

Should I Stay or Should I Go:

Geographic versus cultural networks in migration and employment decisions

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Abstract

In this paper, we use the Indian state of Kerala as a “laboratory” to explore two prominent questions in the migration literature: (1) what are the mechanisms through which migrant networks operate, and (2) what role does the existence of migrant networks have on the labor market participation decisions of non-migrant household members? Our strategy is to use Kerala’s unique religious composition to identify a community’s migration network which confers three main advantages: (1) religion exogenously identifies a well-defined social group which addresses the issue of self-selection because members of a religious group do not “choose” their religion; (2) religion and geography provide variation within localities and religious groups; and (3) religious networks provide social support and other excludable services, especially in labor markets. We use two linked state-wide representative surveys from 1998 and 2003 that collected individual information about each member of the household, including members who had migrated, for 10,000 households. We present three main findings in this paper. First, we demonstrate that religious networks are ten times more powerful than geographic networks in predicting the probability of emigration of the religious group’s own members. The second main finding from this study is that migrant networks channel their members to specific destinations. This indicates the main role of networks is to provide valuable and excludable information to their own members. The analysis on labor market participation of young men reveals interesting patterns as well. In cross-section data, we find that young men in households with migrant members are less likely to be employed, indicating the labor market participation decreasing effects of migration. However, when we look at the panel data and follow the same individuals over time, we see that the same males under 30 years old are more likely to migrate in the second period, taking advantage of their migrant networks. This result goes counter to the claim that migration induces unemployment or withdrawal from labor market among family member. Rather, it suggests that young men in migrant households have a higher expectation of emigration and they are less likely to take a job in Kerala while they prepare to emigrate.

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1. INTRODUCTION

Over two million people from Kerala, India—almost 10 percent of the state’s labor force—are living and working in a Gulf country. Keralites are *willing* to go because the Arab Gulf is like a “modern-day El Dorado” for many of them. They are *able* to go because they can depend on the support of a strong network of people to provide them with the resources and information they need to emigrate.

This paper explores the role of networks in explaining where and when the migrants choose to migrate. More specifically, we use Kerala as an interesting “laboratory” to answer the role of networks on two related questions: (1) what are the mechanisms through which migrant networks operate, and (2) what role does the expectation of emigration have on the labor and leisure decisions of non-migrant household members. In our analysis, we use exogenous religious affiliation as the main determinant of social networks. We find that migrant networks provide country-specific and time-sensitive information to potential migrants and this strongly influences their time and destination choices. For example, the current migrants in the UAE affect only the emigration probability of males from the same religious community to the same destination – there does not seem to be any affect on other destinations or other religious communities. As such, the channeling of the networks’ members to specific destinations presumably happens through provision of valuable and excludible information and other support services only to their own members. This finding also seems to indicate that financing of migration by the network is less important since that financial support does not necessarily need to be destination specific.

Our second set of results is on the timing of migration. Massive communal emigration rates are likely to have various effects on young men as they enter the labor market. When we look at the cross-section data, we find that young men in households with migrant members are less likely to be employed, indicating the labor market participation decreasing effects of migration. However, once we look at the panel data

and follow the same individuals over time, we see that the same males under 30 years old are more likely to migrate in the second period, taking advantage of their migrant networks. This result goes counter to the prominent claim in the literature that migration induces unemployment or withdrawal from labor market among family members, mainly via increased household income levels. Rather, our results suggest that young men in migrant households have a higher expectation of emigration and they are less likely to take a job in Kerala while they prepare to emigrate.

The results of this study lead us to modify one of the main assumptions advanced by the network theory of migration: an individual's probability of emigration will increase with the size of his "geographical network," or the proportion of emigrants from his locality (see Massey, *et al.*, 1998b).¹ But, Kerala's migrants do not depend on the emigration experience of all the people in their Panchayet, but rather the people who they know: family, friends, and acquaintances. The common characteristics of their networks are not necessarily geographic but religious; social contacts are determined by religion and in Kerala, like the rest of India, religion is a community identity that distinguishes social groups. Furthermore, the support and services provided by the network seem to be excludible and rivalrous as they are only provided to network members within the same geographic location.

Using religion to define a community's network as we do here has three main advantages. First and foremost, religion exogenously identifies a well-defined and well-established social group overcoming the problem of "peer effects." Religion also addresses the issue of self-selection because members of a religious group do not "choose" their religion today. The emergence of Hinduism, Christianity, and Islam in Kerala dates back to the first century A.D.² Another advantage to using religion and geography to identify a social group is that these variables provide variation within localities and religious groups. Finally, religious networks provide social support and

¹ A Panchayet in India is considered a municipality and often has its own governing body of elected representatives from the community. Although Panchayets are often considered villages, there may be several Panchayets in large cities.

² Early Hinduism can be linked to the decline of Buddhism and a process of "Aryanization" in the state during the fifth and sixth century A.D. The development of Islam can be traced back to contacts with Arab traders in the eighth century A.D. And the beginnings of Christianity are credited to Saint Thomas the apostle, who allegedly came to the state in the first century A.D (see Menon, 1982; Kurien, 2002).

many other excludable services that are valuable especially in labor markets and migration contexts

The paper is structured as follows. In the next section we describe the institutional setting and context for the study. *Section 3* briefly reviews the literature on migrant networks. Then, *Section 4* describes the data and provides basic summary statistics for the sample population. In *Section 5* we describe our conceptual framework and empirical methodology. In *Section 6* we present the estimation results. And finally, *Section 7* concludes.

2. THE LABORATORY: KERALA, INDIA

2.1 Kerala's Gulf Connection

In 2003, 1.84 million Keralites—eight percent of the state's total labor force— were living and working in a Gulf country (see Zachariah, K.C., Mathew, E. T., & Rajan, S. I., 2004c, p.4).^{3,4} Gulf migration is unusual in that it is exclusively temporary (migrants are called “guest workers”) due to restrictive immigration policies enacted by the countries in the Gulf Cooperation Council (GCC) which prohibit permanent resettlement of foreign nationals (Massey *et al.* 1998b, p.135).

Kerala's present-day Gulf migration began to surge in 1973 when the sudden increase in oil prices set off a rapid process of urbanization in the Arab Gulf.⁵ The Gulf countries, which faced a shortage of qualified local labor, sought foreign labor to satisfy their construction boom. Kerala's history of trade with the region and a large surplus labor force due to the state's “stagnant productive sector” resulted in several important “pull” and “push” factors that motivated migration (Zachariah, *et al.* 2001a, p. 78; see also Massey, D.S., *et al.*, 1998b, p.135; Weiner, 1982). By 1998, Keralites represented over 50 percent of India's total emigration to the Gulf countries (see Prakash, 1998).

³ This figure is similar to the estimations made by the State Planning Board of Kerala which determined the number of emigrants in 1997 to be 1.6 million people.

⁴ The figures presented in this section are the author's own calculations from the Kerala Migration Study (KMS) and South Asia Migration Study (SMS) conducted in 1998 and 2003 respectively.

⁵ In 1973, a conference among GCC countries led to an agreement which formed an oil cartel that drove up the price of oil. By 1974, the price of oil had quadrupled (see Massey *et al.* 1998, p. 137).

The state's geographical position gives it privileged access to the Gulf: Kerala is situated on 580 kilometers of coast at the south-western tip of India. Factors related to the state's development experience, relative to other states in India, have also influenced these emigration patterns: the state's population density, unemployment rate, and literacy rates are all very high by Indian standards.⁶ Thus, Kerala's unemployed, but relatively well educated labor force was attracted to the employment opportunities that Gulf countries offered.

2.2 The Religious Context

Compared to the rest of India with a Hindu majority population (80.5 percent), Kerala is unique in that it has sizeable Muslim (24.7 percent of Kerala's population) and Christian (19 percent) populations in addition to its Hindu (56.1 percent) majority.⁷ There is also sufficient ethnographic data to suggest that social networks in Kerala have been created and are maintained within religious circles (see Kurien, 2002; Osella and Osella, 2000).

A distinguishing characteristic of Kerala's Gulf migration is its religious dimension. While Muslims make up only one fourth of Kerala's total population, they represent close to half of the total emigrant population.⁸ In other words, 13 percent of the total Muslim population was a current emigrant in 1998, compared to only three percent of the Hindu population and six percent of the Christian population. This is the main fact we use to identify migrant networks in the paper.

3. LITERATURE REVIEW

In this paper we test the relevance of both home and destination networks but move away from the assumption that networks operate at an aggregate, geographic level. A migrant network can be defined as "sets of interpersonal ties that connect migrants, former migrants, and nonimmigrant in original and destination areas through ties of

⁶ Kerala's literacy rate is the highest among Indian states. According to the 2001 census, Kerala had a literacy rate of 91 percent.

⁷ "Data on Religion," Census of India, 2001.

⁸ Table A.2 shows that 50 percent of Gulf emigrants were Muslim in 1998

kinship, friendship, and shared community origin” (Massey *et al.*, 1998, p. 43).

Empirical research most often measures the migrant network as the proportion migrants from a specific geographic area (see McKenzie, 2005; Massey, Goldring, and Durand, 1994). In other words, a “home network” is determined by the number of migrant divided by the total number of individuals in the origin community. Similarly, Munshi (2003) measures the “destination network” as the proportion of sampled individuals from a specific origin community in a particular destination. These methodologies suggest that the “quantity” of networks matter most, or what Bertrand, *et al.* (2003) call “contact availability.”

There are several drawbacks to the assumption that the relevant social unit, and thereby network, is geographic in nature. First, treating an entire geographic community as the relevant social unit assumes that contacts are randomly distributed within that geographic area. And second, this assumption fails to account for the fact that *access* to migrant networks, like social networks, can be restricted by the relevant social group. Thus, network theory does not take into account how migrant networks can differ in “quality” and by its social group.

Few empirical studies consider how networks may vary by community or individual characteristics, such as ethnicity, religion, or gender (see Curran and Fuentes, 2003; Borjas, 1992b). Fewer studies also look at the mechanisms by which migrant network operate. If the migration decision is a simple cost-benefit analysis on the part of the migrant or migrant household, then networks increase the net benefits of this calculation by lowering the costs and risks—financial, informational, and psychic—of migration (McKenzie, 2005; Munshi, 2003; Winters *et al.*, 2001; Ilahi and Jafarey, 1999; Schwartz, 1973). Massey *et al.* (1987) show that Mexican return emigrants provide information about the US labor market to potential emigrants in their home communities. Similarly, Munshi (2003) also shows that networks inform new migrants about jobs at destination. Destination networks—as a system of referrals—are applicable to a simple principal-agent problem (see Montgomery, 1991; Rees, 1966). Experienced migrants may have more information than an employer about the ability or skills of other members

in their networks, and their referrals would be valuable to the employer and will increase other network members' employment opportunities.⁹

A number of studies find that the cost of migration decreases with the number of migrants in the destination country because destination networks provide new and potential migrants with information about employment and employers (Carrington *et al.*, 1996; Borjas, 1992; Massey, 1988; Boyd, 1989; Menjivar, 1995, Munshi 2003). Two studies on Kerala's migration find similar results (see Nair, 1998; Sekhar, 1997). There is limited evidence that networks in Kerala directly finance emigration. In one study by Nair (1998), a third of return migrants in Kerala reported having acquired a loan from friends or family to finance migration costs.

A body of sociological literature claims that home and destination networks can also have a number of social and psychological effects as well (see Massey *et al.* 1998; Gardner & Osella, 2004). For example, home networks can influence cultural attitudes regarding migration and thereby affect a household's personal "cost-benefit" analysis (see Bookman, 2002). At destination, Choldin (1973) finds that destination networks reduces the "assimilation shock" for new arrivals.

The economic literature that studies migrant networks, however, is confronted with several empirical challenges. The main econometric challenge to network analysis is identifying the direction of the causal relationship between migrant networks and the migration decision because of the problem of peer effects. Peer effects confound the interpretation of the network effect because shared community characteristics can influence the migration decision but may be unobservable (see Massey, D. S., *et al.*, 1993; Boyd, 1989). Manski calls this the reflection problem.

Another concern for an econometric analysis is that access to the migrant network may be endogenous to the household's own emigration experience (see Orrenius, 1999; Taylor 1987; McKenzie and Rapoport, 2005). One way to isolate the network effect is to

⁹ At the same time, a stronger destination network can be disadvantageous if network members make referrals and offer employment information only for a specific occupation. This "limitation" of networks may help explain why half of Kerala's emigrants become manual laborers in the Gulf while only a third reported being a manual labor prior to emigration. Of course, one could argue that manual labor is simply the only job available and that we must consider this disadvantage in terms of the alternative: unemployment at home.

limit our analysis only to new migrants who are temporarily exogenous to the network (see Orennius, 1999; Zhao, 2001).

Empirical studies of migration have attempted to address these serious challenges of endogeneity in other ways from community fixed effects to individual-level fixed effects to instrumental variables, such as rainfall data or historic state-level migration rates, to address these econometric challenges (McKenzie and Rapoport, 2005; Winters, *et al.*, 2001; Munshi, 2003; and Orrenius, 1999; Munshi, 2003; Giles and Yoo, 2005; McKenzie and Rapoport, 2005; Woodruff and Zentano, 2001). In this study we use the variation afforded to us by religion and geography to help identify the relationship between migrant networks and migration.

Most of the empirical studies that have explored the relationship between migration and labor market participation of non-migrants have focused on the role of remittances (see Amuedo-Dorantes and Pozo, 2006; Kim, 2007; Hanson, 2005). Yet, there is a gap in our understanding of how the expectation of emigration—facilitated by emigration networks and the emigration of other household members—affects the household's labor supply and demand.

4. DATA

The present study uses data from two linked household surveys conducted by the Center for Development Studies in Trivandrum, Kerala which covered a state-wide representative household sample: the Kerala Migration Survey (KMS) and the South Asia Migration Study (SMS). One of the main advantages of this study is that it exploits the panel nature of this data; half of the households surveyed in 1998 were re-surveyed in 2003.

The KMS was administered to the residents of 9,995 households selected from 200 Panachayats (villages) from 61 Taluks (counties) of each of the 14 districts of Kerala from March to December in 1998 (Zachariah *et al.* 2001a, p.64). Fifty households were

selected at random from each Panchayet.¹⁰ The survey collected individual information about each member of the household, including members that had migrated, from the present head of the household at the time of the household visit.

The SMS survey, conducted in 2003, was designed to replicate the KMS and used the same questionnaire and a similar sampling methodology. The primary data for the SMS was collected from 10,012 households from 225 Panchayats, rather than 200 Panchayats as in 1998, from the 14 districts of Kerala (Zachariah *et al.* 2004c, p.12).

5.1 Emigrant characteristics

In the survey, **current emigrants (EMI)** are categorized as those members of the household who had emigrated from Kerala and were living abroad at the time of the survey for at least one year. Emigrants accounted for 6 percent and 8 percent of the total labor force in 1998 and 2003 respectively. **Return emigrants (REM)** are those members of the household who have returned to Kerala after living abroad. By 2003, almost one-fifth of Kerala’s labor force population, or close to 3 million people, had had some sort of migration experience—either they were current migrants or return migrants. In this study, a **non-migrant (NMI)** is a household member who is neither a current nor a return migrant in the survey year.

The average emigrant is male, under 30 years old, and has at least one more year of education as compared to his non-migrant counterpart.

Table 1. Characteristics of Sample Populations in 1998 and 2003

			Percent		Mean Years	Percent	Percent
		Observations	Male	Mean Age	of Education	Married	Unemployed
1998	EMI	2,099	91	26.7*	8.7*	49*	26*
	NMI	26,560	45	34.5	7.5	67	9
2003	EMI	2,94	83	25.2*	9.7*	41*	33*
	NMI	27,273	45	35.6	8.2	65	14

* At migration

¹⁰ Because the number of households in each sample (at the Panchayet level) was not adjusted to reflect the total number of households in the Panchayet, we weight observations by the percentage of the Panchayet population represented by the sample households.

Muslims represent nearly one half of the total emigrant population while Hindus represent about one-third and Christians make up one-fifth of total emigrants in 1998. One reason why Muslims are twice as likely than non-Muslims to emigrate is in part due to the fact that the overwhelming majority of Kerala's emigrants go to the oil-rich Gulf (Table 2 shows that 94 percent and 88 percent of emigrants went to a Gulf country in 1998 and 2003 respectively). Table 2 shows that within Gulf migration, more than two thirds of all emigrants migrated to either the United Arab Emirates (UAE) or Saudi Arabia.

Table 2. Emigration by Host Country in 1998 and 2003

Host Countries	1998		2003	
	EMI	REM	EMI	REM
Saudi Arabia	38%	41%	27%	35%
UAE	31%	26%	36%	31%
Oman	10%	13%	8%	11%
Kuwait	5%	5%	6%	5%
Bahrain	5%	6%	6%	6%
Qatar	5%	3%	5%	4%
Total Gulf	94%	93%	88%	92%
USA	2%	<.5%	5%	1%
Southeast Asia	1%	1%	1%	1%
England	<.1%	<.1%	1%	<.5%
Other	4%	6%	5%	5%
Total Other Region	6%	7%	12%	8%

The choice in destination countries also varies by religion. Almost half of all Muslim emigrants went to Saudi Arabia in 2003 as compared to only one-third of Christian or Hindu emigrants. A significant percentage of Hindu emigrants went to Oman (14 percent) while a significant percentage of Christian emigrants went to Kuwait (10 percent) and the United States (8 percent) while just one percent of Muslim emigrants went to a country outside of the Arab Gulf.

2.1 *Waiting to emigrate: Those who stay behind*

In this study, we define the unemployed as those who are seeking a job, those who are performing unpaid household work, or those for whom a job is not required. Unemployment is higher among younger cohorts: unemployment was 16.7 percent for those under 30 years old compared to only 7.5 percent for those over 30 years old in 1998. Similarly, in 2003 the unemployment rate of the younger cohort was double that of the older cohort. The following table presents the unemployment rate by age and sex.

Table 3. Unemployment Rate by Age and Sex in 1998 and 2003

<i>Age</i>	1998			2003		
	<i>Male</i>	<i>Female</i>	<i>Total</i>	<i>Male</i>	<i>Female</i>	<i>Total</i>
<i>15-19</i>	14.3	7	10.7	13.3	10.6	12
<i>20-24</i>	24.5	18	21.3	30.4	26.9	28.7
<i>25-29</i>	21.2	14.1	17.8	24	26.6	25.3
<i>30-34</i>	13.7	7.3	10.7	17.5	17.4	17.3
<i>35-39</i>	8.7	3.6	6.3	15	13.3	14.2
<i>40-44</i>	6.1	2.9	4.6	12.3	7	9.7
<i>45-49</i>	4.8	2.7	3.8	10.3	4.5	7.4
<i>50-54</i>	7.5	5.6	6.6	8.5	6.2	7.4
<i>55-59</i>	18.3	11.3	14.5	13.8	7.9	10.8
<i>15-60</i>	14.2	8.8	11.6	17.4	15	16.22

As table 3 shows, almost a quarter of males between the ages of 20 and 25 years old in 1998 and a third of males in the same age cohort in 2003 were unemployed. Given that emigration from Kerala is almost 90 percent male and that the average age of emigration in both years was under 30 years one might ask, why hasn't the exit rate of Kerala's labor force decreased unemployment in the state?

One likely explanation for the high unemployment rate among young males is that they are waiting for the opportunity to emigrate and unwilling to take a job in Kerala in the meantime. The following table shows that the total unemployment rate is 40 percent higher in emigrant households. Furthermore, the unemployment rate seems to increase with the number of current emigrants from the household. Table 4 also shows that the

unemployment gap between emigrant and non-emigrant households is even larger for the male population by at least five percentage points higher.

Table 4. Unemployment Rate by Number of Emigrants from the Household

<i>Number of Emigrants</i>	Unemployment Rate of Total Population (Ages 15-60)		Unemployment Rate of Male Population (Ages 15-60)	
	1998	2003	1998	2003
0	10.4	14.5	12	14.63
1	14.6	20	20	24.44
2	19.9	24	28.5	29.6

The figures in table 5 show that the unemployment rate is highest for males between the ages of 15 and 29 years old in emigrant households. Table 6 presents the unemployment rate among males by communities that are above and below the mean network size (or migration prevalence ratio).

Table 5. Unemployment Rate by Age Cohort and Household Emigration Status

<i>HH Migration</i>	Unemployment Rate of Male Population (Ages 15-29)		Unemployment Rate of Male Population (Ages 30-60)	
	1998	2003	1998	2003
NMI hh	14.5	23	9.6	13.5
EMI hh	28.2	26.5	17.7	27.2

Table 6. Unemployment Rate among Males by Network Size

Proportion of Communities	Unemployment Rate of Males (Ages 15-60)	
	1998	2003

Emigrant	<i>Below Mean Network Size</i>	12.8	16.3
Network	<i>Above Mean Network Size</i>	16.2	18.9

One might assume from these findings that young males who are unemployed in emigrant households are simply free-riders without any intention of employment. To the contrary, 90 percent of emigrants in 1998 stated that their main reason for migration was a search for employment. Indeed, we find that the rate of job seeking is highest for young males in emigrant households. Table 6 shows that a quarter of males under 30 years old in emigrant households were looking for a job at the time of the survey compared to only 17 percent and 21 percent of young males in non-migrant households in 1998 and 2003 respectively. The data does not identify whether job seekers are looking for jobs within or outside of Kerala and it is most likely, given these findings, that young males in emigrant households are likely to be seeking jobs outside of the state.

Table 6. Job Seeking among Males by Age and Emigration Status of Household

	Job Seeking Rate of Male Population (Ages 15-29)		Job Seeking Rate of Male Population (Ages 30-60)	
	1998	2003	1998	2003
<i>HH Migration</i>				
NMI hh	16.9	21.6	5.6	10.3
EMI hh	26	24.8	14.2	24.4

5. EMPIRICAL METHODOLOGY

As the previous discussion notes, migrant networks can be measured both at home and at destination. In our empirical framework, we first measure the geographic and religious network in Kerala to show the network effect on an individual's probability of emigration. Then, we measure the religious network at destination to show how information can be transferred from host country to home.

5.1 Migrant networks at home: The emigration decision

5.1.1 The effect of geographic networks

To test the hypothesis that emigrant networks increase the probability of emigration, we estimate the following equation to predict whether individual i in Panchayet p in time period t emigrates using a probit model. The equation can be described as:

$$[1] \Pr(Emigrate_{ip}) = \beta_0 + \beta_1 Rel_i + \beta_2 Netw_p + \beta_3 Netw_p^2 + \beta_4 REMNetw_p + \beta_5 REMNetw_p^2 + Z_i + \varepsilon_i$$

where *Emigrate* is an indicator variable equal to one if the individual undertakes emigration and zero otherwise; *Rel* is a set of dummy variables indicating the individual's own religion which accounts for the similarities within the Christian and Muslim communities relative to Hindus;¹¹ and *Netw* refers to the “geographic network” and is the proportion of adult males between the ages of 16 and 45 who are current emigrants from Panchayet p .¹² In other words, *Netw* can be measured as the total number of adult male emigrants from Panchayet p divided by the total number of adult males in Panchayet p . *REMNetw* refers to the “geographic network” for return emigrants (REM) and is measured as the proportion of return emigrant males in Panchayet p . The square of each network variable is also included to capture non-linear effects. And finally, Z are control variables that are described in sub-section 5.3.

The sample of individuals included in this regression is restricted to adult males between the ages of 16 and 45 omitting current out-migrants from the sample. We also run equation [1] restricting the dependent variable *Emigrate* to first-time emigrants, individuals from households without other emigrants or return emigrants in the

¹¹ We omit the dummy indicating that the individual is Hindu so that the coefficients on the Muslim and Christian dummies are interpreted relative to Hindus.

¹² Although Winters *et al.* (2000) argue that migration networks encompass several villages or municipalities because kinship networks exist across space, we have chosen to measure networks at the Panchayet level because, if networks lower financial and informational costs associated with migration, then it is more likely that networks function at a proximate, if not intimate, level. The Panchayet level allows for closer and more frequent contact. Moreover, given our interest in religious networks, it is more likely that religious communities are more strongly defined at the Panchayet-level because community members frequent near-by churches, temples, or mosques.

household. In all regressions standard errors are clustered by Panchayet because networks are measured at the Panchayet level.¹³ Because the number of households in each sample (at the Panchayet level) was not adjusted to reflect the total number of households in the Panchayet, we weight all observations by the percentage of the Panchayet population represented by the sampled households.

5.1.2 The effect of religious networks

To test the hypothesis that the relevant network is religious, rather than geographic, we estimate the following equation to predict whether individual i in Panchayet p in time period t emigrates using a probit model:

$$[2] \quad \Pr(\text{Emigrate}_{ip}) = \beta_0 + \beta_1 \text{Rel}_i + \beta_2 + \text{RelNetw}_{pr} + \beta_3 \text{RelNetw}_{pr}^2 + \beta_4 \text{RelNetw}_{pr} * \text{OwnRel}_i + Z_i + \varepsilon_i$$

As before *Emigrate* is a dichotomous variable indicating the individual's choice to emigrate and *Rel* refers to a set of dummy variables denoting the individual's religion. We define *RelNetw*, the measurement of the "religious network" as the proportion of adult males of religious group r who are emigrants from Panchayet p .

We follow Bertrand *et al.* and include a "quantity" and "quality" measure for the religious network. In our case, the "quantity" measurement is the proportion of adult males in the Panchayet of the same religion while the "quality" dimension is the migration rate of the religious group. By considering both the quality and quantity of the religious network, we can control for a number of omitted variables biases that would prevent us from distinguishing the network effect from correlated effects. This concept can be described as follows:

For example, the *Hindu Network* would be measured as:

¹³ As a robustness check, we also run equation [1] clustering standard errors by Taluk (which includes several Panchayets) to allow for correlation across Panchayets and the results remain robust.

$$HinNetw = \frac{\text{Total Hindu Emigrant Males}_p}{\text{Total Hindu Males}_p}$$

We also include $RelNetw*OwnRel$, the interaction of the religious network with the individual’s own religion. While the variable $RelNetw$ will capture the spill-over effects of religious networks on all individuals in the Panchayet, this interaction term captures the marginal effect of the religious network on the religious group’s own members—what we call the “own network effect.”¹⁴

5.1.3 Destination networks

We are mainly interested in the mechanism by which networks operate. Networks can either provide information about migration or finance migration costs. If networks are primarily informative then we should expect that destination networks to channel other network members to the destination because their information is country specific.

To test this hypothesis we estimate the following multinomial model to predict whether individual i from Panchayet p in time period t emigrates to destination d . We use a multinomial logit model because the ethnographic information on Kerala’s emigration indicates that the decision to emigrate and the decision of where to emigrate is simultaneous. In other words, when an individual wants to emigrate he will already have a destination in mind (most likely because he already has a strong network in that particular destination that can help to facilitate jobs, visas, and housing for him). This multinomial logit model can be described as:

$$[3] \quad \Pr(Destination_{id}) = \beta_0 + \beta_1 Rel_i + \beta_2 RelDestinNetw_{pd} + \beta_4 RelDestinNetw_{pd} * OwnRel_i + Z_i + \varepsilon_i$$

Where the dependent variable, $Destination$, takes on six values:

$$Destination \ d = \ 1 \quad \text{if Saudi Arabia}$$

¹⁴ All three religious networks are included in the regression because they are not collinear. As mentioned, each religious network is measured *within* the religious community so that for each Panchayet we are dealing with sub-sample populations that vary in size.

- 2 *if UAE*
- 3 *if Oman*
- 4 *if emigrated elsewhere outside India*
- 5 *if no emigration*

Again, *Rel* indicates a set of dummy variables for the individual's religion. *RelDestinNetw* refers to the "religious destination network" and is measured as the proportion of adult males from religious group *r* in destination country *d* from Panchayet *p*. Destination networks are measured for Saudi Arabia, the UAE, and Oman only because these three countries received more than two-thirds of all emigration in either survey year. The interaction term, *RelDestinNetw*OwnRel*, captures the marginal effect of the religious destination network on the religious group's own members while the non-interacted term, *RelDestinNetw*, captures the effect of the religious destination network on all members of Panchayet *p*. As before *Z* are control variables.

5.2 Unemployment at home

After showing where people migrate from a given religious community in a given geographic area, the following models the behavior of those who stay behind. The panel data set gives us the unique opportunity to address these questions by examining the situation of those that are unemployed in 1998 by 2003.

5.2.1 Cross-sectional regressions using 1998 and 2003 datasets

To test the hypothesis that a household's migration experience and the size of the emigrant network increases the probability of unemployment among non-migrant males, we estimate the following equation to predict whether individual *i* in Panchayet *p* in time period *t* is employed using a probit model:

$$[\mathbf{a}] \Pr(\text{Unemployed}_i) = \beta_0 + \beta_1 \text{EMI_hh}_i + \beta_2 \text{EMI_Netw}_p + \beta_3 \text{EMI_Netw}_p^2 + \mathbf{Z}_i + \varepsilon_i$$

where *Unemployed* is an indicator variable equal to one if the individual is unemployed in year *t* and zero otherwise; *EMI_hh* is a dummy variable equal to one if the household has at least one emigrant in year *t*; *EMI_Netw* refer to the “geographic emigrant network” and is the proportion of adult males above 16 years old who are current emigrants in year *t* from Panchayet *p*.

To test the hypothesis that males in emigrant households are more likely to be job seekers we estimate the following equation using a probit model:

$$\text{[b] } \Pr(\text{JobSeeker}_i) = \beta_0 + \beta_1 \text{EMI_hh}_i + \beta_2 \text{OMI_hh}_i + \beta_3 \text{EMI_Netw}_p + \beta_4 \text{EMI_Netw}_p^2 + \beta_5 \text{OMI_Netw}_p + \beta_6 \text{OMI_Netw}_p^2 + Z_i + \varepsilon_i$$

where *JobSeeker* is an indicator variable equal to one if the individual is seeking a job in the survey year and zero otherwise; and all other variables are defined as before.

The sample of individuals included in these regressions is restricted to adult males between the ages of 15 and 60 omitting current emigrants and students from the sample. We then run equation (a) and equation (b) separately for males between the ages of 15 and 29 years old and then for between the ages of 30 and 60 years old. All standard errors are clustered by household since individuals in the same household may share similar characteristics and all regressions are weighted.

5.2.2 Panel regressions

We hypothesize that young men who are unemployed in 1998 are waiting for the opportunity to emigrate because they are seeking employment outside of the state. To test this, we run the following regressions using panel data for the sample of males who are 15 to 29 years old (their age in 2003), excluding those who were migrants or students in 1998:

$$\text{[c] } \Pr(\text{Employ_Status}_i) = \beta_0 + \beta_1 \text{Unemployed}_i + \beta_2 \text{EMI_hh}_i * \text{Unemployed}_i + \beta_3 \text{EMI_hh}_i \beta_4 \text{EMI_Netw}_p + \beta_5 \text{EMI_Netw}_p^2 + Z_i + \varepsilon_i$$

Where the dependent variable, *Employ_Status*, in this regression takes on three values:

Employ_Status = 1 if the individual is *Unemployed* in 2003
 2 if the individual is *Employed* in 2003
 3 if the individual is an *Emigrant* in 2003

Unemployed is a dummy variable equal to one if the individual was unemployed in 1998. *EMI_hh*Unemployed* is the interaction term if the individual was both unemployed in 1998 and if he was a member of an emigrant household household in 1998.

We then run the following regression for job seeking:

$$[d] \Pr(\text{Jobseeking_Status}_i) = \beta_0 + \beta_1 \text{Jobseeker}_i + \beta_2 \text{EMI_hh}_i * \text{Jobseeker}_i + \beta_3 \text{EMI_hh}_i + \beta_4 \text{EMI_Netw}_p + \beta_5 \text{EMI_Netw}_p^2 + Z_i + \varepsilon_i$$

Where the dependent variable, *Jobseeking_Status*, in this regression takes on three values:

Jobseeking_Status = 1 if the individual is a *Job Seeker* in 2003
 2 if the individual is *Employed* in 2003
 3 if the individual is an *Emigrant* in 2003 (or *Migrant* in 2003)

Jobseeker is a dummy variable equal to one if the individual was a job seeker in 1998 and *EMI_hh*Jobseeker* is an interaction term if the individual was a job seeker in 1998 and living in an emigrant household in 1998.

In panel regressions, *EMI_hh* refers to the individual's 1998 status. The network variables refer to the individual's network in 2003. Control variables are described in sub-section 5.3 and refer to the individual's 1998 status with an additional dummy variable equal to one if the individual was a return emigrant in either 1998 or 2003.

5.3 Control variables

Control variables are included in all regressions. The individual characteristics include the individual's years of schooling and years of schooling squared, age and age squared, and a binary variable equal to one if the individual is married or unemployed.

The household-level characteristics include a binary variable equal to one if the household has at least one return emigrant, a binary variable equal to one if the household has at least one out-migrant, a binary variable equal to one if there are multiple emigrants in the household, the family size, and the number of adult males above age 18 in the household. Family characteristics (family size and the number of adult males in the household) include the migrant since we are trying to capture the household's "pre-emigration" state. The data does not contain information on household income. To control for this household characteristic, we include an income proxy as the log of the total amount of land (wet and dry) owned by the household.

The Panchayet-level variables included are the average cost of migration for all migrants from the Panchayet, the average house quality of all households in the Panchayet rated on a scale of one to five (with one being very poor and five being luxurious), and a binary variable equal to one if the Panchayet is urban. The latter two variables may also proxy for the overall wealth and level of infrastructure in the Panchayet.¹⁵

6. EMPIRICAL RESULTS

6.1 *The emigration decision and the "own network" effect*

The probit results for equation (2), presented in table 2 of the Appendix, reveal the Hindu network, the Muslim network, and the Christian network have small and insignificant coefficients, while the coefficients on the interaction terms (*MusNet* Muslim*, *HinNetw *Hindu*, and *ChrisNetw *Christian*) are much larger and statistically significant at the 1 percent level. These results imply that the Muslim, Hindu, and Christian networks significantly increase the probability of emigration for their *own* members while having a marginal and insignificant effect on all households within the Panchayet.¹⁶ We will refer to this effect as the "own network effect." The "own

¹⁵ Panchayet fixed effects are not included in the probit models because including a set of Panchayet dummies would induce an incidental parameters problem (see Greene, 2002). An additional problem with including Panchayet dummies is that the emigration prevalence rates are all measured at the Panchayet level which would make these variables perfectly collinear with the Panchayet dummies.

¹⁶ We measure networks at the Panchayet level for the reasons already mentioned. However, the small sample sizes of some Panchayet indicate 100 percent prevalence rates for migration. In order to ensure that

network effect” was strongest for the Hindu network and weakest for the Muslim network. This effect is also robust for the two major Hindu castes represented in the surveys—the Ezhavas and the Nairs.

The probit results from equation (1), presented in table 1 of the Appendix, show that both geographic networks and return emigrant networks have an inverse U-shaped relationship with the probability of emigration for adult males—implying that at a certain size the network begins to discourage or dampen an individual’s migration probability.¹⁷

When equations (1) and (2) are run for the sample of first-time emigrants only, we find that the results remain robust, but that the coefficients on the network variables (geographic and religious) decrease slightly in magnitude. This change in the magnitudes of the coefficients may reflect the fact that access to the religious network is partially dependent upon the household’s own emigration experience such that households with previous emigration experience are more active members of the network.

Muslim and Christian adult males are more likely than Hindu adult males to emigrate even after controlling for geographic networks. When we include variables for the religious networks and the interaction of religious networks and the individual’s own religion in equation (2) the coefficient on the Muslim dummy continues to be positive and significant, while the coefficient on the Christian dummy becomes insignificant. This change reflects the fact that religious networks do explain some of the variation in the emigration probability but Muslims are still more likely to migrate than non-Muslims.

Consistent with the theoretical literature on the determinants of emigration, certain individual and household characteristics (years of schooling, age, marital status, employment status, family size, number of adult males in the household) also influence the probability of emigration. The characteristics of the Panchayet are weak predictors of

these outliers are not driving our results, we run equation (2) after omitting Panchayets with 100 percent prevalence rates from the regressions to find that the coefficients on all the regressands, including the Muslim and Christian networks and their interactions, remain practically unchanged.

¹⁷ This non-linearity may be a function of “clustering” in the destination and it makes sense when considering that a larger network means more competition for the opportunity to migrate as well as more competition for jobs at destination. As another consequence of clustering, some empirical work finds that wages at destination decreases with the number of migrants thereby also decreasing the incentive to migrate (see Orrenius and Zavodny, 2005). The non-linear relationship is possibly related to the quality of the network such that as the network grows it becomes lower ability if less skilled migrants depend on the network as a means to migrate and find a job abroad. Thus, each additional migrant with lower ability may lower the average skill-level of the network as a consequence of his own migration.

the household's emigration probability. The addition of these Panchayet characteristics do not significantly alter the coefficients on the variables of interest which leads us to believe that Panchayet characteristics are not driving these results.

6.2 Network mechanisms and destination-specific "channeling effects"

The results from the multinomial logit regressions by destination are presented in table 3 of the Appendix. These results show that the own network effect also predicts an individual's destination. For example, the Saudi Muslim network increases the probability of emigration of Muslims to Saudi Arabia but has a statistically insignificant effect on the probability of emigration for all other adult males in the Panchayet. The effects of the Saudi Christian and Saudi Hindu networks have similar results for Christian and Hindu males respectively. As we would expect, the UAE and Oman religious networks have the same channeling effect on members of the religious group to these destinations.

If destination networks were financing migration then we should expect a spill-over effect. But, if destination networks offer information about jobs, housing, or other assimilation strategies in the destination then we should expect and do find that the destination networks increase the emigration probability to the affiliated destination. Our results show that destination networks are primarily informative because they are destination-specific and there is little to no spill-over across destination networks. In other words, the UAE network does not affect the emigration probability of males to Saudi Arabia.

Another hint that these networks are primarily informative is the finding with the panel data that non-migrants in 1998 who emigrate by 2003 (new migrants) rely on the 2003 network, rather than the 1998 network, to emigrate. This supports the notion that networks are informative since information relevant for emigration will decay over time.

6.3 The unemployed left behind

The empirical results from the cross-sectional regressions described in equations (a) and (b) are presented in tables 4 and 5 of the Appendix. The results show that the likelihood of unemployment increases for non-migrant men between the ages of 15 and

60 years old if they live in an emigrant household. The probability of unemployment increases with the size of the emigrant network in the 1998 cross-section.

When we run equation (a) separately for males aged 15 to 29 and males aged 30 to 60, we find that the “disincentive” effect of living in an emigrant household on employment is two times stronger for the younger cohort as compared to the older cohort of males in the 1998 cross-section (table 4). We also find that unemployment increases significantly with the size of the emigrant network for both cross-sections.

Males in emigrant households are also more likely to be job seekers in both years (table 5). In addition, the probability of job-seeking increases with the emigrant network in the 2003 cross-section. When we run equation (b) separately by age cohort, we find that the positive effect of living in an emigrant on job seeking is much stronger for younger males as compared to their older counterparts.

One of the main advantages to this study is the panel structure of the data. The results of the panel analysis, presented in tables 6 and 7 of the Appendix, support the hypothesis that unemployed males are waiting for emigration and seeking jobs outside of Kerala. We find the probability of emigration increases for young males who were living in an emigrant household in 1998 and were also unemployed or job seeking in 1998. As we would expect, the probability of emigration increases with the size of the emigrant network.

Consistent with the theoretical literature on the determinants of unemployment and emigration, certain individual and household characteristics (years of schooling, age, marital status, employment status, family size, number of adult males in the household) also influence the probability of being unemployed, job seeking, and emigrating.

7. CONCLUSIONS

The own network effect demonstrates that the relevant network for potential emigrants is the religious network.¹⁸ The results from our empirical analysis reveals that the Hindu network has the strongest own network effect. The fact that the Hindu network

¹⁸ The strength of religious networks is surprising given the predominance of independent recruitment agencies in contracting migrant workers from Kerala for labor in the Gulf countries. At the same time, the presence of these agencies may explain the larger “own network effect” of Hindu and Christian networks compared to the Muslim “own network effects” if they primarily target Muslim communities.

has a larger effect on the emigration probability of Hindus than the Muslim network has on Muslims contradicts the predictions advanced by Massey *et al.* (1998b) that communities with a higher emigration prevalence should have a higher probability of emigration. This finding may be surprising because one might assume that the Hindu network is less cohesive than the Muslim or Christian networks because the Hindu community had a much more stringent and stratified caste system as compared to the quasi-caste systems adopted by the Christian or Muslim communities in Kerala.

One possible explanation for the strength of the Hindu “own network effect” could be that Hindus, who have neither the advantage of Muslims in their religious compatibility with the Gulf region nor the educational advantage of Christians are simply more reliant on their networks for the opportunity to emigrate. It is possible that Hindu households are more likely to be credit-constrained than Christian or Muslim households (see McKenzie and Rapoport, 2005). Another possible explanation for the stronger Hindu own network effect could be attributed to the fact that Hindus make up more than 50 percent of Kerala’s total population and thereby have a higher likelihood of contact with other Hindus. This explanation is contradicted, however, by the fact that Christians, who have the fewest number of contacts based on their absolute population in Kerala as well as a lower emigration rate compared to Muslims, who still have a stronger “own network effect” compared to the Muslim network.

What remains puzzling is that Muslims have the weakest own network effect but represent 50 percent of Gulf migration. Recall that the coefficient on the Muslim dummy remained significant across the specifications. In both years, Muslims are more likely than Hindus to emigrate, controlling for networks effects.¹⁹ We interpret this finding to mean that there is something inherent to the Muslim community which makes emigration within this community more likely. The most obvious connection that Kerala’s Muslims have with the Arab Gulf is religion itself. Thus, it seems as though Muslims are more likely to migrate to the Gulf regardless of the push or pull of their networks.

This study finds that networks are destination-specific, implying that the primary resource that networks provide to their members is information rather than financing. As

¹⁹ In each regression, we omitted the Hindu dummy so that these results can be interpreted relative to Hindu males.

we would expect, information decays over time which is the most likely reason why return-emigrant networks had a very small and often insignificant effect on the migration probability of new emigrants. Similarly, information decay is probably why 1998 networks have little effect on the emigration probability of non-migrants but 2003 networks have a very strong effect for panel individuals.

Furthermore, our results support the hypothesis that young males in Kerala are unemployed because they are waiting for the opportunity to emigrate and are looking for jobs outside of the state. These results indicate that young men who have a higher expectation of emigration are less likely to take a job in Kerala while they prepare to emigrate.

One auxiliary effect from this stock of unemployed and ambitious young people is that they add (in absolute terms) to the number of highly skilled, albeit unemployed, individuals in Kerala's labor force. Emigrants are, on average, more educated than non-emigrants and the proportion of emigrants or return emigrants with a secondary education is higher than the proportion of the secondary educated in the general population. Aspiring emigrants also need higher levels of education because new Gulf policies and an increasing demand for skilled and professional workers in the Gulf require it. Since 1999, the United Arab Emirates no longer accepts applications for visas for unskilled workers from India, Pakistan and Bangladesh.²⁰ Not surprisingly, the proportion of the population with secondary or tertiary education increased by 3 percentage points between 1998 and 2003.²¹ Thus, those waiting to emigrate may be a potential "brain gain" for Kerala. On the other hand, almost three-fourths of the unemployed had secondary or tertiary education in 2001.²² According to Zachariah and Rajan (2004) the total unemployment rate in Kerala increased by 8 percentage points, but the unemployment rate among those that had completed secondary schooling was an increase of 15 percentage points between 1998 and 2003.²³ For this reason, it is important that the

²⁰ K.C. Zachariah and S. Irudaya Rajan. Gulf Revisited: Economic Consequences of Emigration from Kerala, Emigration and Unemployment, September 2004

²¹ *ibid*

²² Zachariah and Rajan. The impacts of Migration on Kerala's society and economy. (2001)

²³ K.C. Zachariah and S. Irudaya Rajan. Gulf Revisited: Economic Consequences of Emigration from Kerala, Emigration and Unemployment, September 2004

state engages these highly skilled but unemployed young people in the labor market even while they wait to emigrate.

Table 1. Probit Estimates of the Marginal Effect of Geographic Networks on Emigration

Dependent Variable: Emigration				
	1998		2003	
	1	2	3	4
		<i>First-time</i>		<i>First-time</i>
EMI Network	0.66 [0.11]***	0.44 [0.08]***	1.06 [0.17]***	0.65 [0.09]***
EMI Network ²	-1.15 [0.25]***	-0.68 [0.19]***	-1.96 [0.59]***	-1.44 [0.30]***
REM network	0.63 [0.23]***	0.3 [0.18]*	-0.15 [0.37]	-0.28 [0.23]
REM Network ²	-2.82 [1.58]*	-2.35 [1.32]*	1.39 [3.19]	1.95 [1.87]
Muslim	0.1 [0.01]***	0.06 [0.01]***	0.1 [0.01]***	0.06 [0.01]***
Christian	0.03 [0.008]***	0.01 [0.005]**	0.02 [0.01]*	0.009 [0.007]
Education	0.02 [0.00]***	0.02 [0.003]***	0.01 [0.004]***	0.01 [0.002]***
Educ ²	-0.0008 [0.0001]***	-0.0007 [0.0001]***	-0.006 [0.0002]***	-0.005 [0.0001]***
Married	-0.09 [0.01]***	-0.06 [0.01]***	-0.11 [0.01]***	-0.05 [0.01]***
Unemployed	0.08 [0.02]***	0.06 [0.01]***	-0.1 [0.01]***	-0.05 [0.01]***
Age	0.05 [0.00]***	0.03 [0.00]***	0.06 [0.004]***	0.03 [0.002]***
Age ²	-0.0006 [0.00004]***	-0.0004 [0.00003]***	-0.0007 [0.00006]***	-0.0003 [0.00004]***
Other EMI in hh	0.41 [0.03]***		0.46 [0.03]***	
Family Size	-0.0002 [0.001]	-0.009 [0.002]	0.002 [0.001]	0.0003 [0.0008]
Adult Males	-0.01 [0.003]***	-0.01 [0.002]***	-0.02 [0.003]***	-0.01 [0.002]***
Observations	13308	12573	12949	11916
R ²	0.3823	0.2486	0.4148	0.2357

Notes:

Robust standard errors in brackets

* significant at 10; ** significant at 5; *** significant at 1

In columns (2) and (4) the dependent variable is first-time emigration.

Regressions include in Columns (1) and (3) also include dummy variables equal to one if the household is an out-migrant or return emigrant household. The 1998 regressions also include variables indicating the average cost of emigration for the Panchayet, land ownership of the household, and an urban dummy.

Table 2. Probit Estimates of the Marginal Effect of Religious Networks on Emigration

Dependent Variable: Emigration				
	1998		2003	
	1	2	3	4
		<i>First-time</i>		<i>First-time</i>
Muslim Network	0.004 [0.02]	-0.001 [0.02]	-0.001 [0.02]	0.003 [0.01]
Muslim Network* Muslim	0.31 [0.04]***	0.21 [0.03]***	0.28 [0.05]***	0.16 [0.03]***
Christian Network	0.02 [0.02]	0.01 [0.02]	0.03 [0.03]	0.02 [0.02]
Christian Network* Christian	0.59 [0.08]***	0.34 [0.06]***	0.47 [0.06]***	0.2 [0.04]***
Hindu Network	0.05 [0.04]	0.02 [0.03]	0.005 [0.06]	-0.03 [0.05]
Hindu Network* Hindu	0.74 [0.09]***	0.49 [0.05]***	0.75 [0.10]***	0.37 [0.05]***
Muslim	0.1 [0.01]***	0.06 [0.01]***	0.13 [0.02]***	0.06 [0.01]***
Christian	0.01 [0.01]	0.008 [0.007]	0.01 [0.021]	0.009 [0.009]
Education	0.02 [0.003]***	0.01 [0.002]***	0.01 [0.004]***	0.01 [0.002]***
Educ ²	-0.0008 [0.0002]***	-0.0006 [0.0001]***	-0.005 [0.0002]***	-0.0004 [0.0001]***
Married	-0.09 [0.01]***	-0.06 [0.01]***	-0.11 [0.01]***	-0.05 [0.01]***
Unemployed	0.08 [0.01]***	0.06 [0.01]***	-0.09 [0.01]***	-0.05 [0.01]***
Age	0.05 [0.003]***	0.03 [0.002]***	0.05 [0.004]***	0.03 [0.002]***
Age ²	-0.0006 [0.00004]***	-0.0004 [0.00003]***	-0.0007 [0.00006]***	-0.0003 [0.00004]***
Other EMI in hh	0.36 [0.03]***		0.41 [0.03]***	
Family Size	0.0001 [0.001]	-0.0009 [0.0009]	0.002 [0.001]*	0.0006 [0.0009]
Adult Males	-0.01 [0.003]***	-0.01 [0.002]***	-0.02 [0.003]***	-0.01 [0.002]***
Observations	13308	12573	12949	11916
R ²	0.3975	0.2687	0.4270	0.2504

Notes:

Robust standard errors in brackets

* significant at 10; ** significant at 5; *** significant at 1

In columns (2) and (4) the dependent variable is first-time emigration.

Regressions include in Columns (1) and (3) also include dummy variables equal to one if the household is an out-migrant or return emigrant household. The 1998 regressions also include variables indicating the average cost of emigration for the Panchayet, land ownership of the household, and an urban dummy.

Table 3. Multinomial Logit Estimates of the Effect of Destination-Specific Religious Networks on Destination Choice

Dependent Variable: Destination Choice						
	1998			2003		
	Saudi 1	UAE 2	Oman 3	Saudi 4	UAE 5	OMAN 6
<i>Saudi Networks</i>						
Muslim Network	1.07 [0.91]	-0.57 [1.08]	2.52 [1.32]*	-0.39 [1.51]	1.44 [1.01]	-2.3 [2.40]
Muslim Network* Muslim	9.64 [1.24]***	-0.39 [1.57]	-3.58 [2.71]	13.83 [1.90]***	-2.69 [1.73]	-2.9 [5.04]
Christian Network	0.15 [2.31]	-8 [4.25]*	-1.52 [5.65]	-0.26 [1.17]	-0.08 [1.16]	-3.32 [3.61]
Christian Network* Christian	25.09 [3.96]***	15.1 [6.47]**	7.02 [9.62]	21.06 [3.16]***	-2.7 [4.31]	4.18 [7.68]
Hindu Network	4.32 [1.81]**	3.05 [2.42]	4.46 [4.60]	2.2 [1.65]	0.71 [2.13]	6.86 [3.75]*
Hindu Network* Hindu	28.84 [3.46]***	-6.9 [6.71]	-18.27 [9.24]**	22.38 [3.85]***	-0.66 [5.47]	5.14 [5.32]
<i>UAE Networks</i>						
Muslim Network	-2.33 [1.83]	-1.79 [1.42]	-0.38 [1.73]	-0.91 [1.01]	1.32 [0.63]**	-0.99 [1.45]
Muslim Network* Muslim	-1.46 [2.26]	11.13 [1.77]***	-0.87 [2.85]	-3.2 [1.46]**	6.54 [0.86]***	-0.41 [2.42]
Christian Network	0.61 [1.41]	2.24 [1.97]	2.16 [3.18]	3.72 [1.63]**	1.6 [1.55]	3.38 [1.81]*
Christian Network* Christian	4.87 [5.31]	23.56 [4.92]***	0.68 [11.27]	-6.32 [3.91]	17.25 [3.12]***	9.19 [4.82]*
Hindu Network	-3.61 [4.08]	1.52 [3.68]	-8.19 [9.76]	2.68 [1.87]	1.3 [1.17]	0.04 [4.24]
Hindu Network* Hindu	13.45 [6.19]**	37.89 [5.66]***	27.48 [11.38]**	-0.31 [3.71]	14.88 [2.02]***	4.28 [5.80]
<i>Oman Networks</i>						
Muslim Network	-6.18 [6.04]	5.1 [5.44]	7.55 [5.78]	5.45 [4.64]	2.8 [4.33]	1.38 [6.12]
Muslim Network* Muslim	9.82 [7.10]	-3.98 [6.63]	34.77 [7.94]***	-5.78 [6.63]	0.22 [5.60]	32.54 [7.51]***
Christian Network	1.64 [1.79]	2.65 [1.62]	3.61 [2.10]*	1.13 [0.92]	0.13 [1.08]	-0.06 [2.20]
Christian Network* Christian	0.01 [7.13]	-0.11 [6.41]	13.76 [4.61]***	0.93 [3.72]	3.86 [3.35]	14.79 [3.30]***
Hindu Network	5.72 [2.83]**	1.06 [3.18]	-1.61 [8.20]	-2.55 [3.85]	0.41 [3.33]	-15.34 [12.10]
Hindu Network* Hindu	0.59 [5.55]	6.67 [5.85]	46.66 [9.33]***	0.85 [9.02]	6.28 [6.14]	58.96 [12.86]***
Observations	13308	13308	13308	12949	12949	12949
R ²	0.3461	0.3461	0.3461	0.3891	0.3891	0.3891

Notes:

Robust standard errors in brackets

* significant at 10; ** significant at 5; *** significant at 1

Output is relative to non-migration. The results of the choice of emigration outside of India other than to Saudi Arabia, the UAE, or Oman is not presented here.

All regressions include a dummy variable if the individual is Christian or Muslim, his education and its square, his age and its square, the number of other family members who have emigrated, his family size, the number of adult males in the household, and dummy variables if the household is an out-migrant or return emigrant household. The 1998 regressions also include variables indicating the average cost of emigration for the Panchayet, land ownership of the household, and an urban dummy.

Table 4. Probit Estimates of the Marginal Effect of Migration on Unemployment

Dependent Variable: Unemployed						
	1	2	3	4	5	6
	1998			2003		
	Ages 15-60	Ages 15-29	Ages 30-60	Ages 15-60	Ages 15-29	Ages 30-60
EMI hh	0.05 [0.02]***	0.06 [0.03]**	0.04 [0.01]**	-0.04 [0.02]**	-0.02 [0.03]	-0.07 [0.02]***
EMI Network	0.09 [0.02]***	0.22 [0.08]***	0.05 [0.02]***	-0.16 [0.02]***	-0.24 [0.12]**	-0.08 [0.02]***
EMI Network ²	0.34 [0.15]**	0.67 [0.34]*	0.18 [0.13]	-0.02 [0.15]	0.13 [0.34]	0.01 [0.14]
REM	1.87 [0.98]*	2.30 [2.16]	1.12 [0.84]	2.89 [0.84]***	7.60 [2.59]***	1.52 [0.66]**
Education	-0.01 [0.004]**	-0.01 [0.01]	0.003 [0.003]	0.01 [0.004]***	0.00 [0.02]	0.01 [0.003]***
Educ ²	-0.001 [0.0002]***	-0.001 [0.006]*	-0.0002 [0.0002]	-0.001 [0.0002]**	-0.002 [0.001]**	-0.001 [0.0002]***
Married	-0.16 [0.014]***	-0.15 [0.021]***	-0.15 [0.020]***	0.21 [0.014]***	0.17 [0.028]***	0.20 [0.020]***
Age	-0.03 [0.002]***	0.03 [0.023]	-0.03 [0.004]***	0.02 [0.002]***	-0.19 [0.024]***	0.01 [0.004]***
Age ²	-0.0003 [0.00002]***	-0.001 [0.0005]**	-0.0004 [0.00004]***	-0.0002 [0.00002]***	0.005 [0.001]***	-0.0002 [0.00005]***
Family Size	-0.01 [0.002]***	-0.02 [0.005]***	0.002 [0.002]	0.01 [0.002]***	0.01 [0.005]**	0.002 [0.002]
Adult Males	0.02 [0.005]***	0.03 [0.01]**	0.004 [0.003]	-0.02 [0.004]***	-0.03 [0.01]***	-0.003 [0.004]
Head	-0.04 [0.01]***	-0.11 [0.05]**	-0.03 [0.009]***	0.07 [0.01]***	0.23 [0.03]***	0.04 [0.01]***
Head Education	0.002 [0.002]	0.004 [0.005]	0.003 [0.002]	-0.01 [0.003]***	-0.02 [0.006]***	-0.007 [0.003]**
Land	0.02 [0.003]***	0.04 [0.007]***	0.01 [0.002]***			
Urban	0.01 [0.009]	0.03 [0.022]	0.01 [0.007]			
Observations	13958	5350	8608	13997	4951	9046
Chi ²	841.96	341.55	433.26	1094.92	293.96	563.40
Pseudo R ²	0.1851	0.1208	0.1832	0.2054	0.1338	0.2061

Notes:

Robust standard errors in brackets

* significant at 10; ** significant at 5; *** significant at 1

Table 5. Probit Estimates of the Marginal Effect of Migration on Job Seeking

Dependent Variable: Job Seeker						
	1	2	3	4	5	6
	1998			2003		
	Ages 15-60	Ages 15-29	Ages 30-60	Ages 15-66	Ages 15-30	Ages 30-60
EMI hh	0.03 [0.008]***	0.09 [0.03]***	0.01 [0.005]	0.02 [0.01]*	0.03 [0.03]	0.02 [0.009]**
EMI Network	0.09 [0.02]***	0.18 [0.08]**	0.04 [0.01]***	0.13 [0.03]***	0.08 [0.04]**	0.07 [0.02]***
EMI Network ²	0.12 [0.07]*	0.37 [0.28]	0.03 [0.03]	-0.01 [0.10]	-0.26 [0.31]	-0.01 [0.07]
REM	1.04 [0.46]**	3.85 [1.77]**	0.20 [0.21]	-2.54 [0.62]***	-8.73 [2.67]***	-1.11 [0.38]***
Education	0.01 [0.003]***	0.05 [0.02]***	0.00 [0.001]**	0.01 [0.005]**	0.06 [0.02]**	0.00 [0.003]
Education ²	-0.0001 [0.00001]	-0.0006 [0.001]	-0.0001 [0.00005]	-0.0002 [0.0002]	-0.0006 [0.001]	-0.00 [0.000]
Married	-0.07 [0.009]***	-0.12 [0.02]***	-0.05 [0.01]***	-0.15 [0.01]***	-0.19 [0.02]***	-0.12 [0.02]***
Age	-0.01 [0.001]***	0.02 [0.02]	-0.00002 [0.001]	-0.01 [0.002]***	0.18 [0.02]***	0.00 [0.003]
Age ²	-0.00005 [0.0001]***	-0.0007 [0.0004]*	-0.0000002 [0.00001]	-0.0006 [0.00002]***	-0.004 [0.001]***	-0.00001 [0.00003]
Family Size	-0.002 [0.001]**	-0.01 [0.004]**	-0.0000004 [0.001]	-0.003 [0.001]**	-0.01 [0.005]	-0.00004 [0.001]
Adult Males	-0.0001 [0.002]	0.004 [0.009]	-0.0004 [0.001]	0.01 [0.003]**	0.02 [0.011]**	0.001 [0.002]
Head	-0.04 [0.007]***	-0.09 [0.04]**	-0.01 [0.004]***	-0.05 [0.008]***	-0.19 [0.03]***	-0.03 [0.006]***
Head Education	0.002 [0.001]	0.002 [0.004]	0.002 [0.001]**	0.01 [0.002]***	0.02 [0.006]***	0.003 [0.001]**
Land	0.003 [0.001]**	0.01 [0.005]*	0.001 [0.001]			
Urban	-0.01 [0.004]	-0.02 [0.016]	-0.0004 [0.002]			
Observations	13958	5350	8608	13997	4951	9046
Chi ²	683.50	317.27	376.47	944.77	388.32	474.34
Pseudo R ²	0.2798	0.1407	0.3476	0.2930	0.1632	0.3464

Notes:

Robust standard errors in brackets

* significant at 10; ** significant at 5; *** significant at 1

Table 6. Panel Data: Multinomial Logit Estimates of Previous Unemployment and Migration on Current Unemployment and Migration for Males aged 15 to 29 years

	1	2	3	4
Dependent Variable:	Unemployed in 2003	External Emigrant in 2003	Unemployed in 2003	External or Internal Migrant in 2003
Unemployed (1998)	0.61 [0.228]***	-0.63 [0.401]	0.75 [0.260]***	-0.23 [0.352]
EMI household (1998)	-0.21 [0.350]	0.45 [0.353]	-0.15 [0.353]	0.15 [0.319]
Unemployed*EMI hh	0.22 [0.646]	1.61 [0.635]**	-0.11 [0.743]	1.29 [0.596]**
EMI Network	1.44 [4.182]	20.62 [6.137]***	1.39 [4.420]	11.84 [5.063]**
EMI Network ²	-19.44 [16.853]	-45.42 [19.047]**	-20.07 [17.720]	-23.95 [16.114]
REM (1998 or 2003)	-0.35 [0.626]	-0.04 [0.500]	-0.30 [0.658]	0.20 [0.492]
Education	-0.27 [0.103]**	0.71 [0.327]**	-0.25 [0.107]**	0.58 [0.246]**
Education ²	0.02 [0.006]***	-0.03 [0.017]*	0.02 [0.007]**	-0.02 [0.013]*
Married	-0.44 [0.562]	1.14 [0.394]***	-0.40 [0.657]	1.19 [0.350]***
Age	-0.09 [0.089]	0.95 [0.444]**	-0.08 [0.033]**	0.41 [0.318]
Age ²	0.00 0.61	-0.02 -0.63	0.00 0.75	-0.01 -0.23
Observations	2117	2117	2053	2053
Chi ²	187.65	187.65	147.17	147.17
Pseudo R ²	0.1241	0.1241	0.1023	0.1023

Notes:

Robust standard errors in brackets

* significant at 10; ** significant at 5; *** significant at 1

Columns (1) and (2) refer to the multinomial logit in which the dependent variable takes on three values: 1 if unemployed, 2 if employed, and 3 if external emigrant in 2003.

Columns (3) and (4) refer to the multinomial logit regression in which the dependent variable takes on three values: 1 if unemployed, 2 if employed, and 3 if external emigrant in 2003.

All estimates are relative to the base outcome of employed in 2003.

Table 7. Panel Data: Multinomial Logit Estimates of Previous Job Seeking and Migration on Current Job Seeking and Migration for Males aged 15 to 29 years

Dependent Variable:	1	2	3	4
	Job Seeker in 2003	External Emigrant in 2003	Jobseeker in 2003	External or Internal Migrant in 2003
Job seeker (1998)	0.38 [0.246]	-0.37 [0.423]	0.32 [0.302]	-0.14 [0.381]
EMI household (1998)	-0.24 [0.378]	0.83 [0.380]**	-0.22 [0.378]	0.21 [0.313]
Job seeker*EMI hh	0.44 [0.708]	1.29 [0.670]*	0.27 [0.854]	1.20 [0.636]*
EMI Network	0.43 [4.345]	18.03 [6.085]***	0.35 [4.532]	11.83 [5.064]**
EMI Network ²	-15.99 [17.594]	-39.74 [18.974]**	-15.67 [18.235]	-24.02 [16.115]
REM (1998 or 2003)	0.15 [0.271]	0.84 [0.367]**	-0.15 [0.692]	0.25 [0.479]
Education	-0.09 [0.132]	0.68 [0.329]**	-0.06 [0.139]	0.58 [0.242]**
Education ²	0.01 [0.007]	-0.03 [0.017]	0.01 [0.008]	-0.02 [0.012]
Married	-0.87 [0.608]	1.25 [0.404]***	-1.05 [0.755]	1.24 [0.349]***
Age	-0.10 [0.034]***	0.94 [0.440]**	-0.10 [0.033]***	0.36 [0.317]
Age ²	0.00 [0.001]	-0.02 [0.011]*	0.00 [0.001]	-0.01 [0.008]
Observations	2095	2095	2031	2031
Chi ²	176.01	176.01	136.66	136.66
Pseudo R ²	0.1294	0.1294	0.1021	0.1021

Notes:

Robust standard errors in brackets

* significant at 10; ** significant at 5; *** significant at 1

Columns (1) and (2) refer to the multinomial logit in which the dependent variable takes on three values: 1 if jobseeker, 2 if employed, and 3 if external emigrant in 2003.

Columns (3) and (4) refer to the multinomial logit regression in which the dependent variable takes on three values: 1 if jobseeker, 2 if employed, and 3 if external emigrant in 2003.

All estimates are relative to the base outcome of employed in 2003.