kimbanguiste	Regional Pentecostal	0.22	4
Iglesia Centroamericana	Nondenominational	0.10	3	Association of Vineyard Chs	Regional Charismatic	0.19	6
New Testament Mission	Nondenominational	0.10	4	Open Bible Standard Church	Regional Pentecostal	0.15	21
Cumberland Presbyterian Ch	Reformed, Presbyterian	0.09	3	Salvationist (Salvation Army)	Salvation Army	0.15	4
United Brethren in Christ	Conservative Methodist	0.07	5	Fundamentalist Methodist	Fundamentalist	0.14	3
Reformed Presbyterian Church	Reformed, Presbyterian	0.07	7	Broadsheet Readers' Clubs	Neocharismatic	0.10	10
Seventh Day Baptist Church	Baptist	0.07	12	Jehovah's Witnesses	Jehovah's Witnesses	0.10	5
Union of Armenian Ev Chs	Congregationalist	0.06	8	Worldwide Church of God	British-Israelite	0.07	2
Waldensian	Waldensian	0.05	3	Mennonite, Anabaptist	Mennonite	0.06	7

Denomination	Tradition	N(m)	C	Denomination	Tradition	N(m)	C
United Apostolic Faith Church	Baptistic-Pentecostal	0.05	3	Pentecostal Church of God	Regional Pentecostal	0.06	3
Apostolic Ch of Pentecost	Oneness-Pentecostal	0.05	6	Exclusive Brethren	Exclusive Brethren	0.05	5
Swedish Alliance Mission	Nondenominational	0.04	4	Christian Mission Fellowship	Disciple, Restorationist	0.02	4
Swedish Holiness Mission	Conservative Methodist	0.03	4	Pioneers	Nondenominational	0.02	3
United World Mission	Nondenominational	0.02	6	Friends (Quaker)	Friends (Quaker)	0.02	2
Apostolic Faith Mission	Holiness-Pentecostal	0.02	8	Association of Vineyard Chs	Signs, wonders	0.01	3
Metropolitan Church Assoc	Conservative Methodist	0.01	4	Children of God	Marginal Ind Christian	0.01	25
Worldwide Evang Crusade	Nondenominational	0.01	2	Wesleyan Church	Conservative Methodist	0.01	3
World Missions	Nondenominational	0.01	2	Church of the Nazarene	Conservative Methodist	0.01	2
Elim (US)	Baptistic-Pentecostal	0.00	3	Unitarian, Universalist	Unitarian, Universalist	0.00	2
Pentecostal	Classical Pentecostal	0.00	2				

Notes: N(m) indicates number of affiliated Christians worldwide in millions; C indicates number of countries in which the denomination is present.

Appendix B: Doctrine and Governance in Denominational Families

Question	N	Mean
How many levels of the global organization have authority over congregations with respect to doctrine?	70	1.521
How many levels of the global organ. have authority over congregation w.r.t. funding, hiring/firing?	71	1.239
How many levels are there to the global organization?	70	3.171
Are local churches autonomous from central authority?	70	0.407
Does the group have a local church body that holds pastors accountable to congregations?	67	0.470
Is organization (1) episcopal, (2) presbyterian, or (3) congregational?	70	2.036
Are pastors appointed by an entity other than the local congregation?	69	0.435
Do pastors require an educational degree to be ordained?	70	0.486
Can women be ordained as pastors?	69	0.565
Do congregations have salaried pastors?	72	0.861
Does local church own church property?	66	0.621
Is congregation obligated to make payments to central organization?	67	0.627
Is congregation eligible to receive financial support from central organization?	72	0.875
Does movement include tithing among its core tenets?	71	0.254
Does central organization run universities?	73	0.534
Does central organization run hospitals abroad?	73	0.384
Does central organization run primary or secondary schools abroad?	72	0.389
Does movement consider evangelism an essential function of all churches and believers?	73	0.603
Does group consider grace of God to be irresistible (Calvinist, as opposed to Arminian)?	81	0.043
Does movement include baptism in church service?	74	0.865
Does movement emphasize adult baptism (eg, Anabaptist tradition)?	73	0.712
Does movement practice baptism by immersion?	73	0.767
Is Lord's Supper or Holy Communion performed in church service?	75	0.880
How often is Eucharist celebrated on average (times per month)?	72	1.644
Does the movement have a written liturgy?	75	0.153
Does movement consider the bible inerrant or infallible?	74	0.878
Does movement emphasize the damnation of non-believers?	73	0.411
Does movement emphasize imminence of 2nd coming of Christ?	73	0.438
Does movement emphasize being born again?	74	0.784
Does movement emphasize sanctification (eg, Holiness tradition)?	72	0.417
Does movement emphasize speaking in tongues?	70	0.286
Does movement restrict drinking and smoking?	67	0.597
Does movement restrict dancing, movie going, or other cultural activities?	67	0.448
Does movement restrict manner of dress?	66	0.341
Does movement practice excommunication, shunning or other forms of exclusion?	70	0.214
Is movement Trinitarian (ie, believes in the trinity of Father, Son and Holy Ghost)?	75	0.807
Does movement have holy texts held to be of equal or greater authority relative to the Bible?	75	0.107
Does movement emphasize the ongoing practice of divine healing?	73	0.384
Is movement ecumenical?	73	0.610
Does movement espouse pacifism?	73	0.116
Does movement tolerate humanistic and liberal doctrines?	74	0.284
Is movement affiliated with the World Council of Churches?	75	0.280