Migration, Networks, and Religious Choice*

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Abstract

Over the last half century, affiliation to Pentecostal denominations has grown rapidly, with this growth concentrated in low income countries. This paper investigates one economic factor influencing this growth - rural-urban migration: religious institutions attract members by serving as hosts for economic and social networks, a service which is especially attractive for migrants into the city. I present new evidence from Ghana to test this hypothesis, using data from the ISSER Northwestern-Yale Panel Survey (GSPS) and a survey of Pentecostal churches in Accra. I construct a series of shift-share instruments for migration, using exposure to price shocks in the mining, construction and manufacturing industries. I find that migration significantly increases Pentecostal affiliation, especially for migrants with few network connections in the city. The process of migration also has implications for village networks. I find that out-migration induces conversion for households at the origin. I present evidence consistent with the story that out-migrant households convert in response to weakening ties with the village network.

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1 Introduction

Across the last century, there have been monumental shifts in the patterns of religious affiliation around the globe. In contrast to a steadily secularising West, religiosity in much of the developing world is rising. One trend embedded in this transition is the rapid rise of new Christian Pentecostal denominations, especially within Africa and Latin America, rising from a near-zero share in 1900 to 8% of the global population today (World Christian Database, 2024). These Pentecostal denominations dispense with many of the rituals and formality of the mainline Catholic and Protestant denominations. Critical to understanding the forces that underlie this trend is diagnosing the good (in the economic sense) that Pentecostal churches are providing and why this good might be especially valuable in a low-income, rapidly urbanising context.

One of the key services provided by Pentecostal churches and religious institutions more broadly is their role as hosts for social and economic networks (Chen, 2010; Ager and Ciccone, 2018; Murphy et al., 2019). These networks are crucial in the migration process, aiding in the integration of migrants into new economic settings (Beaman, 2012; Munshi, 2003) by offering risk-sharing services and pathways to employment. As the process of urbanisation draws people into the city, the support provided by religious institutions becomes particularly valuable for migrants. Consequently, migration and urbanisation may play a central role in shaping patterns of religious affiliation over time. If Pentecostal churches are particularly successful at facilitating economic networks, especially for migrants, increases in migration may induce waves of Pentecostal conversion.

The hypothesis explored in this paper is the following: Rural-Urban migration is an important factor in the growth of Pentecostalism, owing to the comparative advantage Pentecostal churches hold in facilitating economic and social networks. As migrants move from the village to the city, they look for a network to help them integrate into the urban environment. The network they find with the highest returns are those provided by Pentecostal churches, inducing conversion for these migrants. Furthermore, there may be a conversion effect for the household at the origin. As migrants embrace their new faith, they may introduce their families to this religious alternative, potentially resulting in further conversions. Conversely,

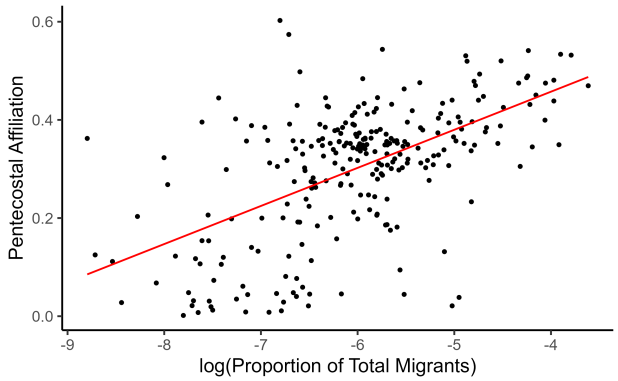

Figure 1: 2021 Ghana Census. Each point represents a district.

the outmigration process may undermine existing village risk-sharing networks as in Munshi and Rosenzweig (2016); Morten (2019). If the households in that village value the services provided by the village network, they may look for alternatives, prompting them to join new religious institutions that can deliver these network services.

I test this hypothesis in the context of Ghana, whose Pentecostal transition reflects the experience of many African nations. Within Ghana there is strong descriptive evidence for the relationship between migration and Pentecostal growth. Figure 1 illustrates the correlation between Pentecostalism and the proportion of total in-migrants by district. Districts receiving a higher share of migrants have a higher share of Pentecostal affiliation. Table 1 reports regression results from the 2021 Ghana census on the correlation between migration and Pentecostal affiliation. Holding age, gender, and education fixed, migrants are 5.8% more likely to be Pentecostal, and rural-urban migrants are 9.2% more likely to be Pentecostal.

	Dependent variable:		
	Pentecostal		
	(1)	(2)	(3)
Migrate	0.058***		
	(0.003)		
Rur-Urb Migrate		0.092***	
		(0.004)	
Rur-Urb Migrate (5 Years)			0.062***
			(0.003)
Mean	0.310	0.310	0.310
Observations	1,797,161	1,797,161	1,789,045
Adjusted R^2	0.114	0.117	0.114

Table 1: Includes fixed effect for district at birth. HH controls for age, gender, education. Errors clustered at the district level. *p<0.1; **p<0.05; ***p<0.01,

Conversion is not just occurring in urban areas - the highest growth in Pentecostalism over the last 20 years has been in rural districts in the east (see figure A.1).

The hypothesis I test predicts the conversion of migrants into urban areas and of the families of migrants remaining in rural areas. The paper takes these two components in turn.

I begin by causally identifying the effect of migration on the religious affiliation of the migrant. To achieve this, I construct a set of shift-share instruments for migration, using shocks to prices for industries in potential destination districts as plausible exogenous variation. I focus on the manufacturing and construction industries as core low-skill employers in urban areas and the mining industry as an employer in rural areas. Price shocks are multiplied by a form of market access to the industry - households who are closer to districts with a high industry share will be more exposed to the industry shock. This is multiplied by an individual productivity measure, constructed using years of education and an age probability of migration - younger, more educated individuals have a higher propensity to migrate and are, therefore, more exposed to the pull shock in destination districts. Using the full set of instruments, I find that migration significantly increases Pentecostal affiliation among male migrants from rural areas.

I then test potential explanations for the relationship between migration and religious affiliation. I present evidence that Pentecostal institutions provide network services in the form of monetary and in-kind transfers, both formally through the institution and informally through the network of members. Pentecostal churches provide support for members' businesses, allowing the promotion of businesses during services. I test for differences in this provision of network services across religious denominations and find that such support is significantly more prevalent in Pentecostal churches. To explore whether migrants convert to Pentecostalism in pursuit of these services, I examine if those with fewer existing network connections, i.e., migrants with greater returns from network engagement, are more likely to convert. My findings indicate that migrants who report not knowing anyone at their destination are significantly more likely to convert to Pentecostalism.

Even with this evidence, it may be possible that either 1) migrants, especially unconnected migrants, are attracted to Pentecostal churches for the hopeful messages they present, or 2) while migrants do join Pentecostal churches for the network, they purely value the social

good of the network. To test 1), I compare the size of the institution that the migrant joins. Institutional size strictly increases with the quality of religious product offered. However, network services are not linearly correlated with the size of the network. The optimal network is one of medium size. Initially, network benefits grow with size, with greater risk-sharing capacity and more robust referral networks. However, increases in size eventually diminish the monitoring ability of the network, and increase the cost of transmitting information across the network. Therefore, individuals who value the network should prefer to join a church with an intermediate size.

To test 2), I test whether the receipt of in-transfers has an effect on the likelihood of conversion. If a migrant receives in-transfers from a relative outside the household, the economic value of the religious network to them will go down, while the social value of the network should not change. I find that the receipt of transfers does reduce the probability that migrants convert. To address the concern that receiving transfers may increase the cost of switching religion, I vary the source of the transfer. There is no difference in the effect of in-transfers by source: transfers from relatives and transfers from non-relatives outside the district have similar effects on the likelihood of conversion.

To identify the effect of out-migration on origin households, I repeat the instrument exercise described above. I find that outmigration induces changes in religious affiliation in the origin household. On aggregate, shifts occur away from Catholicism towards Protestantism. Examining the services provided by religious institutions in rural areas, I find that religious service provision is rarer in rural areas than in urban areas and that Pentecostal and Protestant churches offer a similar scale of services in rural areas.

I test the network hypothesis for out-migrant households - that households convert as the village network breaks down, against alternative hypotheses - households convert based on the experience of the migrant. I estimate the effect of out-migration on connections with the village network and look at the effect of the migrant's religious affiliation on the conversion of the remaining household. After out-migration events households engage less with village networks, and display less trust in the village network. Moreover, households convert regardless of the religion of the migrant.

In presenting this evidence, I introduce two novel datasets. I firstly use the ISSER-Northwestern-

Yale Long Term Ghana Socioeconomic Panel Survey (GSPS), which traces religious affiliation and migration status across the four waves of the survey. I contribute a new religion unit to the fourth wave of the survey, allowing a mapping between the pre-existing detailed economic information of the survey, and information on religious participation, institutional membership, services received from religious institutions, and the history of religious affiliation.

I secondly present the results of a detailed survey of 35 Pentecostal institutions I conducted in Accra, containing information on institutional history, institutional organisation, membership, employees, finance, and service provision. While there is a rich literature relating migration to networks, this research examines a novel type of network. Compared to other common networks, religious networks are not explicitly discriminatory - any individual has the opportunity to join and is often encouraged to do so. In fact, religious institutions can provide unique opportunities to socialise across demographic groups (Chetty et al., 2022).

Having a formal organisation act as host has multiple benefits. Religious institutions act as a coordinating device, providing the space and opportunity for a group to socialise and build trust with one another through repeat interactions. In addition to this coordination role, religious institutions can manage network services like consumption smoothing; pooling resources and allocating transfers to members with the greatest need, and referral networks; connecting members needing a job or housing with potential employers or hosts. These roles may be especially important in urban areas, where the environment is rapidly changing, and there are interactions between many disparate groups.

For Pentecostal churches to benefit from migration patterns, they must uniquely be structured to provide services valuable to migrants. An effective network host is one that provides centralised, credible, and timely services to their members and extracts contributions fairly and effectively. Institutions that, by nature, are participatory, flexible, trustworthy, and hold lower levels of bureaucracy will be most effective.

Pentecostal churches fill this brief in several ways. The traditional Protestant and Catholic denominations are large, historical organisations. Doctrine and practices are set, and restrictions are placed on the types of services and activities that can occur through the institution. Pastors or Priests within these denominations must be trained for several years before practising. The use of finance must generally be approved by a parish board and is subject

to oversight from regional authorities. Wages are generally set by the denomination, and only loosely tied to the income of the local branch. In comparison, Pentecostal churches are largely informal and independent. In Ghana, there are no formal registration requirements for churches and very few barriers to entry. Most Pentecostal churches are started locally, independent of a larger denominational body. Much of the organisational structure, therefore, is constructed by the founder. As a result, the decision making and processing of resources can become concentrated around this central figure. There are no formal training requirements for Pentecostal pastors, and Pentecostal churches are more reliant on volunteer hours from their members.

There are two main implications of the independence and informality of Pentecostal churches. Firstly, Pentecostal churches have the ability to innovate, both in the doctrine they present and in the services they offer to their members, catering these goods more closely to local demand. In effect, the introduction of Pentecostal churches shifted the market from an oligopoly market with a few large players, to a perfectly competitive market, with independent Pentecostal churches absorbing a large market share. Secondly, Pentecostal pastors are endowed with an incentive structure that promotes growth. Since the organisation is concentrated around the founder, and their profitability depends on the contributions of their members, the founder has greater incentives to attract new members to their congregation and to extract greater commitments from existing members. Under a club goods model, this higher level of commitment allows more network services and can increase the utility of members in the organisation. This incentive structure is stronger in more densely populated, high-income areas. In rural areas, where households are poor, traditional denominations, with their large networks of churches, may hold an advantage, subsidizing churches in poorer rural communities with the income from richer urban communities.

In general, little is known about how formal institutions can affect the relationship between networks and migration.

Munshi (2020) provides an effective summary of the literature on networks and migration. Networks are important in improving labor market outcomes for migrants (Munshi, 2003), though these outcomes are dependent on the size and dynamics of the network (Beaman, 2012), and can be subject to congestion effects (Tang, 2024). Blumenstock et al. (2023)

distinguish the information and economic support roles provided by networks to migrants, while Dai et al. (2019) show that migration networks can have lasting effects on the quality of business networks.

Networks at origin are also affected by outmigration. Munshi and Rosenzweig (2016) and Morten (2019) study the trade-off between the potential income gains from migration and the consumption smoothing benefits provided by the village risk-sharing network for permanent and temporary migration, respectively. Meghir et al. (2022) find evidence that conversely, some forms of migration can increase the ability for origin communities to risk share. Lagakos et al. (2023) quantify the welfare effects of rural-urban migration in providing insurance for low-income households.

My paper presents evidence that religious institutions can help to support migrants on entry into the city, offering a network for those with few prior connections. In rural areas, I present new evidence that religious institutions can act as a substitute for the village risk-sharing network. This suggests that the costs associated with the breakdown of the village network may be mitigated by the presence of service-providing institutions.

This paper also contributes to several strands of literature within the economics of religion. Firstly, I contribute to the understanding of the economic drivers of religion. The seminal papers of Iannaccone (1992, 1998) discuss the role of stigma in stabilising religious communities in a club goods model. Glaeser and Sacerdote (2008) present a model where the social value of religion predicts correlations between education levels and religious participation. Bryan et al. (2021) provide evidence supporting the protestant work ethic - individuals in their experiment earned more income after conversion. Iyer et al. (2014a) run a survey documenting the physical services provided by religious institutions, showing that competition can increase provision. Fruehwirth et al. (2019) finds that religion reduces depression in adolescence. A recent group of papers discuss the network value of religious institutions. In his recent book Seabright (2024) describes religious institutions as platforms, bringing people together from different backgrounds for a variety of purposes. Chetty et al. (2022) find that religious institutions uniquely enable people from different social classes to interact with each other. Murphy et al. (2019) present evidence for the informational value of the network - individuals who find themselves in the same church are more likely to share agricultural

information with each other. Religious groups can provide insurance, both physical (Chen, 2010; Ager and Ciccone, 2018) and psychological (Auriol et al., 2020). Chen (2010) find evidence that individuals became more religious during the Indonesian Financial crisis and that participation in religious communities increases the ability to consumption smooth. Auriol et al. (2020) conduct a lab-in-the-field experiment in Pentecostal churches in Ghana, finding that formal insurance can substitute for religious participation and that this substitution is owed not to the physical insurance offered by a community but to the idea that God divinely insures faithful believers. Similar to Iyer et al. (2014b), I provide evidence at a granular level on the types of services that religious institutions provide. In contrast, I focus on network services, complementing institutional data with household-level data on interactions with the religious institution. In addition, I break down these services by denomination and look at differential provision based on context and identity of the adherent.

Secondly, I speak to the literature on the intersection of religion and development. Much of the existing literature focuses on the mixed legacy of historical missions in colonial Africa on a range of development outcomes (income, welfare, mortality, fertility, education) (Nunn, 2010; Wantchekon et al., 2015; Valencia Caicedo, 2019; Jedwab et al., 2021; Lowes and Montero, 2021; Guirkinger et al., 2022; McCleary and Barro, 2019). A smaller number of papers examine the modern impact of religion on development. Borooah and Iyer (2005) look at the effect of caste and religion on education. Iyer (2016) study the effect of religious riots on election results. Bazzi et al. (2020) consider the response of religious schools following the introduction of public schools in Indonesia. In a similar vein to Bazzi et al. (2020), I find evidence that the provision of network goods by religious institutions acts as a substitute for other providers. Religious institutions succeed in a setting with weak government services and replace traditional village networks both in urban areas, where migrants from many ethnic groups interact, and in rural areas as village networks break down.

Finally, I provide a novel explanation for the rise of Pentecostalism in developing economies, contributing to the literature on the economic forces underlying religious adherence patterns. Barro and McCleary (2005, 2024) use reports from the World Values Survey to conduct cross-country comparisons on the determinants of religious conversion. In the history literature, Rubin (2014) examines the effect of the spread of the printing press on the rise of Protes-

tantism, while Becker et al. (2017) looks at the effect of the expansion of education on religious attendance in Germany. Michalopoulos et al. (2018) find evidence supporting trade as an important factor in the early spread of Islam. Corbi and Sanches (2021) find that government regulation and tax incentives can favour certain types of religious institutions. A subset of this literature establishes the effect of negative shocks on religiosity: Buser (2015) examines the impact of income on religiosity using variation in eligibility for government welfare; Sinding Bentzen (2019) find increases in conversion and conversion to Evangelical denominations in response to earthquakes, and Costa et al. (2023) find that economic downturns in Brazil led to higher local vote shares for Pentecostal candidates. The closest paper in this literature is that of Ager and Ciccone (2018), which tests the hypothesis that agricultural risk promoted the development of religious communities in the US. My paper builds migration into this story, proposing that rural-urban migration interacts importantly with this risk-sharing function to promote Pentecostalism.

The rest of the paper proceeds as follows, section 2 describes the data, section 3 describes the empirical strategy, section 4 presents results on the religious affiliation of migrants, and discusses potential mechanisms, section 5 presents results on the religious affiliation of out-migrant households, and potential mechanisms, section 6 contains a discussion of these results and concludes.

2 Data and Background

2.1 Survey of Pentecostal Churches

Very little empirical data exists on the nature of religious institutions in developing countries (Iyer et al. (2014b) provides a notable exception). Collaborating with a team from the University of Environment and Sustainable Development in Ghana, I conduct extensive surveys of 35 Pentecostal churches throughout Accra.

Two communities were selected to be roughly representative of Accra. In the first stage, we built a sampling frame of churches within these communities. Enumerators approached community centres and asked administrators for full lists of the churches within the com-

munity. They then walked the communities and validated these lists, adding any additional institutions they found. In the second stage, we aimed to conduct a census of the Pentecostal churches in the two communities. Enumerators visited every Pentecostal church in the sampling frame and requested interviews with the lead pastor and/or a lead administrator within the organisation. If subjects were not available, enumerators made arrangements to follow up at another time. The final take up rate for these interviews was approximately 75%, for a total of 35 Pentecostal churches. Two enumerators sat with each subject for the interview and recorded their responses on paper surveys. Interviews were recorded to assess data quality. The survey consisted of 5 units: Institutional history, membership and attendance, services provided by the institution, church organisation and employment, and finance. Summary statistics on basic institutional information are recorded in table 2. Attendance figures over time are shown in figure A.2.

	Num.	Mean	Median	Std	Min	Max
Church Attributes						
Year Founded	35	2006.00	2006.50	11.15	1972	2021
Members	35	178.03	107.00	191.86	15	756
Attendance	35	100.14	75.00	90.50	10	420
Contributions						
Tithes (GHS)	30	1062.50	425.00	1617.32	50	8000
Offerings (GHS)	30	709.71	500.00	690.34	0.37	2700
Volunteers	31	7.76	6.00	5.17	0	20

Table 2: Summary Statistics from a survey of 35 Pentecostal Churches in Accra

2.2 ISSER-Northwestern-Yale Ghana Long Term Socioeconomics Panel Survey (GSPS)

Testing the relationship between migration and Pentecostalism requires longitudinal data tracking both migration movements, and religious affiliation at the denominational level. Few datasets break down denomination past the level of Protestant/Catholic level. The GSPS survey tracks denominational affiliation, including Pentecostal affiliation across its four waves (2009/2010, 2013/2014, 2017/2018, 2022/2023). The dataset also contains extensive information on education, assets, income, health, consumption, networks, psychology, and housing, allowing rich mapping between religious affiliation and other household economic variables. I contribute a unit in the fourth wave of the survey to elicit additional information on religious history and affiliation. The unit refines religious affiliation to the organisation level. It records religion at birth and timing of conversion from this religion,

allowing me to control for religion at birth in the estimations that follow, and to match historical conversion with migration. The unit also records details on the institution the household member attends: the size of the institution, and the distance travelled to get there. Importantly, it also records information on the contributions made to the religious institution, both monetary and time and services received from the institution. This data allows comparisons of services provided by institutions between denominations, across geographies, and by individual attributes. Table 3 provides some basic summary statistics. Figure **??** in the appendix shows the conversion patterns across waves, while figure A.5 compares religious involvement by denomination. Most conversion occurs between Protestantism and Pentecostalism, though there is significant conversion away from Catholicism and Traditional religions, especially in rural areas.

	Num	Mean	Median	Std
Tithe (Yes/No)	8929	0.47	0.00	0.49
Other Giving (GHS)	1300	158.88	50.00	611.93
Religious Materials (GHS)	1310	7.10	6.00	4.38
Other Spending (GHS)	336	2.98	2.00	2.87
Travel Time (mins)	7004	17.78	15.00	18.08
Institution Size (attendees)	6998	116.50	70.00	144.18

Table 3: GSPS Wave 4, religion unit summary stats

The GSPS survey is representative at the regional level, with 5009 households surveyed in the first wave. The panel attempts to track migrants and split households across waves. Split households make up a significant portion of the sample: there are 5927 households in the fourth wave, with 1945 these being new households since the first wave.

2.3 Supplementary datasets

The Ghana Census (2000, 2010 and 2021) releases 10% representative samples for researchers. The survey contains information on recent migration status, most recent immigration, and employment status. It also records religious affiliation, including a category for Pentecostal affiliation. This data provides additional information at the national level, which I use in constructing motivating facts, and in the setup of the instrument.

I use price series from the FRED database released by the US Bureau of Labor Statistics. To construct the mining exposure instrument, I use the Producer Price Index for Gold Ore. For the construction instrument I use the price of ready-mix concrete. For the manufacturing

instrument I use the series for PPI private capital equipment for manufacturing industries as a measure of capital costs, and I use the yearly series for the price level of exports for Ghana, provided by the Penn World Tables.

2.4 Construction of Variables

Migration The GSPS survey records migration with three different methods. It firstly records immigration information - years living in the current community, previous location of residence, reason for migrating, and employment before and after moving. Secondly, in the first three waves the survey asks for up to four migration events longer than one year in length, and migrations longer than one month in the fourth wave. The migration history unit collects information on the timing of migrations, employment before and after migration, connections at destination when migrating, and reason for migrating. Thirdly, it records observed migration across waves.

I use the immigration unit to construct a binary measure for rural-urban migration. The variable takes the value 1 if the individual was born in a rural community, migrated, and is now living in an urban community. I use this as a secondary measure to conduct robustness checks on the migration results, and use the information in the immigration unit on employment before and after immigration.

Using the migration history unit, I construct a yearly migration panel. I do not use this as my primary migration measure for several reasons. Firstly, there is significant bunching of historical migration around 5 and 10 year increments, making it difficult to map migration events to pull-migration shocks, and to conversion events. Secondly, there is evidence that there is significant under-reporting of migration events. While immigration events should show up in the migration unit, this rarely occurs (in wave 3, 6184 individuals report not being born in the community, while only 3309 report having ever lived away from the community). Additionally, the migration unit asks for "the most recent migrations, preferably those since the last wave". This leads to some double reporting of migration events across waves, with conflicting reports on the timing of migration. Locations are often not reported, making it difficult to map these migration events to one another. Lastly, and critically, these migration reports combine both temporary and permanent migration - migrants may have moved with

their household to their current location, migrants may have left their original household to start a new household, or family members may have lived away from their household for several years before returning.

I do use this panel in testing the mechanisms, making use of the information it contains on reasons for migration, connections at destination when migrating, and employment information before and after migration.

My primary measure for migration uses observed migration events from the panel. In each wave, households are asked to provide a household roster. If households report that someone no longer belongs to their household, households are asked whether this individual is still in the community and, if not, where they migrated to. The panel then attempts to locate this individual to interview their new household. One drawback of this measure is the significant attrition of migrants. While 5695 outmigration events are recorded, only 755 of these migrants are located after migration. This attrition will bias the results if attrition is non-random. I control for this attrition using propensity weighting of observables at baseline. This attrition does not affect estimation using out-migration. Households who report out-migration are still observed in the sample.

Religious Affiliation The Ghana Panel records religious and denominational affiliation in each wave. In defining Pentecostal, I combine several categories that are sometimes separated in different literatures: Pentecostal, Charismatic, Renewalist, Independent. For my purposes, the term Pentecostal is used to describe churches that are relatively *informal* - low start-up costs, few formal requirements for pastors and members, few restrictions on activities undertaken by the church; and *independent* - the organisation is independent of a large historic global denomination, the organisation has lower levels of bureaucracy, and decisions are made at a more local level. In some cases, the organisational structure of Pentecostal organisations can resemble those in Protestant organisations. The Church of Pentecost, for example, claims a membership over 10% of the Ghanaian population, with over 18000 local assemblies across the country. While the size of this organisation requires hierarchical management, the organisational structure remains unique to mainline Protestant denominations in several ways. The organisation and leadership are Ghanaian, with a much smaller international presence (largely diaspora communities). Church of Pentecost branches

have more independence and decision-making power than branches of traditional Protestant denominations. The congregation has a greater say in the use of resources and church activities. There are few training requirements for pastors in the Church of Pentecost, and local branches rely heavily on volunteers.

In the fourth wave of the survey, I collect information on the specific religious organisation that individuals belong to. I conduct robustness checks separating out these larger Pentecostal denominations.

In wave three of GSPS they modified their denomination categories to introduce the category "Charismatic". In previous waves those selecting Charismatic are likely to present in the "Pentecostal" category or the "Other Christian" category. In the first two waves, I take "Other Christian" and "Pentecostal" to represent Pentecostal, though a small number of those in the "Other Christian" group would traditionally be classed as Protestant (e.g., Church of Christ). I group Anglicans, Presbyterians, and Methodists as Protestants. The other groups I use are Catholic, Traditional (Ethnic) religion, and Muslim. Approximately 1.4% of the panel identify as having no religion. I include them as a group in the analysis, but do not present any results related to the group. There is very little switching between Muslim affiliation and Christian affiliation (see figure **??**). For the purpose of this paper, I keep Muslims in the sample but do not report results related to Muslim affiliation. I conduct robustness checks, omitting Muslims from the panel.

Conversion I construct a set of binary variables representing conversion. $Conv_{rel}$ represents a change in reported affiliation across waves between any of the major groups discussed in the previous paragraph. $Conv_{denom}$ represents a change between any minor denominational group (for example, a Methodist becoming Presbyterian). This measure is complicated by the change in definition between waves two and three. I code "Other Christian" as "Charismatic" in waves one and two for this purpose. $Conv_{Pent}$ represents a change in affiliation from any group towards Pentecostalism.

2.5 Background

Pentecostalism was introduced to Ghana by missionaries in the early 20th century, following Pentecostal revivals in Wales and the western United States. The organisations formed as a

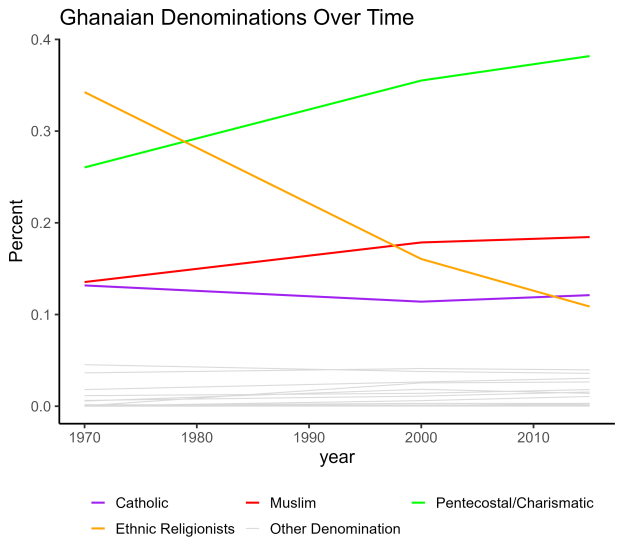

Figure 2: World Christian Database 2024, Ghana denominational affiliation over time

result of these mission activities expanded steadily across the 20th century, and today, along with the Catholic church, are the largest religious organisations in the country. The Church of Pentecost and the Apostolic Church were both formed out of the Welsh revival, while the Assemblies of God churches derive from the California Azusa Street revival.

In the 1980s, a new strand of churches emerged - "Charismatic" churches. These churches were typically offshoots of the mainline Pentecostal churches, with the distinction that the founders were Ghanaian. These Charismatic churches proliferate the market today, especially in urban centres. They are many and diverse; the majority are small (under 100 members), though some grow into large, highly marketed organisations of up to 20000 people.

Figure 2 shows estimates of denominational affiliation in Ghana. Pentecostal affiliation expanded rapidly between 1970 and 2000, largely at the cost of traditional religions. Since then the growth rate has slowed, though Independent denominations (which I take as Pentecostal) continue to gain share.

Along with the organisational distinctives that I focus on (noted in the introduction), literature in sociology and religious studies note several other key differences between Pentecostal churches and mainline denominations. The work of Gifford (2004) groups the differences into the following categories:

Firstly, more than traditional forms of Christianity, Pentecostal churches share a core belief in the intervention of God ineverydayy life, displayed supernaturally through, for example,

divine healing, prophecy, and speaking in tongues (The Pew Forum on Religion & Public Life, 2006).

Secondly, Pentecostal denominations place a high value on success and prosperity. Messages in churches often highlight individual agency in creating personal and corporate transformation, promising physical and spiritual rewards for faithful adherence, including escape from poverty (McClendon and Riedl, 2019). Economic and social success is encouraged, and those who attain this success are often regarded as favoured by God.

Thirdly, while both Catholic and Mainline Protestant churches have invested significantly in economic development, through investments in education and health, political persuasion, human rights advocacy (Gifford, 2004; Wantchekon et al., 2015; Nunn, 2009), many churches forgo these general services, investing instead, as I will show, in network services for members. Large Pentecostal churches invest considerably marketing, radio or tv programming to grow and encourage their congregations.

Fourthly, the style of worship and music offered by Pentecostal denominations is distinct. Unlike the orderly worship services found in traditional denominations, Pentecostal worship is participatory, exuberant, and personal (Gifford, 2004; Asamoah-Gyadu, 2015; Miller and Yamamori, 2007).

While the demographics found in Pentecostal churches can vary between organisations and branches, there is a distinct age gap, with young people favouring Pentecostal denominations, and older people favouring traditional Catholic and Protestant denominations.

3 Empirical Framework

In this section I seek to establish that migrants, who value network services, convert upon migrating, and convert towards Pentecostal denominations.

For individual i in community d at period t, the effect of migration on affiliation to religion Rel is estimated with

$$Rel_{idt} = \beta_R Rel_{i,birth} + \beta_M Mig_{idt} + \beta_X X_{idt} + \alpha_d + \alpha_t + \varepsilon_{idt}$$

where Rel_{idt} is a dummy variable which equals 1 if individual i belongs to religion Rel at time t, $Rel_{i,birth}$ is the religion of individual i at birth, Mig_{idt} is a dummy variable which takes the value of 1 if individual i migrated between periods $t-1$ and t, α_d is the fixed effect for the community at time 0, and α_t is the time fixed effect.

This estimation compares migrants with non-migrants from the same community at the baseline period, holding fixed individual characteristics in X_{idt}.

Migration may be endogenous to religious choice for several reasons. There may be selection issues: individuals who are Pentecostal may also be more likely to migrate (migration will be endogenous if younger people are both more likely to demand the services provided by Pentecostal churches and migrate to the city). Secondly, reverse causality may be a problem if conversion assists in the process of migration, e.g., joining a Pentecostal church connects you to an inter-district network of churches. Finally, there may be unobserved variables that are correlated with both religious affiliation and migration choices. Several papers (Chen, 2010; Ager and Ciccone, 2018; Buser, 2015) have demonstrated that negative income shocks are likely to increase religiosity. Since income shocks will also affect migration choices, migration will be endogenous if there is no control for these shocks.

3.1 Instrument Design

To address these endogeneity concerns, I construct a set of pull instruments using as-good-as-random shocks to industries at potential destination districts. The instrument z_{iotk} represents the exposure of individual i from origin district $o \in \Theta$ at time t to price shocks in industry k in each potential destination district d. The instrument includes a market access component: those who live closer to districts with a high employment share in industry k are more exposed to price shocks that affect that industry. The instrument is constructed as

$$z_{iotk} = \phi_{i(t-1)} \sum_{d \in \Theta/o} \frac{\Delta Price_{kt} \times exposure_{kd}}{\tau_{od}}$$

$\Delta Price_{kt}$ is the sum of price innovations between wave $t-1$ and wave t, $exposure_{kd}$ is the proportion of workers in industry k that reside in district d at baseline (constructed using the 2010 Ghana Census), τ_{od} is the distance between the centroids of district o and d, and

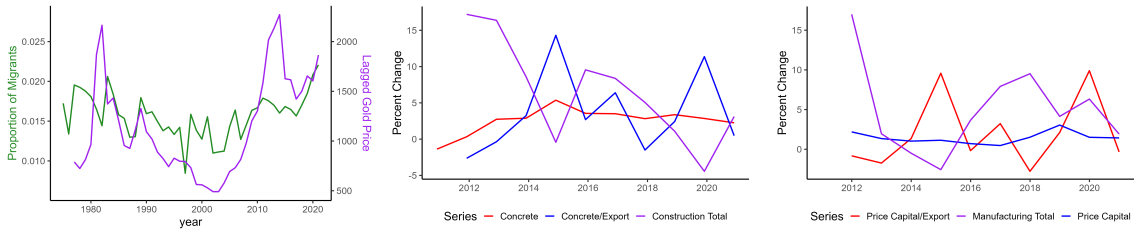

Figure 3: Panel 1) Gold prices from the FRED database, proportion of migrants from 2021 Ghana Census, Panel, 2) Concrete prices from FRED database, construction industry size from Ghana Statistical Service, 3) Manufacturing capital prices from FRED database, manufacturing industry size from Ghana Statistical Service

$\phi_{i(t-1)}$ is a measure of potential individual productivity.

$$\phi_{i(t-1)} = yearsedu_{i,0} \times ageweight_{i,t-1}$$

where $yearsedu_{i,0}$ is the years of education for individual i at time 0 and $ageweight_{i,t-1}$ is a measure of the likelihood of migration based on the age of the migrant at time $t-1$, constructed using the 2010 census.

3.2 Instrument Relevance

I exploit random price innovationsthath affect employment opportunities in one largely rural industry - gold mining, and two urban industries - construction and manufacturing.

3.2.1 Mining

In 2022, gold made up 47.7% of total exports in Ghana (OEC, 2024). Work in small-scale and artisanal mines is extensive (the number of people working informally in small mines is estimated to be around 1.1 million, McQuilken and Hilson (2016)). Changes in the global price of gold impact the profitability of seeking work in gold mining. This induces migration, whereby households living near gold mines will be more likely to migrate to a gold area following a positive gold shock. As descriptive evidence for this effect, I regress the share of migrants who report immigrating into a gold mining district by year, according to the 2021 census, on lagged changes in the global gold price series from the FRED database. Results are reported in table A.2, and the comovement of the series can be seen in figure 3.

	Dependent variable:		
	Prop. of Migrants	Number of In-Migrants	
	(1)	(2)	(3)
Gold Price (USD)/1000	0.0001***	22.045***	
	(0.00004)	(1.699)	
Innovation			0.018***
			(0.004)
lag(Innovation)			0.013***
			(0.004)
District FE	Yes	Yes	Yes
Observations	734	734	749
Adjusted R^2	0.467	0.274	0.125
F Statistic	38.835***	17.299***	6.942***

Table 4: Migration from Ghana 2021 Census, Gold Prices from FRED. Column (1) is a regression of prices on the proportion of adult male migrants entering a gold mining district. Columns (2) and (3) are regressions of gold prices/innovations on the number of in-migrants to gold mining districts. Regression is at the year-district level. *p<0.1; **p<0.05; ***p<0.01

3.2.2 Construction

I use innovations in the price of ready-mix concrete (FRED, 2024) as an important input in the construction industry. The construction industry makes up approximately 15% of GDP in Ghana, and employs approximately 420,000 people, predominantly in urban areas (International Trade Administration, 2023). While approximately 7.9% of adult males in urban areas are employed in construction, 10.5% of economic migrants to urban areas find themselves in construction (Ghana Census, 2021).

3.2.3 Manufacturing

I use innovations in the price of manufacturing inputs relative to export prices, following the analysis of Kose and Riezman (2001) in examining the effect of trade shocks in Africa. Manufacturing amounts to approximately 11% of GDP in Ghana (World Bank 2023), employs 6.5% of males in urban areas, and 8.9% of recent migrants into urban areas. Figure – presents evidence on the response of the industry to changes in input prices, and migration responses to high manufacturing districts.

3.2.4 Individual Productivity

As in Madhock et al. 2024, I interact the instrument with a second share so that the instrument represents individual exposure to the price shock. I construct a measure of

individual productivity using education levels and age structure. Individuals in their early 20s and who have received more education are more mobile and, therefore, are more exposed to the pull-migration shocks.

3.2.5 Two Stage Least Squares

The two stage least squares framework is the following,

$$Rel_{iodt} = \beta_R Rel_{i,birth} + \beta_M Mig_{iodt} + \sum_k exp_{otk} + \beta_X X_{idt} + \alpha_o + \alpha_t + \varepsilon_{idt}$$

$$M_{iodt} = \beta_R Rel_{i,birth} + \sum_k \mu_{1,k} z_{iotk} + \sum_k exp_{otk} + \mu_x X_{iot} + \gamma_o + \gamma_t + v_{iot}$$

where $exp_{otk} = \Delta Price_{kt} \times exposure_{ko}$ is the direct exposure of district o to the commodity k shock.

First-stage regressions are reported in table A.4, with the expected signs. Increases in the gold price, increase the likelihood of migration. Increases in concrete, or capital prices, reduce the likelihood of migrating.

3.3 Instrument Exogeneity

In order for exogeneity to hold, it must be that the instrument only affects religious choice through migration, given controls and fixed effects. Recent contributions to the shift-share literature establish that consistency can be achieved either through plausible exogeneity of the shifts (Borusyak et al., 2022) or of the shares (Goldsmith-Pinkham et al., 2020). In this section, I will argue that 1) market access shares are plausibly exogenous given controls, i.e. that trends over time in religious affiliation for districts with more or less exposure are the same absent of migration, and 2) that conditional on controls, shocks to employment opportunities in destination districts are randomly assigned across individuals.

I first consider the exposure of districts to shocks in commodity prices. If estimation were to occur at the district level, we would require the equivalent of a parallel trends assumption: trends in Pentecostalism over time across districts are the same absent of the price

shock. Without controls, this is unlikely to hold. Districts closer to high density Pentecostal districts are likely to experience differential exposure over time (Pentecostal churches conduct many evangelism activities). Furthermore, remote districts are likely to experience less exposure to religious pluralism generally. To address these issues I firstly control for region-time fixed effects, so that identification occurs by exploiting differences in the within-region exposure to industry shocks. I include community fixed effects at baseline to account for any time-invariant village level variables which may affect religious affiliation (like initial level of Pentecostalism). To allay concerns of differential religious exposure, I control directly for population density, and access to Pentecostalism, by including a weighted distance measure to districts with Pentecostalism, similar to the construction of the instrument. Given controls, it seems plausible that there are no differential trends within region in Pentecostal growth absent of migration. There will still be endogeniety issues if price shocks in neighbouring districts directly affect local conditions. To address concerns that exposure to price shocks may be correlated across space I directly control for local district exposure to the price shock ($\Delta Price_{kt} \times exposure_{kd}$). I also control for average district income, to account for any spillover affects that price shocks may have on local incomes (e.g., through transfers or trade). Finally, to ensure that price changes are not arbitrarily correlated with other price series, I use innovations in prices from an AR(1) process.

Having established that the price-exposure measure provides plausibly random variation across districts, I transform this to individual exposure, by multiplying by an individual productivity weight - the product of years of education at baseline and an age weight, based on the national likelihood of migrating at age a based on statistics from the 2000 Ghana census. I control directly for age and years of education level, so that identification occurs through the differential exposure of age-education individuals to the price shock. Many unobservables may be correlated with age and education that predict Pentecostal affiliation. Income, or fertility, for example, will be correlated with both age and income, and may affect religious choice. Following (Borusyak et al., 2022), the exclusion restriction then rests on the exposure shocks being as-good-as-randomly-assigned given controls and fixed effects, i.e. that exposure to district shocks does not systematically differ by individual productivity weighting ϕ_{it-1}. In figure 4 below I compare the distribution of shocks for individuals with

high and low ageweights, and high and low education levels, after conditioning on controls and fixed effects. I directly control for income, household size, number of births and number of deaths in the household. The distributions appear almost identical - individuals with different productivity measures are exposed to similar shock levels given controls.

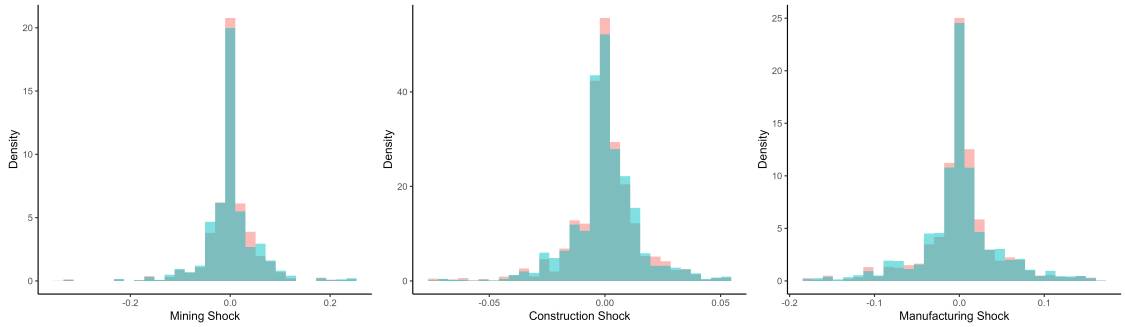

Figure 4: Distribution of Shocks across high and low productivity individuals, controlling for age, education, religion at birth, local industry exposure, region-wave fixed effects, community fixed effects

More formally, following Borusyak et al. (2022) I run a set of balance tests, regressing potential confounding factors, including education and age weight, against a first differenced shock in a pooled cross-section, controlling for region fixed effects. If the shock is uncorrelated with these confounding factors, then we can conclude the shocks are as-good-as-randomly assigned, and that the shock is not arbitrarily picking up comovements with other individual characteristics.

3.4 Household Out-Migration

In order to estimate the effect of outmigration on the religious affiliation of the household at origin, I run a household equivalent regression to the one used in section 3

$$Rel_{hodt} = \beta_R Rel_{h,birth} + \beta_M Mig_{hodt} + \sum_k exp_{otk} + \beta_X X_{idt} + \alpha_o + \alpha_t + \varepsilon_{idt}$$

$$M_{iodt} = \beta_R Rel_{i,birth} + \sum_k \mu_{1,k} z_{iotk} + \sum_k exp_{otk} + \mu_x X_{iot} + \gamma_o + \gamma_t + v_{iot}$$

Rel_{hodt} is the number of household members in household h that belong to religion Rel at time t, $Rel_{h,birth}$ is the modal religion of the adult household members at birth, Mig_{hdt} is

the number of out-migrants from household h that migrated between periods $t-1$ and t, α_d is the fixed effect for the community at time 0, and α_t is the time fixed effect.

The instrument is defined using the same industry shocks as section 3, and the arguments for exogeneity follow. The productivity weight is modified to represent household productivity. The household instrument is

$$z_{hotk} = \phi_{h,0} \sum_{d \in \Theta/o} \frac{\Delta Price_{kt} \times exposure_{kd}}{\tau_{od}}$$

$$\phi_{h,0)} = yearsedu_{h,0} \times ageweight_{h,0}$$

where $yearsedu_{h,0}$ is the total years of education for household h at baseline and $ageweight_{h,0}$ is the average age of adults in household h at baseline. Exposure of the household to destination industry shocks are increasing in education levels in the household, and decreasing in average adult age.

4 Migration Results

Since the industry shocks I am using, especially in mining and construction will predominantly affect men, and because the majority of migration for women is for marriage or family purposes (see table A.1), I restrict the sample to male migrants. I adjust for attrition using inverse probability weighting based on observables at baseline [1]. The results of the instrument regression are presented in table 5. Columns (1) - (3) are the results for migrants who began in rural areas, and (4) - (6) are the results for migrants who began in urban areas. Male migrants from rural locations are more likely to be Pentecostal after migrating and less likely to be Protestant. Conversely, male migrants from urban areas are less likely to be Pentecostal after migrating, with some evidence of a shift towards Protestantism. The size of the coefficients are large. Migrating roughly doubles the probability of being Pentecostal for migrants from rural areas, and wipes out much of Protestant affiliation.

A corresponding regression can be run to determine the effect of migrating on conversion

[1] In most cases, it is known which individuals have migrated, since the household at origin reports their migration event. However, there is no information on the current religious affiliation of migrants that are not traced

	Dependent variable:					
	Rural			Urban		
	Pentecostal	*Catholic*	*Protestant*	*Pentecostal*	*Catholic*	*Protestant*
	(1)	(2)	(3)	(4)	(5)	(6)
Migrate	0.244**	−0.063	−0.284***	−0.276**	0.059	0.109
	(0.122)	(0.097)	(0.105)	(0.124)	(0.066)	(0.132)
Mean	0.26	0.14	0.16	0.4	0.11	0.24
F^{Eff}	13.6083	13.6083	13.6083	9.9992	9.9992	9.9992
Region-Wave FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,320	4,320	4,320	2,158	2,158	2,158
Adjusted R^2	0.377	0.355	0.332	0.377	0.341	0.302

Table 5: Includes individual controls for age, income, education, religion at birth, district controls for income, population density, religion at baseline. Includes fixed effects for community at time 0. Errors clustered at the EA level. F_{Eff} is the effective F-statistic for testing weak instruments (Olea and Pflueger, 2013). *p<0.1; **p<0.05; ***p<0.01

- conversion between religions, conversion between denominations, or conversion to Pentecostalism. The results are given in table 6. The results show no significant increase in conversion rates for migrants from either rural or urban areas, when compared to individuals from the same origin district who did not move.

I cannot reject that migration has an effect on conversion rates. However, there may be two forces acting simultaneously to produce this null result - non-Pentecostals may migrate to the city and convert, while Pentecostals, upon migrating, hold on to their Pentecostalism. To investigate this, I run a regression interacting Pentecostal status with migration, with results reported in A.6. The results of the regression support this dynamic, though the instruments lose some power when interacted with religious status, inflating the coefficient sizes. For Pentecostals, migration lowers the probability of conversion, while for non-Pentecostals the probability of conversion is increased. Results are limited by the attrition of migrants, especially as I break down the sample to Rural/Urban and Pentecostal/Non-Pentecostal.

4.1 Migrant Mechanism

4.1.1 Network Services

I now seek to establish the mechanism behind this shift in religious affiliation for migrants moving from rural areas. I provide evidence to support the hypothesis that these migrants join Pentecostal churches for the network services they provide. Firstly, I demonstrate that Pentecostal churches provide economic assistance through transfers significantly more than

Table 6

	Dependent variable:					
	Rural			Urban		
	$Conv_{Any}$	$Conv_{Denom}$	$Conv_{Pent}$	$Conv_{Any}$	$Conv_{Denom}$	$Conv_{Pent}$
	(1)	(2)	(3)	(4)	(5)	(6)
Migrate	0.0004	0.220	0.020	−0.076	−0.131	−0.059
	(0.108)	(0.173)	(0.069)	(0.125)	(0.142)	(0.070)
Mean	0.2	0.27	0.06	0.15	0.24	0.02
F^{Eff}	13.5806	13.5806	13.5806	10.1125	10.1125	10.1125
Region-Wave FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,317	4,317	4,317	2,157	2,157	2,157
Adjusted R^2	0.178	0.223	0.090	0.146	0.209	0.059

Table 7: Includes individual controls for age, income, education, religion at birth, district controls for income, population density, religion at baseline. Includes fixed effects for community at time 0. Errors clustered at the EA level. F_{Eff} is the effective F-statistic for testing weak instruments (Olea and Pflueger, 2013). *p<0.1; **p<0.05; ***p<0.01

		Services Received from Institution				
		From Institution		From Network		
Denomination	N	$Trans_{Money}$	$Trans_{In-Kind}$	$Trans_{Money}$	$Trans_{In-Kind}$	*Advertise*
Catholic	268	0.02	0.03	0.02	0.03	0.03
Pentecostal	1420	0.06**	0.09**	0.04	0.06	0.05
Protestant	700	0.05	0.07	0.04	0.05	0.02
Muslim	550	0.01	0.02	0.00	0.01	0.04
Traditional	58	0.03	0.02	0.00	0.00	0.00
		Contributions to Institution				
Denomination	N	*Tithe*	*Giving*	*ReligItems*	$Attend_{Services}$	$Attend_{Other}$
Catholic	268	0.44	62.34	0.14	66.93	43.93
Pentecostal	1420	0.66***	40.66	0.14	70.99	53.09
Protestant	700	0.69***	32.12	0.23	63.40	49.54
Muslim	550	0.19	49.39	0.10	226.87***	106.89***
Traditional	58	0.02***	22.76	0.00	43.76	31.74

Table 8: Ghana Panel Wave 4 summary statistics - $Trans_{Money}$ is a binary variable which takes the value 1 if an individual received a monetary transfer within the last year, $Trans_{In-kind}$ is a binary variable which takes the value 1 if an invidiaul received an in-kind transfer within the last year, *Advertise* is a binary variable which takes the value 1 if an invidual advertised their business in their religious institution within the last year. *Tithe* is a binary variable which takes the value 1, if the individual reports giving a set portion of their income to their religious institution, *giving* is the amount of giving outside of the tithe, *ReligItems* is the amount spent on purchasing religious materials, $Attend_{Services}$ is the number of services attended during the year, and $Attend_{Other}$ is attendance at activities outside of the main service. Stars represent the significance for the difference with Catholic following regressions reported in tables A.7 and A.8, *p<0.1; **p<0.05; ***p<0.01.

other religions and denominations.

Table 8 presents summary statistics from the religion unit in the fourth wave of the GSPS survey on both the services received from the religious institution, and contributions made. Table A.7 tests for differences in the provision of services across denominations, controlling for age, gender, household structure, income, and education levels. The significance results are reported in table 8. Pentecostals are significantly more likely than other denominations to report receiving transfers directly from their institution within the previous year. 10% of Pentecostals in urban areas report receiving at least some transfer from their institution within the last year. Pentecostals have the highest level of transfers received from other mem-

bers of the institution, and in businesses advertised, though these differences with Catholics are not statistically significant. Protestant churches are the second largest providers of transfers. However, there appear to be some geographic trends; after controlling for district fixed effects, the coefficient on Protestant reduces and becomes statistically insignificant. I do not include information on job and housing referrals here since reported referrals are less than one percent in each denomination.

On the contributions to the network, Pentecostals and Protestants are roughly equally likely to give a set proportion of their income to their religious institution (i.e., to tithe), significantly more than Catholics and non-Christians. Giving and spending outside this tithe is relatively small, with no significant differences across denominations.

To understand the scale of these services from an institutional standpoint, table 9 reports results from the survey of 35 Pentecostal churches in Accra. Of the 32 churches that responded to the services section of the survey, 31 of them reported giving monetary transfers to their members, with a median of 12 transfers per year. Most also reported in-kind transfers of food and clothing. The median size of a transfer is 475 Cedi, representing approximately 1/4 of the median monthly urban household income in our sample (1870 Cedi). In-kind transfers tend to be smaller, and are received by poorer households.

The median size of church in the sample is 110, indicating that churches report giving approximately 10% of their members a transfer within a year, in line with the GSPS results. Churches report helping more members to find jobs and housing than reported by individuals in the GSPS. Finally, churches report providing support for businesses started by their members. The reports on advertising opportunities provided by churches are reflected in the GSPS data, though few people report to having attended the business or skills training that churches provide.

Pentecostal churches, therefore, appear to be providing network-related services, especially transfers, in urban areas. Most of these transfers are centralised, and are channelled formally through the organisation. This support is supplemented by transfers given informally by members of the same religious institution. Notably, Pentecostal churches are significantly more likely than any other group to provide transfers through the institutional channel. These services come at a cost, with Pentecostal churches requiring greater tithing commit-

ments.

	Number Churches	Mean	Median	Std	Min	Max
Number of Transfers						
Monetary	31	17.15	12	17.06	1	80
Food	26	17.54	10	19.08	2	80
Clothing	22	16.25	10	20.93	1	80
Size of Transfers						
Monetary	31	1749.17	475	2324.41	100	8000
Food	26	765.42	100	1484.98	50	5000
Clothing	22	577	100	1144.35	50	5000
Other Network Services						
Helped find job	28	15	7.50	26.22	2	135
Helped find housing	26	8.46	5	12.82	1	60
Business Related Services						
Business Training (Participation)	16	45.12	30	46.24	3	200
Skills Training (Participation)	16	39.31	28.50	40.66	4	170
Businesses Advertised	25	8.48	5	9.31	1	40

Table 9: Survey of 35 Pentecostal churches in Accra, Ghana: services provided in the previous year.

I now examine which migrants convert in the city, and in particular, I test if migrants with fewer connections in the city on arrival are more likely to convert. If migrants are converting based on preferences for Pentecostal worship or doctrine, we would not expect differential conversion based upon connections at the destination.

To test this, I use the year-by-year panel based on self-reported migration. I add a year-by-year panel for conversion, using observed conversion during the years of the Ghana Panel, and self-reports on when individuals converted away from their religion at birth. The construction of the conversion panel will miss conversions if the individual converts multiple times before 2009. The majority of individuals who convert report only converting once in their lifetime. I remove individuals from this estimation who report converting more than once with these conversions not appearing in the years of the panel ($< 5\%$). Self-reported migration and conversion contains significant reporting error, and in particular, significant bunching of reported migration around 5 year intervals. To address this concern, I look at the effect of migration on conversion in the 5 years following the migration event. I run a fixed effects regression of the following form:

$$Conv_{idt} = \beta_R Rel_{i,birth} + \beta_{M_1} Mig_{NoConn,idt} + \beta_{M_2} Mig_{Conn,idt} + \beta_X X_{idt} + \alpha_i + \alpha_t + \varepsilon_{idt}$$

The results are reported in table . The results demonstrate that in periods where an individual migrates with no connections, they are significantly more likely to convert. Conversely, there is no significant effect of migrating with connections on conversion.

	Dependent variable:			
	$Convert$	$Convert_{Pent}$	$Convert$	$Convert_{Pent}$
	(1)	(2)	(3)	(4)
Know Relative/Acquaintance	−0.002	0.009	−0.008	0.004
	(0.010)	(0.010)	(0.010)	(0.009)
Know No One	0.035*	0.020	0.037**	0.023*
	(0.018)	(0.014)	(0.016)	(0.013)
Mean	0.19	0.26	0.19	0.26
Ind FE	No	No	Yes	Yes
Observations	128,835	128,835	128,835	128,835
Adjusted R^2	0.069	0.063	0.217	0.227

Table 10: Ghana Panel year by year regression using self-reported migration events. *Convert* is conversion in the 5 year period after migration. $Convert_{Pent}$ is conversion to Pentecostalism. Errors clustered at the EA level.*p<0.1; **p<0.05; ***p<0.01

There are several remaining hypotheses that may be consistent with the presented results. It may be the case that income directly affects membership in a religious institution, so that income changes upon migration (either positive or negative) directly induce conversion. To address this concern, I control for income in the estimation. This may not be adequate if income differentially affects conversion for migrants and non-migrants. I conduct a robustness test in table A.9, estimating the effect of income on conversion for migrants vs non-migrants. I find no evidence for a differential conversion effect of income between migrants and non-migrants.

Secondly, It may be the case that migrants, and especially disenfranchised migrants who have not found employment in the city, are especially attracted to the doctrines presented in Pentecostal churches in providing hope and meaning to their lives. This story would be consistent with the evidence offered by Binzel and Carvalho (2017), where unemployed males in Egypt disappointed with their job market outcomes shift their time use towards religious practices. To provide a test for this hypothesis I consider the size of the religious institution attended. The size of the church should increase linearly with the quality of the religious product offered so that migrants who value the religious product alone would be more likely to join the largest churches that are available in their community. However, network services do not increase linearly with size. While a larger network provides some benefits in the form of an enhanced risk-sharing network and a broader referral network, these benefits exhibit decreasing returns to scale. Moreover, there are costs that increase with size. Observability is reduced with a larger network, so trust and credibility are more

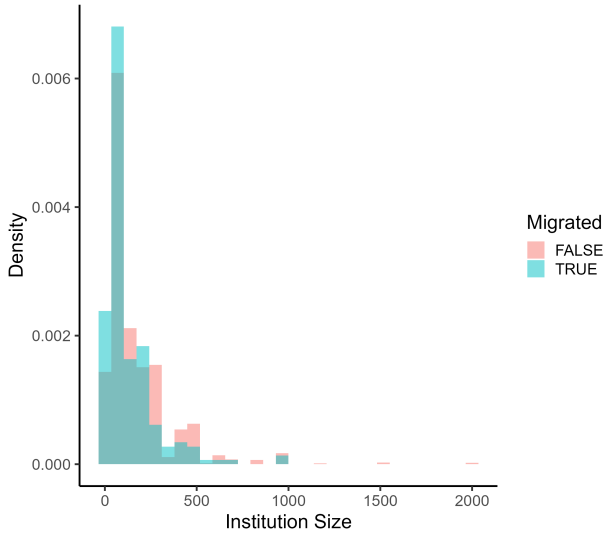

Figure 5: Distribution of institution size by migration status in urban areas. Migrated is true if individual migrated between 2009 and 2022.

difficult to establish. The referral benefits of a network are also reduced, as it becomes more difficult for individuals to find one another in the network. Therefore, there exists an optimal network size for network benefits. Running a regression of the likelihood of receiving services on the size of the institution attended, we see that this is indeed true. Monetary transfers from the institution decline with the size of the network. Monetary transfers from institution members initially increase with the size of the network but then decline, with a maximum of around 400 members. The regression results are reported in A.10. Using this difference, I compare the size of the institution attended by migrants with those attended by the general population. Figure 5 shows the institution size distribution for migrants vs non-migrants. Table A.11 reports the results of regressing institution size on migration status. Having migrated during the panel period (2009-2022) reduces the size of institution attended, i.e. migrants attend smaller institutions in comparison to the general population. This provides suggestive evidence that migrants are joining religious institutions for the benefits that do not scale with size, i.e. for the benefits of the network, rather than the quality of the worship service or charisma of the leader. This result could be explained if smaller churches present messages that are more attractive to migrants. While there is no particular reason to expect this to be true, I cannot unreservedly reject this hypothesis without more data on the types of messages valued by migrants. Finally, it may be the case that migrants value network services, but they value the network's social

rather than economic component. If networks purely provide social value, then economic variables should not affect the likelihood of conversion, except through channels of preference. In particular, the receipt of in-transfers from family members outside the household will reduce the economic value of the network, but should not affect the social value of the network. It may be the case, however, that stronger family ties outside of household increase the cost of switching religion. To partially account for this, I also look at the effect of the receipt of transfers from non-family members outside of the district of residence. The results are reported in table A.12. Migrants who receive transfers from relatives outside the household are less likely to convert. While not significant, the effect of transfers from non-relatives outside the district has a similar coefficient. While the receipt of in-transfers may be correlated with other factors that affect religious choice, this provides suggestive evidence that conversion does not occur for social reasons only.

5 Out-Migration

In this section, I investigate the effect of out-migration on the religious affiliation of households at origin. Outmigration may affect religious affiliation through several channels - a household with an out-migrant may be exposed to a new religion product for the first time, a household with an out-migrant may join the religion of the migrant as a form of support, or a household may increase their religiosity as a form of divine investment in the migrant. I test these against the hypothesis that outmigration breaks down the village network as in Munshi and Rosenzweig (2016), and the breaking down of the village network increases the demand for alternative sources of network goods, which are provided by religious institutions.

The results of the IV regression estimating the effect of out-migration on religious affiliation are reported in table 11.

Following outmigration, households with out-migrants become less Catholic compared to households with no out-migrants. Though not significant, Pentecostal adherence appears to decline. Households shift towards Protestantism (though not significant) and Traditional religions. Running the regression on conversion obtains the results given in table A.5. Out-migration increases conversion rates between religions and denominations. While conversion

rates to Pentecostalism increase, on net conversion away from Pentecostalism appears to dominate.

	Dependent variable:			
	Pentecostal	*Catholic*	*Protestant*	*Ethnic*
	(1)	(2)	(3)	(4)
Num_{Mig}	−0.191	−0.223*	0.250	0.155*
	(0.228)	(0.128)	(0.191)	(0.088)
Mean	1.166	0.563	0.554	0.287
F^{Eff}	37.9122	37.9122	37.9122	37.9122
HH Control	Yes	Yes	Yes	Yes
Observations	6,860	6,860	6,860	6,860
Adjusted R^2	0.470	0.453	0.444	0.432

Table 11: Includes household controls for average age, income, education, modal religion at birth, district controls for income, population density, religion at baseline. Includes fixed effects for community at time 0. Errors clustered at the EA level. F_{Eff} is the effective F-statistic (Olea and Pflueger, 2013). *p<0.1; **p<0.05; ***p<0.01

	Dependent variable:		
	$Conv_{Rel}$	$Conv_{Denom}$	$Conv_{Pent}$
	(1)	(2)	(3)
Mig_{Out}	0.280***	0.307***	0.154***
	(0.065)	(0.076)	(0.047)
Mean	0.458	0.603	0.141
F^{Eff}	37.9122	37.9122	37.9122
Observations	6,860	6,860	6,860
Adjusted R^2	0.177	0.208	0.016

Table 12: Includes household controls for average age, income, education, modal religion at birth, district controls for income, population density, religion at baseline. Includes fixed effects for community at time 0. Errors clustered at the EA level. F_{Eff} is the effective F-statistic (Olea and Pflueger, 2013). *p<0.1; **p<0.05; ***p<0.01

5.1 Out-Migrant Mechanism

In this section, I provide evidence that households are converting in response to a weakening village network, and that Protestant churches are more effective service providers in rural areas.

Table 13 compares services provided by religious institutions in rural areas in the Ghana Panel, with stars representing differences in services provided, or contributions made compared to Catholic affiliated households. Tables A.13 and A.14 report the regressions.

The results demonstrate no significant differences in the transfers received between any religious group, except that Pentecostals appear more likely to receive monetary transfers from their network than Catholics. The network function of religious institutions in rural

		Services Received from Institution				
		From Institution		From Network		
Denomination	N	$Trans_{Money}$	$Trans_{In-Kind}$	$Trans_{Money}$	$Trans_{In-Kind}$	*Advertise*
Catholic	843	0.03	0.03	0.01	0.02	0.02
Pentecostal	2102	0.05	0.04	0.03***	0.03	0.03
Protestant	1053	0.04	0.03	0.02	0.02	0.03
Muslim	1189	0.01	0.03	0.00	0.02*	0.02
Traditional	475	0.01	0.01	0.01	0.01	0.01
		Contributions to Institution				
Denomination	N	*Tithe*	*Giving*	*ReligItems*	$Attend_{Services}$	$Attend_{Other}$
Catholic	843	0.46	13.23	0.13	69.05	46.49
Pentecostal	2102	0.61***	14.96	0.10	66.42	48.53***
Protestant	1053	0.64***	21.01	0.12	63.86	45.07
Muslim	1189	0.17***	11.44	0.09	242.48***	114.09***
Traditional	475	0.03***	0.65	0.00**	43.47***	34.60 ***

Table 13: Ghana Panel Wave 4 summary statistics - $Trans_{Money}$ is a binary variable which takes the value 1 if an individual received a monetary transfer within the last year, $Trans_{In-kind}$ is a binary variable which takes the value 1 if an invidiaul received an in-kind transfer within the last year, *Advertise* is a binary variable which takes the value 1 if an invidual advertised their business in their religious institution within the last year. *Tithe* is a binary variable which takes the value 1, if the individual reports giving a set portion of their income to their religious institution, *giving* is the amount of giving outside of the tithe, *ReligItems* is the amount spent on purchasing religious materials, $Attend_{Services}$ is the number of services attended during the year, and $Attend_{Other}$ is attendance at activities outside of the main service. Stars represent the significance for the difference with Catholic following regressions reported in tables A.7 and A.8, *p<0.1; **p<0.05; ***p<0.01.

areas is dampened, with less service provision overall. The Christian denominations resemble each other closely in rural areas. Conversely, differences in giving appear more stark than in urban areas, with Pentecostals and Protestants both much more likely to tithe than their Catholic counterparts. Pentecostal and Protestant groups appear virtually indistinguishable in rural areas.

I now consider what the effect of out-migration is on the relationship between the out-migrant household and their village. The Ghana Panel gathers information on 1) trust in the village community and 2) the number of other surveyed households in the community they would interact with. The first three columns in table 14 report the effect of migration on the household's trust in the village network. Outmigration lowers household trust in the village network.

Columns (4)-(6) of 14 report the change in network interactions following outmigration. Outmigration lowers the number of other village households that the outmigrant household is willing to help and to share information with.

Outmigration appears to weaken the ties between a household and their village network. Households engage less with the information and insurance functions of the village network at the same time as shifts in religious affiliation occur.

Put together, the parallel shifts away from the village network and towards a new church

network support the hypothesis that households look for a replacement network as their position in the village network deteriorates. Households move towards Protestantism, which requires greater commitment but also returns more services than Catholic institutions. There is also a shift towards Traditional religions. This may represent households who were once part of a church community but cannot find a replacement network once their village ties are weakened.

	Dependent variable:					
	Village Trust	Alertness	Village Helpful	Receive help	Receive Ag Advice	Give Ag Advice
	(1)	(2)	(3)	(4)	(5)	(6)
$Out_{Mig,Inst}$	-2.082^{***}	0.856	-1.848^{***}	-4.999^{***}	-9.805^{***}	-9.309^{***}
	(0.717)	(0.685)	(0.633)	(1.270)	(1.683)	(1.537)
F^{Eff}	7.7557	7.7557	7.7557	7.7459	7.7459	7.7459
District-Wave FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,982	8,976	8,981	5,505	5,505	5,505
Adjusted R^2	0.152	0.203	0.130	0.513	0.503	0.524

Table 14: Includes household controls for average age, income, education, modal religion at birth, district controls for income, population density, religion at baseline. Includes fixed effects for community at time 0. Errors clustered at the EA level. F_{Eff} is the effective F-statistic (Olea and Pflueger, 2013). *p<0.1; **p<0.05; ***p<0.01

6 Discussion

The ubiquitousness of religious attendance in many developing countries speaks to the value that religious institutions provide. Religiosity tends to increase in environments of rapid cultural and economic change and to flourish in environments with greater risk. Religious organisations combat risk and uncertainty by providing a host of services, both tangible and intangible. This research provides a scale for the prevalence of tangible service provision, with approximately 10% of urban residents benefiting from these services within a given year. Religious institutions appear to be one of several risk-sharing strategies that individuals employ, with approximately 40% of households receiving transfers from some source within a given year. These transfers occur largely between immediate family members. Religious institutions provide a mechanism, especially in urban areas, to expand risk sharing beyond the family. Membership in an organisation is prima facie indiscriminate to factors desirable for risk sharing, such as income, industry of employment, and geography.

To understand the importance of migration in shaping Pentecostal growth, I conduct some

back-of-the-envelope calculations. If we take the results in tables 5 and 11, they indicate that migrants from rural areas are approximately 24% more likely to be Pentecostal after migrating compared to similar individuals in their village. According to the census, approximately 3.3% of the population migrated from a rural to urban area in the last 5 years. The Pentecostal effect of this migration is, therefore, approximately 0.8%. This represents a substantial share of the shift towards Pentecostalism - total aggregate conversion towards Pentecostalism across waves sits at around 2%. We must keep in mind, however, that the 0.8% estimate represents both increased conversions to Pentecostalism from other religions and lower conversion rates for Pentecostals upon migration, so that the role of migration in conversion will likely be smaller than 0.8/2. Furthermore, the aggregate impact of migration is likely to be smaller, given substantial migration from urban to rural areas, and urban to urban areas.

Out-migration on average reduces the number of Catholics in the household by 0.22. Therefore, if 3.3% of the population migrates out of rural areas, then the proportion of Catholics in Ghana will decline by 0.726%. Again this number is substantial, especially given Catholicism represents only 10% of the total population. Further research is needed to validate these results in other contexts, and to understand the full dynamics of the role of migration in influencing these trends over time.

The results have important implications for understanding risk-sharing and social insurance within the context of urbanisation. Without easy access to government services or other established insurance mechanisms, demand for social insurance systems in urbanising areas will be high. This gap, in theory, could be filled by a range of social groups or institutions. Religious institutions are a natural candidate. By their nature, they effectively build trust, fostering environments of repeated interaction, observability, and mutual commitment. Religious institutions assist in coordination, having a centralised organisation and trusted decision maker. Even their messaging promotes ideas of care for neighbour and mutual support, reaching across traditional ethnic boundaries. Religious institutions therefore stand to gain when traditional systems are uprooted, and public provision hasn't kept pace. One implication of this is that religious affiliation will respond to the introduction of alternate sources of service provision. As in Auriol et al. (2020), where the introduction of formal

insurance induces substitution away from religious giving; increases in government spending on social welfare has the potential to reduce attachment to religious organisations. The welfare implications are ambiguous. Similar to Morten (2019), detaching network participants has negative externalities on the rest of the network. Alternatively governments may decide to exploit the strength of these networks, for the diffusion of information, and for the provision of social insurance. Traditionally governments have offered generous tax breaks for religious organisations. These could be used to incentivise the continued provision of services to members.

Lessons can also be learned from the openness of the religious networks. The presence of networks with low barriers to entry provides an outside option for migrants into the city: even if a migrant has no connections, insurance services and employment connections are available. This reduces the risk of migration for those who initially faced the greatest risk. If migrants are positively selected, then the presence of open networks increases efficiency by reducing the risk for higher ability migrants moving to the city. Put another way, the presence of an outside option network allows selection of migrants by ability rather than by network connections alone.

Finally, the outmigration results provide evidence that there are responses to the breakdown of village networks following out-migration. Households with weakened ties to the village network do not have to bear this full cost but may search for alternative service providers. Households could alleviate losses by looking for risk-sharing arrangements outside the village, concentrating their risk-sharing group, looking for formal services, or turning towards institutions. Institutions can mitigate some of the costs of increased outmigration by providing an alternative source of social insurance. By lowering the externalities associated with outmigration, the presence of institutions at origin can serve to increase outmigration rates, or to reduce the costs associated with programs that encourage rural-urban migration.

7 Conclusion

Religious institutions have always attracted converts during periods of great uncertainty and upheaval. In developing countries the process of urbanisation induces this upheaval not only

in the expanding urban area, but in the diminishing origin village. This paper studies the effect of migration on religious conversion under the framework that religious institutions facilitate economic networks, providing services which are especially valuable for migrants, and households with out-migrants. I consider this hypothesis in the context of the recent growth of Pentecostal adherence in many low income countries.

I analyse new data from a religion unit in the fourth wave of the GSPS survey in Ghana, which allows the creation of a panel of migration and religious affiliation. I construct a set of shift-share instruments, using shocks to large industries in destination districts as an exogenous source of variation. The instruments represent individual exposure to these shocks - exposure increases if the individual lives closer to a high industry district, if the individual is more educated, and if the individual is younger. Using this instrument I find that rural-urban migration increases Pentecostal affiliation.

Pentecostal churches are more intensive network hosts, providing more transfers to their members at the cost of greater network commitments. Using data from a survey of Pentecostal churches in Accra, I show that transfers are substantial - 10% of Pentecostal members receive a transfer each year, with a median value exceeding a quarter of the average household income in Accra. Churches also provide a referral network helping to find jobs and housing, and to advertise businesses. Through the provision of network services, religious institutions have the potential to reduce the risk associated with migration. Migrants are more likely to convert if network membership yields high returns - migrants with fewer network connections in the city are more likely to convert.

Using the same instrument approach I find that outmigration increases conversion for households at the origin. Households convert away from Catholicism, towards Protestantism. Protestant churches provide a similar frequency of network payouts to Pentecostal churches in rural areas. Protestant churches may hold an advantage in being connected to a large network, allowing subsidisation of churches in rural areas.

In response to outmigration, I show that households have weaker connections with their village networks, offering and receiving less help, and displaying lower levels of trust. Religious institutions can therefore offer an alternative for households facing the network costs of outmigration.

In this way religious institutions fill the demand for network services, acting in the absence of government services or in the presence of a weakening village network. The interaction and substitution between these three groups remains a promising area for future research.

A Appendix

	Job transfer	Seeking employment	Own business	Spouse's employment	Accompanying parent	Marriage	Other family reason	Education	Farming	Work	Accommodation
Adults	0.03	0.11	0.04	0.00	0.00	0.02	0.27	0.37	0.04	0.08	0.00
Adult Males	0.04	0.14	0.05	0.00	0.00	0.01	0.17	0.37	0.06	0.11	0.00
Adult Females	0.01	0.07	0.01	0.01	0.00	0.03	0.38	0.36	0.03	0.03	0.00

Table A.1: Ghana Census, 2021: Migration reason, lived Outside current community (more than 1 month)

	Dependent variable:		
	Prop. of Migrants	Number of In-Migrants	
	(1)	(2)	(3)
Gold Price (USD)/1000	0.0001***	22.045***	
	(0.00004)	(1.699)	
Innovation			0.018***
			(0.004)
lag(Innovation)			0.013***
			(0.004)
District FE	Yes	Yes	Yes
Observations	734	734	749
Adjusted R^2	0.467	0.274	0.125
F Statistic	38.835***	17.299***	6.942***

Table A.2: Migration from Ghana 2021 Census, Gold Prices from FRED. Column (1) is a regression of prices on the proportion of adult male migrants entering a gold mining district. Columns (2) and (3) are regressions of gold prices/innovations on the number of in-migrants to gold mining districts. Regression is at the year-district level. *p<0.1; **p<0.05; ***p<0.01

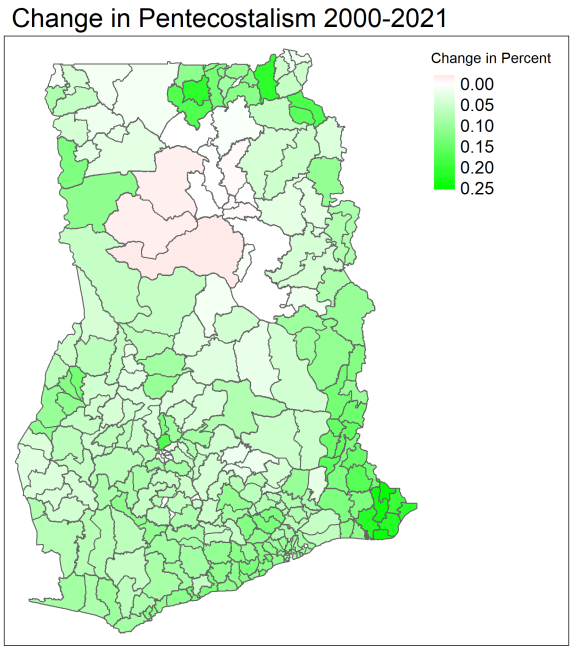

Figure A.1: Ghana Census 2000,2021

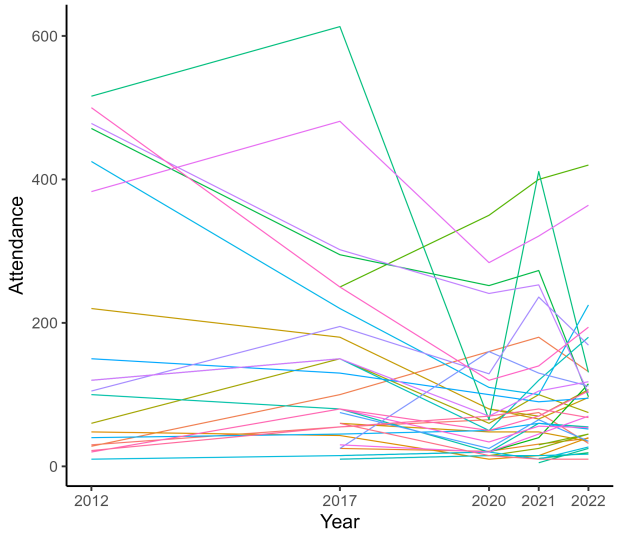

Figure A.2: Attendance over time for 35 Pentecostal churches. Attendance reported at 10,5,2,1 year(s) ago and present.

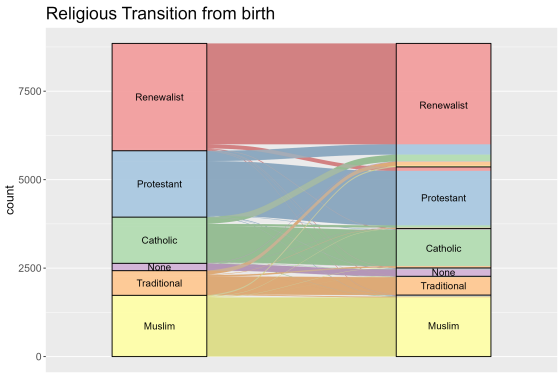

Figure A.3: GSPS - Birth religion to current

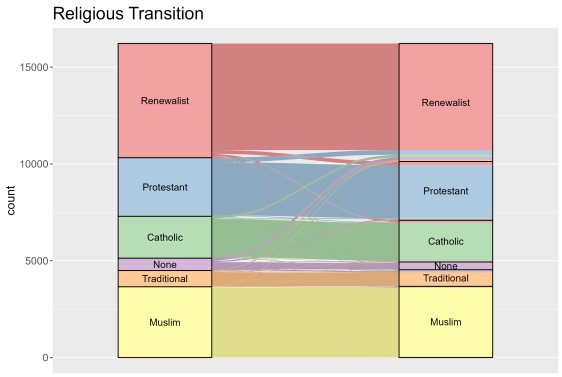

Figure A.4: GSPS - Religious adherence wave 3 to wave 4

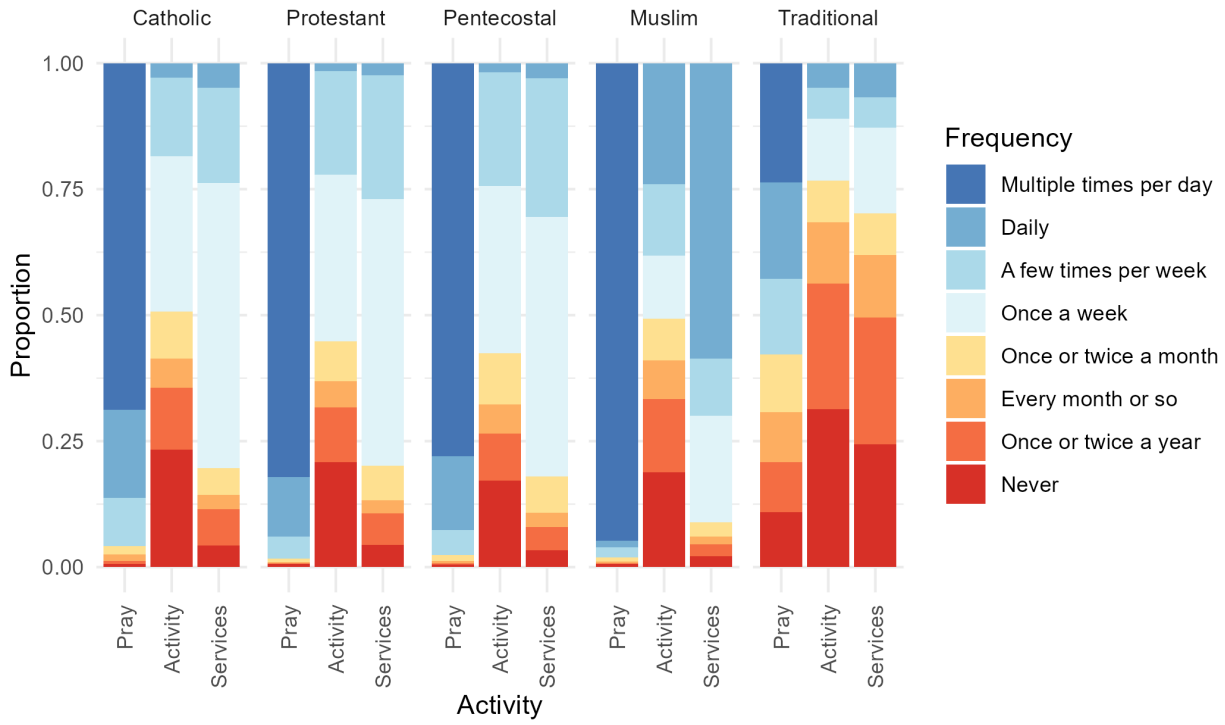

Figure A.5: GSPS - religiosity by denomination

	Dependent variable:			
	IndustrySize			
	(1)	(2)	(3)	(4)
$\Delta Price_{Concrete}$	−3.030			
	(1.656)			
$\Delta Price_{Concrete/Export}$		−0.868**		
		(0.325)		
$\Delta Price_{Captial}$			2.260	
			(2.566)	
$\Delta Price_{Concrete/Capital}$				−0.418
				(0.423)
Constant	0.154**	0.096***	0.017	0.058**
	(0.053)	(0.021)	(0.041)	(0.020)
Observations	10	10	10	10
Adjusted R^2	0.207	0.406	−0.026	−0.003
F Statistic (df = 1; 8)	3.349	7.146**	0.775	0.976

Table A.3: Industry size from the Ghana Statistical Service (Percentage Change in the Industry value $), Concrete, and manufacturing capital prices from FRED database (Percentage changes). *p<0.1; **p<0.05; ***p<0.01

Table A.4

	Dependent variable:		
	Migrate		
	(1)	(2)	(3)
$Inst_{mining}$	71.291***		
	(16.346)		
$Inst_{construction}$		−2.678***	
		(0.444)	
$Inst_{manufacturing}$			−0.487***
			(0.182)
totalrev	−0.00000**	−0.00000*	−0.00000**
	(0.00000)	(0.00000)	(0.00000)
I(totalrevˆ2)	0.000	0.000	0.000*
	(0.000)	(0.000)	(0.000)
yearsedu	0.003**	0.002**	0.003***
	(0.001)	(0.001)	(0.001)
yearsedu.hh	0.001**	0.0005	0.002***
	(0.0004)	(0.0004)	(0.0004)
age	−0.001***	−0.0004	−0.003***
	(0.0003)	(0.0004)	(0.0003)
Observations	6,478	6,478	6,478
Adjusted R^2	0.209	0.261	0.210

Table A.5: Includes controls for religion at birth, ethnicity, district controls for income, population density, local exposure to price shock. Includes fixed effects for community at time 0. Errors clustered at the EA level. *p<0.1; **p<0.05; ***p<0.01

	Dependent variable:		
	$Conv_{Any}$	$Conv_{Denom}$	$Conv_{Pent}$
	(1)	(2)	(3)
$Non-Pentecostal$	−0.003	0.156***	0.315***
	(0.026)	(0.026)	(0.027)
$Migrate$	−0.355***	−0.001	−0.751***
	(0.104)	(0.216)	(0.206)
Non-Pentecostal*Migrate	1.340***	0.753**	2.568***
	(0.397)	(0.365)	(0.567)
Mean	0.2	0.27	0.06
F^{Eff}	5.5876	5.5876	5.5876
Region-Wave FE	Yes	Yes	Yes
Observations	4,313	4,313	4,313
Adjusted R^2	0.085	0.202	−0.760

Table A.6: Includes individual controls for age, income, education, religion at birth, district controls for income, population density, religion at baseline. Includes fixed effects for community at time 0. Errors clustered at the EA level. F_{Eff} is the effective F-statistic for testing weak instruments (Olea and Pflueger, 2013). *p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	$Trans_{Money}$	$Trans_{In-kind}$	$Trans_{Money}$	$Trans_{In-kind}$	Advertise
	(1)	(2)	(3)	(4)	(5)
Muslim	−0.0004	−0.006	−0.006	−0.014	−0.023
	(0.017)	(0.020)	(0.014)	(0.017)	(0.016)
Protestant	0.012	0.008	0.004	0.007	−0.0004
	(0.014)	(0.016)	(0.012)	(0.014)	(0.013)
Pentecostal	0.033**	0.032**	0.015	0.016	0.022*
	(0.013)	(0.015)	(0.011)	(0.013)	(0.012)
Traditional	0.020	−0.013	−0.009	−0.013	−0.013
	(0.030)	(0.034)	(0.025)	(0.029)	(0.028)
Constant	−0.031	−0.017	−0.026	−0.044	−0.049
	(0.084)	(0.096)	(0.069)	(0.082)	(0.078)
Mean	0.03	0.05	0.02	0.03	0.03
District FE	Yes	Yes	Yes	Yes	Yes
Observations	3,056	3,056	3,056	3,056	3,056
R^2	0.077	0.066	0.104	0.070	0.070
F Statistic	1.431***	1.207**	1.984***	1.295***	1.303***

Table A.7: GSPS wave 4, urban households. Comparison group is Catholic. Errors clustered at the EA level. *p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	Tithe	*Giving*	*ReligItems*	*Services*	*Activity*
	(1)	(2)	(3)	(4)	(5)
Muslim	−0.079*	19.519	−0.038	125.492***	85.871***
	(0.041)	(14.047)	(0.088)	(7.954)	(7.469)
Protestant	0.137***	6.259	0.089	2.508	3.549
	(0.033)	(11.322)	(0.071)	(6.411)	(6.020)
Pentecostal	0.124***	16.230	0.015	9.471	6.948
	(0.031)	(10.541)	(0.066)	(5.969)	(5.605)
Traditional	−0.286***	14.655	−0.148	−9.099	2.795
	(0.071)	(24.189)	(0.151)	(13.697)	(12.861)
Constant	0.181	−51.541	−0.291	3.336	−18.797
	(0.200)	(68.027)	(0.424)	(38.521)	(36.171)
Mean	0.33	30	0.15	95.3	59.93
District FE	Yes	Yes	Yes	Yes	Yes
Observations	3,056	3,056	3,056	3,056	3,056
R^2	0.218	0.076	0.070	0.436	0.206
F Statistic	4.804***	1.414***	1.297***	13.278***	4.469***

Table A.8: GSPS wave 4. Comparison group is Catholic. Errors clustered at the EA level. *p<0.1; **p<0.05; ***p<0.01

	Dependent variable:			
	Pentecostal	$Convert_{denom}$	$Convert_{rel}$	$Convert_{Pent}$
	(1)	(2)	(3)	(4)
Migrate	0.001	0.054***	0.043***	0.013***
	(0.012)	(0.012)	(0.011)	(0.005)
Income (1000s)	−0.024***	−0.030***	−0.023***	−0.003
	(0.008)	(0.008)	(0.006)	(0.002)
$Income^2$	0.005***	0.003***	0.003***	0.0004
	(0.001)	(0.001)	(0.001)	(0.0004)
$Migrate * Income$	0.015	−0.013	−0.030	−0.010*
	(0.025)	(0.025)	(0.019)	(0.005)
$Migrate * Income^2$	−0.006*	0.001	0.003	0.001
	(0.004)	(0.003)	(0.003)	(0.001)
District-Wave FE	Yes	Yes	Yes	Yes
Observations	17,504	32,091	32,091	32,091
Adjusted R^2	0.549	0.133	0.090	0.012

Table A.9: Errors clustered at the EA level. Includes controls for age, gender, education. *p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	$Trans_{Money}$	$Trans_{In-kind}$	$Trans_{Money}$	$Trans_{In-kind}$	Advertise
	(1)	(2)	(3)	(4)	(5)
Inst Size	0.008	−0.007	−0.015***	−0.004	0.002
	(0.005)	(0.006)	(0.004)	(0.005)	(0.005)
Inst Size^2	−0.001*	0.0002	0.001**	0.00000	−0.0003
	(0.0004)	(0.0005)	(0.0003)	(0.0004)	(0.0004)
Constant	−0.039	−0.019	0.014	−0.003	−0.008
	(0.118)	(0.135)	(0.098)	(0.115)	(0.111)
Mean	0.03	0.05	0.02	0.03	0.03
District FE	Yes	Yes	Yes	Yes	Yes
Observations	2,406	2,406	2,406	2,406	2,406
R^2	0.093	0.082	0.127	0.085	0.087
F Statistic	1.473***	1.274**	2.080***	1.328***	1.356***

Table A.10: GSPS wave 4, urban households. Institution size scaled by 1/100. Comparison group is Catholic. $Trans_{Money}$ is a binary variable which takes the value 1 if an individual received a monetary transfer within the last year, $Trans_{In-kind}$ is a binary variable which takes the value 1 if an invidiaul received an in-kind transfer within the last year, *Advertise* is a binary variable which takes the value 1 if an invidual advertised their business in their religious institution within the last year.Errors clustered at the EA level. *p<0.1; **p<0.05; ***p<0.01

	Dependent variable:	
	Number of Members	
	(1)	(2)
Migrated	−42.867***	−24.746*
	(13.569)	(13.442)
Constant	173.642***	174.606***
	(4.037)	(29.807)
Individual Controls	No	Yes
District Controls	No	Yes
Observations	2,406	2,392
Adjusted R^2	0.004	0.087
F Statistic	9.980*** (df = 1; 2404)	16.231*** (df = 15; 2376)

Table A.11: Number of institution members in urban areas. Migrated is a dummy variable if the individual migrated between 2009 and 2022. Controls for age, gender, income, education, religion at birth. Errors clustered at the EA level. *p<0.1; **p<0.05; ***p<0.01

	Dependent variable:	
	$Conv_{Any}$	
	(1)	(2)
$Transfer$	0.018	0.010
	(0.022)	(0.017)
Mig_{Inst}	0.171*	0.124
	(0.092)	(0.086)
$Transfer \times Mig_{Inst}$	−0.944*	−1.164
	(0.510)	(1.308)
Region-Wave FE	Yes	Yes
Observations	7,631	7,631
Adjusted R^2	0.473	0.476

Table A.12: Sample is Adult Males from Rural Areas in Wave 1. Column (1) is the effect of transfers from non-household relatives, Column (2) is the effect of transfers from out-district non-relatives. Transfers are a dummy variable indicating any in-transfer within the last year. Errors clustered at the EA level. *p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	$Trans_{Money}$	$Trans_{In-kind}$	$Trans_{Money}$	$Trans_{In-kind}$	Advertise
	(1)	(2)	(3)	(4)	(5)
Muslim	−0.007	0.008	0.002	0.019**	−0.003
	(0.009)	(0.010)	(0.006)	(0.009)	(0.008)
Protestant	−0.005	−0.004	−0.004	−0.006	0.003
	(0.008)	(0.008)	(0.006)	(0.007)	(0.007)
Pentecostal	0.009	0.008	0.013***	0.010	0.006
	(0.007)	(0.007)	(0.005)	(0.007)	(0.006)
Traditional	−0.007	−0.002	0.012	0.005	0.004
	(0.011)	(0.011)	(0.007)	(0.010)	(0.009)
Constant	−0.002	−0.030	−0.003	−0.029	0.0002
	(0.080)	(0.085)	(0.056)	(0.075)	(0.068)
Mean	0.03	0.03	0.01	0.02	0.02
District FE	Yes	Yes	Yes	Yes	Yes
Observations	5,853	5,853	5,853	5,853	5,853
R^2	0.060	0.074	0.056	0.081	0.057
F Statistic	1.547***	1.949***	1.439***	2.157***	1.467***

Table A.13: GSPS wave 4, rural households. Comparison group is Catholic. Errors clustered at the EA level. *p<0.1; **p<0.05; ***p<0.01

	Dependent variable:				
	Tithe	*Giving*	*ReligItems*	*Services*	*Activity*
	(1)	(2)	(3)	(4)	(5)
Muslim	−0.111***	2.135	−0.046	134.280***	67.124***
	(0.023)	(4.403)	(0.042)	(4.931)	(4.730)
Protestant	0.051***	4.059	−0.032	1.240	5.576
	(0.020)	(3.800)	(0.036)	(4.256)	(4.082)
Pentecostal	0.056***	4.072	−0.019	6.068	9.611***
	(0.017)	(3.317)	(0.031)	(3.715)	(3.563)
Traditional	−0.209***	−7.527	−0.101**	−30.201***	−18.882***
	(0.026)	(5.050)	(0.048)	(5.655)	(5.424)
Constant	0.226	−17.923	2.946***	39.608	46.482
	(0.197)	(38.099)	(0.361)	(42.666)	(40.925)
Mean	0.25	23.85	2.86	99.15	58.96
District FE	Yes	Yes	Yes	Yes	Yes
Observations	5,853	5,853	5,853	5,853	5,853
R^2	0.233	0.082	0.066	0.497	0.227
F Statistic	7.422***	2.180***	1.715***	24.104***	7.160***

Table A.14: GSPS wave 4. Comparison group is Catholic. Errors clustered at the EA level. *p<0.1; **p<0.05; ***p<0.01

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