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Economic Shock and Migration:

Differential Economics Effects, Migrant Responses, and Migrant Cumulative Causation in Thailand

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Abstract

Classic migration theory predicts that individual and household migration decisions are partially responsive to economic pushes from origin communities and pulls from destinations. Recent theorizing argues that this basic relationship is fundamentally influenced by the experiences accumulated within migrant streams, connecting potential migrants with future migrants between origin and destination. Drawing upon a 16-year study of migrant departures and returns from 22 villages in northeastern Thailand, we extend current knowledge about these fundamental relationships before, during, and after Thailand's economic crisis of 1997. We answer the following questions: How are migrant departures from the origin affected by the crisis, how are migrant returns to origin communities affected by the crisis, and how do migrants' accumulated experiences connecting origin and destination moderate these relationships? We examine effects separately for men and women since village and destination economies are sufficiently sex differentiated. We find that migrant selectivity partially explains year effects: that is, earlier periods are more highly selective. Migrant cumulative experiences facilitate migration throughout the time period and modestly influence the migration decisions during economic downturns, but these effects are far more important for women than for men. For return migration, year effects emerge only for the post 1997–98 period and only after controlling for migrant social capital and occupational sector. Origin-based migrant social capital slightly, but significantly, reduces the odds

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⁴In order to be at risk of moving back, an individual had to spend at least two months outside Nang Rong during the year. Any person who resided solely within Nang Rong District for the whole year was not at risk of this move.

⁵Time-varying measures include age, age-squared, marital status, education, land ownership, remittances, assets, remoteness, electrification, and cumulative migration experience. Time-invariant measures are temporary migrant status in 1984.

⁶The amount of land owned is measured categorically in standard Thai land units—rai. 1 rai is equivalent to .396 acres. We measure amount of land owned in the categories no land, 1 to 10 rai, 11 to 25 rai, and more than 25 rai. One to 10 rai is enough for a house structure and some paddy and gardening land to sustain a household; 11 to 25 rai represents enough paddy, garden, and pasture land to save and accumulate some land; and more than 25 rai is a relatively wealthy household.

⁷We draw on earlier work by Garip (2014) to construct our consumer index, using a Filmer-Pritchett Principal Component Analysis.

⁸For the remittance variable, we use household responses to a question in the 1984, 1994, and 2000 survey question that asks whether a member of the household who migrated in the 12 months prior to the survey remitted back to the household.

of return migration throughout the period of observation. However, migrant social capital does amplify the likelihood of return migration after the Asian Financial Crisis. Construction workers are the most likely to return to their origin villages after the Asian Financial Crisis, while manufacturing, service, and agricultural workers show little change in behavior.

Keywords

Migration; Economic Shock; Cumulative Causation; Migrant Social Capital; Gender

INTRODUCTION

Contemporary theories of migration suggest that decisions to move or stay and the overall patterns of movement are closely related to economic conditions in places of destination and origin (de Haas 2010, 2012; Massey et al. 1998; Piore 1980; Portes 2007; Skeldon 2006; Todaro 1969; Zelinsky 1971), the social relationships that connect people between origins and destinations, and the accumulated experiences at destinations among individuals and members of their community (Castles and Delgado Wise 2008; de Haas 2012; Massey and Zenteno 1999). In particular, accumulated migration experiences and individual associations with other migrants, through shared membership in households or villages, can significantly influence the migration process, independent of other social and economic factors present in *origin communities* (e.g., Curran et al. 2005; Garip and Curran 2010; Massey, Goldring, and Durand 1994) and can generate migration flows that are higher than expected (Massey and Zenteno 1999). However, no studies have examined the impact of migrant accumulated experiences and shared migrant association, also known as migrant cumulative causation (Massey and Zenteno 1999) or migrant social capital (Curran et al. 2005; Garip and Curran 2010; Portes 2007), when *destination economic conditions differ or change*.

Before turning to migrant social capital effects on the relationship between economic influences on migration patterns, we briefly summarize general findings related to migration and economic conditions in origins and destinations. The push-pull explanation of migration flows argues that migration streams are directed toward places where capital is growing and labor is scarce and that migration streams are sourced from places where capital is shrinking and labor plentiful (Lewis 1954; Todaro 1969). While migration patterns partially conform to this pattern, there are also exceptions (Castles, de Haas, and Miller 2013). Even when economic conditions improve in the origin community, out-migration may continue (Massey et al. 1994; Massey and Zenteno 1999; Massey et al. 1999). Or not all individuals are similarly responsive to push-pull conditions, since there are selective influences on the possibility of migration. For example, significant variability by age, sex, education, and sector can structure labor market conditions in both origin and destinations (Castles et al. 2013; Knight, Deng, and Li 2011; Piore 1980; Portes and Walton 1981; Skeldon 2006). Similarly, the new economics of labor migration (NELM) argues that the stickiness of migrant flows depends in large part on the institutional constraints in the origin setting and not on the absolute differences in conditions between origin and destination. Instead, relative deprivation, risk management, and the maturity of capital and insurance markets affect the

responsiveness of households to the labor market conditions that would induce migration rather than returns to labor predicted by classical economic theorists (Stark 1991).

In recent years, major regional and global economic crises have yielded further assessments of how responsive individuals and migrants are to changing relative economic conditions in destinations and origins. Generally, economic shocks in the destination reduce the number of migrants (Castles 2011; Green and Winters 2010; Huang et al. 2011; McKenzie, Theoharides, and Yang 2014; Villarreal 2014), reduce out-migration (Becker et al. 2005; Castles 2011; Fidrmuc 2004; Huang et al. 2011), reduce remittances (Jha, Sugiyarto, and Vargas-Silva 2010), and disrupt migrant systems (Martin 2009; Mitchneck and Plane 1995). Relative wage rate shifts and unemployment rates at the destination appear to be the most influential upon individual likelihoods to move from origin to destination. Economic crises at the destination also increase return migration to origin communities (Castles 2011), migrant departures from destinations (Cadena and Kovak 2013), and greater rates of unemployment among migrant laborers during and immediately following a recession (Aysa-Lastra and Cachón 2012). Economic recessions in destination communities decrease remittances back to origin communities (Jha et al. 2010), and economic recessions in origin communities increase remittances from migrants at other destinations that are not affected by recession (D. Yang 2008). Finally, research on the relationship between economic shocks and migration frequently identifies how effects are differentiated among types of migrants. Typically, effects are greatest for low-skill workers and sectors most sensitive to currency devaluations, while effects are least for workers in protected labor markets or economic sectors (Becker et al. 2005; Castles, de Haas, and Miller 2010; Cho and Newhouse 2013; Horton and Mazumdar 2001; McKenzie et al. 2014; Villarreal 2014).

What is unknown is whether the accumulated migrant reservoir of experiences persists in its influence despite changes in the economic conditions at destinations. We take up this unknown for the case of rural-urban migration in Thailand, where there is a very rapid shift in economic conditions in the destination labor market during the time for which we have observations. Specifically, we examine the exogenous shock of the Asian Financial Crisis, which had important, differential impacts upon typical migrant destination labor markets—construction, manufacturing, and service—and its impact upon the likelihood of migration and the influence of accumulated and shared migrant experiences. Specifically, we investigate whether migrant cumulative causation changed individual propensities to migrate out or to return from a migrant trip in response to changing conditions in the destination.

With regard to decisions to leave a rural community, migrant cumulative experiences might improve information and knowledge about working conditions at a destination and might reduce the propensity of individuals to migrate out of an origin community when there is an economic downturn at the destination. On the other hand, migrant social capital might provide special knowledge about the labor market that improves access to opportunities, thereby insulating migrants from shocks (Korinek Entwisle, and Jampaklay 2005). Migrant cumulative experiences and shared migrant associations (through households and villages) might influence the propensity for migrants to return to origin communities after an economic shock because migrant ties back to origin through these cumulative experiences and associations facilitate returns home to await the economic downturn in a less volatile but

globally dependent economy. Even when a migrant returns to his or her origin community, migrant social capital might effectively and quickly convey new information about labor market opportunities back to the return migrant, facilitating a migration rebound. Evidence from the Asian Financial Crisis and the Global Economic Crisis indicates relatively quick rebounds in migrant flows through established migrant streams within three to five years after each crisis (Ratha et al. 2013).

Migrant social capital or migrant systems are understood to convey valuable information between origin and destination and to reduce the psychic, social, and economic costs of migration (Massey 1990a; Massey 1990b; Massey and Espinosa 1997; Massey and García-España 1987; Massey et al. 1994; Massey and Zenteno 1999). Furthermore, as the number of migrant experiences grows with increasing compositional diversity, migration will accelerate and yield cumulatively caused migration (Garip and Curran 2010; Massey et al. 1994). The idea that migration experiences can evolve, accumulate, and generate higher-than-expected levels of migration out of communities of origin has yielded a considerable number of empirical studies and some policy attention. Much of this research focuses upon Mexico-U.S. migration patterns and Mexican migration behaviors (Davis, Stecklov, and Winters 2002; Espinosa and Massey 1999; Massey and Espinosa 1997; Massey et al. 1994; Massey and Zenteno 1999; Winters, de Janvry, and Sadoulet 2001). Because of the temporal and spatial data requirements necessary to test migrant cumulative causation theories, extensions to other settings outside of the Mexico-U.S. case have rarely been undertaken. In order to test the theory, researchers need to know about the history of migrant streams linking origin and destination communities, they need prospective rather than retrospective designs, and they need to convincingly link migrant accumulated experiences through associations at the household and village level (or other relevant associations of shared membership) with individuals at risk of migrating.

Earlier work examined longitudinal data from Thailand (1984–94) to replicate studies of cumulative causation and show how migrant social capital influences the probability of migration (Curran et al. 2005; Garip 2008; Garip 2014; Garip and Curran 2010). Those studies confirm that the relationship between internal migration and migrant social capital is similar to the relationship between migrant social capital and international migration (Curran et al. 2005). Furthermore, those studies indicate how heterogeneity in migrant social capital is significantly related to migration outcomes, in particular the sex, age, and education composition of migrant streams (Garip and Curran 2010).

In the current study, we extend earlier work with data for a longer period of time, including the 1997–98 financial crises. Our interest, in this case, is to observe whether individuals with greater access to migrant social capital are equally likely to move before and after the economic crisis. We suspect this is so, but, just as with our earlier work, we also suspect that the content of the migrant social capital will matter in different ways for different individuals (Curran et al. 2005; Garip and Curran 2010; Garip 2008). On this latter point, we evaluate our models for men and women separately. Our analysis first examines whether there are significant year effects upon the propensity to migrate out of the village or return to the village. Then we examine how inclusion of the selective factors that typically influence migration changes the year effect. We then examine whether migrant social capital buffers or

mitigates the year effects. And, finally, we examine how a migrant's occupation at the destination affects his or her likelihood of returning home.

Before we begin our analyses, we provide a brief background on the Thai economic context and the study site. We then provide a set of hypotheses to evaluate and a description of our modeling approach. In our discussion, we provide a summary of our results and discuss their significance for general studies of migration, migrant social capital, and economic development. Because the theoretical demands upon the data require a long time span over which to prospectively observe migration patterns and accretion of migration experiences by individuals, their families, and their origin communities, as well as to track coincidental changes in economic conditions, there have been few sites where the theory has been comprehensively tested.

Background and Study Site

The period of time captured by the data (1984–2000) coincides with dramatic economic growth in Thailand, followed by a dramatic contraction and subsequent re-expansion. Between the mid-1980s and mid-1990s, the Thai economy experienced an unprecedented economic boom, with a GDP growth rate of more than 6 percent per year. Large amounts of direct foreign investment allowed the manufacturing sector to expand, leading to increases in value-added and export earnings. Domestic consumer demand followed suit, leading to growth in the service and light industrial sectors. After 1990, real estate speculation was rampant, fueled by government spending as well as an under-regulated banking industry (Warr 1999). Not surprisingly, the boom led to creation of new jobs, particularly in industrial regions of the country. As the economy grew, unskilled rural people moved to urban areas to fill labor demands. From 1990 to 1996, real wages had increased at a rate of 9 percent per year (Warr 1999)—evidence of labor deficits, primarily in urban and periurban labor markets. In 1996, the unemployment rate was estimated to be only 1.5 percent (IMF 1998). In the decade before the crash, Thailand shifted from being a net labor exporter to a net labor importer, as immigrants from such countries as Myanmar and Cambodia filled the demand for labor that Thais began to eschew—3D jobs (difficulty, dirty, dangerous).

The Asian Financial Crisis began in the summer of 1996 and grew in intensity through 1997 and 1998. During that time, Thailand's burden of foreign debt skyrocketed as the Thai currency lost value and interest rates rose. In the summer of 1997, the Thai government agreed to an IMF bailout package, which included the delinking of the baht from the US dollar and other currencies. The baht, which had been stable for at least a decade at about 25 baht/USD, immediately lost value—declining to 45 baht/USD in late 1997 and remaining at or below 40 baht/USD through the year 2000. The banking and nascent finance sectors crashed. It has been estimated that over 10,000 people lost their jobs when 56 out of the 91 finance companies in the country were forced to shut down (Soonthornthada 2001). In addition to the financial sector, the real estate market contracted. This in turn affected the construction industry, as thousands of construction projects were halted. The manufacturing sector also reversed its growth in 1997–98 because investment dried up and companies either had to lay off or decrease the amount spent on labor in order to stay afloat (Nawarat 2006; Parnwell 2002). Figure 1 shows economic growth slowing in 1996, retracting sharply from

the third quarter of 1997 and remaining contracted through the first half of 1998, and picking up to positive growth by the end of 1998 and the start of 1999. Employment levels follow the economic growth patterns, although lagging economic growth changes between one and two quarters. It is estimated that 1.5 million people were laid off by early 1998 (Teokul 1999). One important pattern displayed in figure 1 is the time lag between the contraction of the economy and the drop in employment in 1997 and 1998. After 1998, GNP began to grow again; however, rates of employment did not resume their precrisis levels until after 2000. Migration reversed from rural to urban areas in 1998 (Narawat 2006), and poverty grew by more than 15 percent between 1996 and 1998, reversing steady declines (Jones and Marsden 2010).

Growth varies by selected economic sectors (figure 2). We note these sectors, as they are ones that are linked to migrant labor demand and draw rural-urban migrants from the study site. In 1996, the service industry was growing very quickly, reaching a peak growth rate of around 25 percent. In contrast, other industries were growing at between 5 and 10 percent per year. After 1996, the industrial sector was affected the earliest, but the worst-hit sector was construction in 1997 and 1998, followed by contraction of the finance sector in 1998 and 1999. GNP of the manufacturing and service sectors declined in 1998 but by 1999 was growing at a rate faster than in 1996. Unemployment increased during the crisis, first in construction and then in finance and real estate, followed by manufacturing, then service and agricultural sectors (Kittiprapas 2002). The primary destination of return migrants from Bangkok was northeastern Thailand (Jones and Marsden 2010; Kittiprapas 2002), the region where the study site is located.

Origin communities for this study are located in one district in northeastern Thailand (see figure 3), an economically homogeneous district during the time period covered by the survey. Farming is the primary occupation among most of the population (Curran and Cooke 2008). Most households farm first for subsistence and second for export (i.e., for sale to local, national, and international markets). To the extent that villagers are engaged in agricultural production for international export agriculture (as suppliers of rice and manioc) they were minimally affected by the Asian Financial Crisis and the devaluation of the baht. During Curran's fieldwork in 1998, 2000, and 2007, villagers indicated little impact of the crisis on agricultural product sales, and economic analyses showed that agricultural exports continued to grow, although not as fast as labor-intensive manufacturing (Thammavit 1998). Instead, the main way the crisis affected villagers was in terms of the price of imported consumer goods and the labor market opportunities for migrants in destination communities. Villages are variously connected to consumer and labor markets via migrant migration. *Thus the variability of the impact of the Asian Financial Crisis on origin communities is primarily reflected in the variability of migrant connections to destinations*—this is the main focus of our research project and the one we seek to investigate in this analysis.

Among policy makers, provincial governors, and even villagers, there was great concern that many people who had been working in urban manufacturing or construction industries would return to rural areas and increase unemployment or underemployment there. In fact, during the fieldwork that Curran conducted in January of 1998 and subsequently in 2000, migrants' and villagers' responses to the economic crisis varied considerably. Some

migrants stayed in urban industrial destinations to work and, rather than being out of work, worked overtime hours. Others lost work, shifted to doing informal work, or returned home. Some villages had a temporary influx of return migrants, who left again soon after-wards. Other villages saw the establishment of new rural factories that were built, in part, through government subsidies (Horton and Mazumdar 2001). In these villages there was a subsequent return of migrants to work in these factories. A handful of other villages saw little change in the return of migrants. And, finally, among some villages out-migration and seasonal migration continued apace.

What explains these different-than-expected outcomes? One clue may be found in an analysis of the role of migrant cumulative experiences. There is considerable variation across villages in accumulated migration experiences among villagers in the study site. Migrant prevalence rates vary dramatically between 5 and 70 percent over the 16-year period (figure 4). In some villages migrant prevalence rates change little between 1984 and 2000 and in others the rates grow dramatically. Migrants have different kinds of accumulated migrant experiences that are shared through their mutual membership in meaningful associations. We examine three levels of accumulated experiences. First are the individual's lived experiences; these are likely the most meaningful experiences on which future migration decisions most depend. Second are the migration experiences of other household or family members. Third are the migration experiences of other members of the individual's origin village. Villages in Thailand are relatively small, cohesive social and administrative clusters of no more than 100 households. All households are within walking distance. Villagers frequently gather at shops, along the main road that transects a village, in the community center, or work together in nearby agricultural fields. Thus information is shared through these varying but still intimate and frequent connections. Further, experiences of migrants such as occupation, labor sector, and frequency and duration of trips also tend to cluster differently across villages. Some migrant pathways are for agricultural labor only, others tend to predominate in the construction industry, while others are mainly for work in manufacturing. These varied concentrations of experience suggest that the impact of the economic downturn will be felt differently by individuals and villages, depending on their respective accumulated experiences. And the suspected impact of the economic downturn on migration—whether outgoing or return—is likely to vary systematically by the amount and character of previous migrant experience, reflected at the individual, household, and community level.

Nang Rong District in Buriram Province (the study site) is a rural, agricultural, and poor district, similar to other rural districts in Thailand. Like other rural districts in Thailand, because of poverty, past high fertility, and limited arable land for future development, the district became an important source of migrants to urban centers in Thailand, primarily Bangkok. Northeastern Thais are known for their migratory behaviors. Much of their migration is circulatory and follows the agricultural cycle of the monsoon patterns of wet and dry seasons. For decades, migrants from the northeast would move to wetter regions to work in agricultural occupations in the central and eastern regions of the country. With the growth of the economy during the 1980s and 1990s, increasingly those migrants were hired into non-agricultural jobs, including construction, factory, and service, particularly domestic work, truck and taxi driving (Curran et al. 2005; De Jong, Richter, and Isarabhakdi 1996;

Hewison 1999; Limpinuntana et al. 1982; Nartsupha 1999; Phongpaichit and Baker 1998; Phongphit 1990; Piotrowski, Ghimire, and Rindfuss 2013; Siamwalla, Setboonsarng, and Patamasiriwat 1993; Singhanetra-Renard and Prabhudhanitisarn 1992; Soonthorndhada 2001).

Nang Rong is located in the southern portion of the northeastern region along a major highway built during the 1970s by the United States, linking Bangkok with the Laotian border. The highway serves as an important conduit of people and resources to and from central Thailand. Figure 3 displays a map of the study site and its relative location within Thailand and the province of Buriram. In 1990, Nang Rong was one of the largest districts in the country, with a population of over 200,000 within an area of about 240,000 hectares.

The Nang Rong Surveys are a longitudinal data collection effort conducted by the Carolina Population Center at the University of North Carolina and the Institute for Population and Social Research at Mahidol University in Thailand.¹ We employ three waves of data for this analysis (the 1984, 1994, and 2000 surveys). The 1984 data collection was a census of 50 villages and included information on individual demographic data, household assets, and village characteristics. The 1994 data collection not only replicated the 1984 survey, including a census of all households and information about former 1984 village members, but also included a 10-year retrospective life history about education, work, and migration, as well as key social and demographic events such as marriage, births (asked only of women), and entrance into military service or the Buddhist *sangha* (asked only of men),² information about siblings and their current residence, and a special survey of migrants. This data collection effort was also repeated in 2000. There were two main reasons for migrating in this context and during this period—schooling and work (Curran et al. 2004; Curran et al. 2005; Keyes 1984; VanWey 2005). Migration for marriage was rare, especially for women, given the matrilineal and matrilocal settlement patterns (Keyes 1984). Migration for work or school might subsequently lead to marriage in the destination community, but marriage, alone, was generally not the reason for a move (Curran et al. 2005; Keyes 1984).

We employ the information from the life history surveys and the migrant follow-up in 1994 and 2000, as well as information from the 1984 survey. The migrant follow-up component was conducted in 22 of the original 1984 villages and counted a migrant as someone who was a member of a 1984 or 1994 household and had since left a village for more than two months to one of four destinations: the provincial capital, Buriram; the regional capital, Korat or Nakhon Ratchasima; Bangkok and the Bangkok Metropolitan Area; or eastern seaboard provinces (Chachoensao, Chonburi, and Rayong). Related project manuscripts document how successful the surveys were at following households and individuals (Rindfuss et al. 2007). For this kind of migrant follow-up, the success at finding migrants is considered remarkably high. On average, for the twenty-two villages, about 44 percent of

¹Survey information is available at the Nang Rong website, <http://www.cpc.unc.edu/projects/nangrong/>.

²Entrance into the Buddhist *sangha* as a temporary monk is a tradition, but a temporary life event, that can be as short as three days or as long as one year. Typically, entrance into the *sangha* occurs after school and some work and before marriage. It typically occurs around age 20, but there is substantial variation in practice (Jackson 1999; Keyes 1984; McDaniel 2011; Pramualratana, Havanon, and Knodel 1985).

the migrants were successfully interviewed at some point in the six months following the 1994 village surveys and a slightly lower percentage in 2000.

This case study is similar to other demographic surveillance studies around the world in that the detailed data and the panel study mean that the population surveyed is not nationally representative. Nevertheless, the district is similar to many other rural, agricultural districts in Thailand. Its similarity allows us to suggest the possibility of comparable findings for other rural, agricultural communities. The value of the case is in the richness of detail and the ability to observe variability in migrant ties to destinations and to be fairly certain that the variability is not related to other origin factors also related to, or affected by, the Asian Financial Crisis. Analyzing the impact of economic shock on an entire system, one that connects destination and origin, is analytically complex and challenging. The value of this study lies in the fact that we can “control” for some of the complexity because origin communities are mostly homogeneous, except for the accumulated migrant experiences, and we can examine temporal ordering of effects before and after the shock.

Since Nang Rong villages were exposed to the same economic shock, we simply estimate year effects as a proxy for the destination economic shock. The variability of the impact is also assessed via the variability in migrant connections, the probability of migration, and the sector the migrant is working in at the destination. We explore the following questions:

1. How does migration out of Nang Rong systematically vary by year, especially in relation to the 1996–97 economic contraction?
 - a. How different are these patterns for men and women?
 - b. How do these year effects change with the addition of fixed and time-varying socioeconomic characteristics of migrants, their origin households, and their origin villages?
 - c. How does cumulative migration experience at the individual, household, and village level moderate the year effects?
2. How does return migration from outside Nang Rong back to origin villages systematically vary by year, especially in relation to the 1996–97 downturn?
 - a. How different are the patterns for men and women?
 - b. How do these year effects change with the addition of fixed and time-varying socioeconomic characteristics of migrants, their origin households, and their origin villages?
 - c. How does cumulative migration experience at the individual, household, and village levels change the year effects? Or, how does migrant social capital moderate the year effects?
 - d. How does migrant occupation in the destination labor market prior to return influence the impact of year effects?

Data and Methods

For our study we use the life history information collected in 1994 from individuals who were 18 to 35 years old and construct a file that uses their migration histories beginning when they were 13 years old. We add to our records their life histories from the 2000 survey year. As each person ages into the file, we create a person-year record that included both fixed and time-varying characteristics over the time period. These characteristics are observed measures of their own characteristics, their household characteristics, and their village's characteristics. We chose 13 years old as the lower bound because it marks the end of primary schooling and the beginning of exposure to the risk of moving as an independent adult (Curran et al. 2004). We transform each person-year record into a person-year-move record, since the life history data allow for up to six moves in a year, and these moves are recorded in sequence ($\text{year}_i (1984, \dots 2000) - \text{move}(1, \dots 6)$) with associated occupation, education, and other statuses. There are 113,469 person-year-move records. We conduct our analyses for the entire set of 13- to 41-year-olds and subsequent individuals who age into the file over the 16-year period. For 1984 our data include 1,895 women and 2,028 men and by 2000 the data include 3,305 women and 3,394 men. The units of analysis in our study are individuals observed throughout the 16-year period and with information about themselves, their households, other household members, and village characteristics linked to those individual person-year-move records.

Our analytic approach builds on a model developed by Massey and Zenteno (1999) and extended by Curran et al. (2005) and Garip and Curran (2010) to measure the dynamics of mass migration. We employ this approach for a number of reasons. Our data are limited in that we do not know the date of first migration and without making some very large assumptions cannot presume to estimate it. On the basis of the life history files and the village censuses in 1984, 1994 and 2000, we construct a prospective panel of villagers 8 to 25 years old in 1984 and observe them forward in time, much as Massey and Zenteno (1999) do with their communities. To address the unobserved heterogeneity associated with first migration, we include a set of baseline attributes of individuals that might account for possible unobserved heterogeneity related to our explanatory factors and the dependent variables. In this study, we are interested in predicting whether a person in time t was living outside Nang Rong District. We are interested in two kinds of movement: migration out of and migration back to Nang Rong. A migrant trip out of Nang Rong is a move from within the district to anywhere outside the district. A return trip back to Nang Rong is a move from anywhere outside the district to a place within the district. Movement is measured by creating a person-year-move-place of residence file and comparing the place of residence with the previous place of residence. If an individual was in Nang Rong at $t - 1$ and outside Nang Rong at t , this was coded as “migrating out.”³ Conversely, if an individual resided outside Nang Rong at $t - 1$ and then resided within Nang Rong at t , this was coded as migrated and returned.⁴ The first set of models are estimated only on samples of Nang Rong residents who are at risk of migrating away—that is, living in Nang Rong in $t - 1$. The second set of models are estimated only on those residents who are at risk of returning, i.e. living outside of Nang Rong in $t - 1$.

^{3,3} In order to be at risk of moving either in or out of Nang Rong, a person had to spend at least two months in a place of residence.

Our data set contains multiple observations of the same individual over time. Let MigrateOut_{it} represent our dependent variable, such that $\text{MigrateOut}_{it} = 1$ if person i ($i = 1, 2, \dots, n$) is a migrant at time t (year-move sequence = 1984 – m1, . . . 2000 – m6) and $\text{MigrateOut}_{it} = 0$ otherwise. Our explanatory variables take the form of time-invariant (Invariant_{it}) and time-varying (Variant_{it}) measures. The probability of being a migrant, that is $p_{it} = \text{Prob}(\text{MigrateOut}_{it} = 1)$, is modeled as a function of Variant_{it} and Invariant_{it} using a logistic estimation technique. To allow for a correlation between the observations of an individual across time, we introduce an individual level effect, u_i , in the model. These models fall into a class of models called multilevel discrete-time event history models (Steele 2011). We also take into account the correlated error structure of multiple observations from individuals with a random effects specification to allow us to estimate time-invariant effects (such as whether the individual or the household experienced migration prior to 1984):

- a. $\text{Prob}(\text{MigrateOut}_{it}) = f(\text{Variant}_{it}, \text{Invariant}_{it})^5 + u_i$
 1. *Model 1 (Year Effects):* $\text{Prob}(\text{MigrateOut}_{it}) = f(\text{Year}_{1984-2000}) + u_i$
 2. *Model 2 (Controls):* $\text{Prob}(\text{MigrateOut}_{it}) = f(\text{Year}_{1984-2000}, \text{Variant}_{it-1}, \text{Invariant}_{it}) + u_i$
 3. *Model 3 (Migrant Cumulative Causation):* $\text{Prob}(\text{MigrateOut}_{it}) = f(\text{Year}_{1984-2000}, \text{Variant}_{it-1}, \text{Invariant}_{it}, \text{Itrips}_{it-1}, \text{Iexp}_{it-1}, \text{Htrips}_{it-1}, \text{Hexp}_{it-1}, \text{Ctrips}_{it-1}, \text{Cexp}_{it-1}) + u_i$
- b. $\text{Prob}(\text{Return}_{it}) = f(\text{Variant}_{it}, \text{Invariant}_{it})$
 1. *Model 1 (Year Effects):* $\text{Prob}(\text{Return}_{it}) = f(\text{Year}_{1984-2000}) + u_i$
 2. *Model 2 (Controls):* $\text{Prob}(\text{Return}_{it}) = f(\text{Year}_{1984-2000}, \text{Variant}_{it-1}, \text{Invariant}_{it}) + u_i$
 3. *Model 3 (Migrant Cumulative Causation):* $\text{Prob}(\text{Return}_{it}) = f(\text{Year}_{1984-2000}, \text{Variant}_{it-1}, \text{Invariant}_{it}, \text{Itrips}_{it-1}, \text{Iexp}_{it-1}, \text{Htrips}_{it-1}, \text{Hexp}_{it-1}, \text{Ctrips}_{it-1}, \text{Cexp}_{it-1}) + u_i$
 4. *Model 4 (Migrant Occupation):* $\text{Prob}(\text{Return}_{it}) = f(\text{Year}_{1984-2000}, \text{Variant}_{it-1}, \text{Invariant}_{it}, \text{Itrips}_{it-1}, \text{Iexp}_{it-1}, \text{Htrips}_{it-1}, \text{Hexp}_{it-1}, \text{Ctrips}_{it-1}, \text{Cexp}_{it-1}, \text{Occ}_{it-1}) + u_i$

where $\text{Prob}(\text{MigrateOut}_{it})$ is person $_i$'s probability of moving out of Nang Rong in year t and $\text{Prob}(\text{Return}_{it})$ is person $_i$'s probability of moving back to Nang Rong in year t . For all persons at risk of moving out, MigrateOut_{it} is 1 if person $_i$ moved out of Nang Rong at some point during year t and is 0 otherwise. For all persons at risk of moving back, Return_{it} is 1 if person $_i$ moved back to Nang Rong at some point during year t and is 0 otherwise. In model 1, we estimate year effects for economic growth and shock with dummy variables for a two-year interval and with 1996–97 as the omitted year for comparison. We expect to observe relatively higher odds of migration in years prior to 1996–97 and lower odds of migration in the years after that period. In the subsequent models we examine how those year effects change with the addition of individual, household, and origin community characteristics, as

well as with the addition of migrant cumulative causation or migrant social capital characteristics.

In model 2, we account for the factors typically employed to explain migration or the selectivity of the migration process. Inclusion of these variables in our model should partially explain the year effects. On the basis of earlier work, we expect that the selectivity of migration will be more pronounced in earlier years and less pronounced in later years over the observed time period (Garip and Curran 2010).

At the individual level we include sex, age, and an age-squared term to account for the nonlinear relationship between age and propensity to migrate, marital status, educational attainment (this is measured categorically as primary education or less, some secondary, or completed secondary), and whether the individual was a temporary migrant in 1984. We also include origin-based, household-level, and village-level factors for both migration out of the origin community and return migration to the origin. Origin characteristics capture the push factors for out-migration and once a person has migrated capture the pull factors back to the origin community. The only destination conditions we capture in our return models are the occupations of migrants in the year prior to a possible move in year t .

In Model 2 we also include migrant selective household and village variables. We include a measure that indicates whether there were any temporary migrants in the household in 1984. This is a time-invariant measure. To capture wealth of the household, we generate a time-varying measure of the amount of land owned,⁶ a consumer asset index,⁷ and a variable that indicates whether a household reports receiving remittances.⁸ Finally, we indicate whether the individual's origin village is somewhat or very remote and whether the village is electrified. Both of these measures also vary across the observation period as roads and electricity extend throughout the district.

Our third model incorporates measures of migrant social capital or accumulated migrant experience. In this model we examine the direct effects of migrant social capital or accumulated migrant experiences, but we are particularly interested in how the year effects change with the addition of these variables. We have two measures of accumulated experience, directly following on previous research by Massey and Zenteno (1999), Curran et al. (2005), and Garip and Curran (2010). These measures capture two very different dimensions about the migrant experience—including the number of trips (out and back) and the time spent away during each trip (number of months). As described in the previously mentioned work, the former measure is meant to proxy the conveyance of information directly back to origin communities upon return. We assume that frequent migrants convey information about the process of moving. The latter measure is meant to capture deeper information about the place and the opportunities or challenges present in that place. Alternatively, duration of time away may also signal a lack of commitment to the origin community and reduce the amount of information conveyed back to origin communities, diminishing the impact of migrant streams on subsequent migration, as suggested by Curran et al. (2005).

For these measures we aggregate migrant trips and months during a trip (duration away) from 1984 to $t - 1$ for each year t . These are first aggregated yearly to the individual level, then aggregated to the household level, and then aggregated to the village level (see Curran et al. 2005). For the household accumulated trips or months we do not include the individual's own information but only observe other household members' migration experiences. We follow a similar set of steps for the village accumulated trips and months and do not include household members' accumulated trips and months when linking village information to household records. Each measure is standardized to a mean. Replicating earlier work (Curran et al. 2005; Garip and Curran 2010), we calculate sex-disaggregated versions of each measure at the household and village levels. Thus we generate female migrant social capital and male migrant social capital. The complete set of measures capture some portion of the heterogeneity in the association of villages with accumulated migrant experience between men and women, within households, across households within villages, and across time (Curran et al. 2005).

The choice of aggregating to households and villages is not merely due to the exigencies of the data available. Households and villages are meaningful social relationships in the context of rural Thailand. Generally, households are equivalent to families (sometimes intergenerational ones) and will count individuals temporarily absent in their household rosters, especially those with kin or family ties to other household members. Villages in Thailand are relatively small, cohesive social and administrative clusters of usually about 100 households. All households are within easy walking distance. Villagers frequently gather at shops, along the main road that transects a village, or in the community center or work together in nearby agricultural fields. Thus information is shared through these varying but still intimate and frequent connections. Curran et al. (2005) and Garip and Curran (2010) both discuss the meaningfulness of villages as socially coherent associations of households and individuals.

Because of the panel nature of the data and the census approach to data collection, our data file structure allows us to account for changing associations of individuals across households within villages. The file structure allows us to link original households and split households, providing tools for attaching household characteristics of the original household to an individual's record and then shifting their household of record characteristics as the individual changes associations. This can happen through marriage or the natural evolution of adult children leaving natal, multigenerational households and taking their subfamily group with them to set up a new household.

Our return migration models follow a similar sequential approach. First, we estimate a reduced-form model with just year effects. Then we include measures of migrant selectivity and observe how the year effects change. In model 3 we include measures of migrant social capital. And in model 4 in the return migration analysis we include a measure of the migrant's occupation in the destination immediately preceding the return to Nang Rong. These occupations are farming, factory work, construction sector, service sector, other occupation type, and no occupation. There is considerable variability among men and women and across time in occupations among migrants. Figure 5 illustrates the proportion of migrants engaged in each occupation category by sex and year. Among women, factory

work predominates as the primary occupation from 1986 onward, steadily growing in importance. Among the remaining occupations, construction and agricultural jobs are initially relatively high and steadily drop in importance, while construction takes over by 1994 as the second most important occupation. For men, factory occupations also grow in importance over time but do not predominate as much as they do for women, and their predominance does not appear until the early 1990s. Instead, construction and other occupations predominate until 1990. Construction steadily drops off and service sector occupations steadily grow from the mid-1990s. Since the economic crisis affected construction and agricultural workers the most, we expect migrants in these occupations to be the most likely to become return migrants.

Findings

Table 1 displays the sample characteristics of the 13- to 25-year-old men and women in 1984 and later for 2000 when the sample had both aged and experienced additions as 13-year-olds aged into the sample. At the end of the period of observation, a majority of our sample had ever migrated (64 percent for women and 75 percent for men) and among those that migrated about 43 percent of the women returned and 56 percent of the men returned. The sample aged with time. In 1984 average age was 19 years and by 2000 the average age of the sample was 29 years. In 1984 30 percent of women and 21 percent of men were married. Most of the sample had a primary education or less in 1984, but by 2000 the proportion completing secondary school had grown by two to three times. The proportion with temporary migrant status dropped from 1984 to 2000, because younger cohorts aging into the sample would not have been at risk of migrating in 1984.

As with the individual sample, the proportion of households with any temporary migrants dropped between 1984 and 2000—from 20 percent to 15 percent for the female sample and from 18 percent to 13 percent for the male sample. In both the male and female samples, the proportion living in landless households remained relatively unchanged for the landless over the period. The proportion of the sample living in households with 1 to 10 rai and 11 to 25 rai increased by 2000, while the proportion of the sample living in households with more than 25 rai decreased from 1984 to 2000. These patterns resulted from household splits, as marriage confers land to the new household through inheritance. As might be expected given the very high rates of migrant prevalence, the proportion of households receiving remittances grew from about 14 percent in 1984 to 52 percent by 2000 for women and a slightly different range for men's households (13–51 percent between 1984 and 2000). Remittances are measured up through $t - 1$, allowing us to temporally lag the household receipt of remittances in relation to subsequent migration. Consumer assets also grew significantly and reflect both the growing incomes of these farm households and their access to remittances. Origin villages remained relatively unchanged with regard to remoteness; in part this was due to the frontier nature of the district and the continued spread of communities across the landscape (Piotrowski et al. 2013). Finally, while only 31 percent of villages were electrified in 1984, all were electrified by 2000.

To clarify the data distributions among the migrants, figure 5 displays the occupations among migrants across time. Also, figure 6 displays the destination occupations of returned

migrants for the year just prior to returning. Comparing these two figures provides insight on the occupational characteristics of migrants and return migrants. While factory work predominated among migrants from the 1990s onward, agricultural and construction work predominated among the return migrants. Agricultural work at destinations among return migrants in the year prior to returning is a typical pattern among northeastern Thai villagers. During the monsoonal dry season, many villagers move to work on agricultural plantations, where lands are irrigated and crops are industrially produced for export (mostly in central and eastern Thailand) (Hewison 1999). These migrants will return for the rainy season to their own villages to help with field preparation and planting. The other occupation that appears to follow a circulatory pattern is construction work, but this occupation was particular hard hit by the Asian Financial Crisis. Real estate and financing were among the hardest hit, and there was a substantial ripple effect in the building sector (Hewison 1999; Jones and Marsden 2010).

To demonstrate how villages are variably connected to destinations labor markets, figure 4 displays the percentages of migrants with any migration experience across villages (demarcated by each symbol-line) and across years. The general trend is upward, but villages show some variability in the rates of increase. The patterns are summarized for the male and female samples in table 1 only for 2000, since there are no data for 1984, as that is the first year of observation for this panel study. In table 1, in the female sample, individuals made 1.76 trips on average and averaged almost 44 months away from the village over the 16-year period. In the male sample, men made over two trips on average and spent almost 55 months away. Comparing the female and male samples, other male household members took more trips and spent more time away in the female sample than in the male sample. The pattern is reversed for other female household members. In the female sample other female household members took fewer trips and spend less time away than did other female household members in the male sample. Patterns of trips by male and female villagers are similar across the male and female samples. The average number of trips by males in the village was about one trip over the time period, and males in the village spent a total of two years away. Females made fewer than one trip on average over the 16-year period, and the average total duration away was slightly under two years.

Migrating Out of Nang Rong—How did the economic downturn affect migration out of Nang Rong? In table 2 we display the results of our multilevel, discrete-time random effects logistic estimations for three models. In the first model, we find that for both men and women in the years prior to the 1996–97 period the odds of migrating are higher in the early 1990s and lower in the 1980s. In the period just prior, the odds are about even, as with the 1989–90 period. After the 1997 period, the odds of migrating are 38 percent lower for women and 47 percent lower for men.

In model 2 the year effect coefficients shift in magnitude and statistical significance with the addition of individual, household, and village characteristics that usually influence migration behavior. There are two patterns to note with the change in the year effects. First, controlling for selective factors highlights the general positive linear effect of each year on the odds of migration and increases the magnitude of the year effects. Earlier years have lower odds than later years. With each year through 1991–92 the odds of migrating are lower than in the

1997–98 period. In the year when the economy is growing the fastest, 1993–94, the odds of migrating are greater than in the 1997–98 period. Second, after the Asian Financial Crisis, when the model controls for selective factors influencing migration, the magnitude of the year coefficient (1999–2000) shrinks for both men and women. In other words, when the selectivity of migration is controlled for, the economic downturn has less of an impact on the odds of migrating, all else held equal. In model 1, the odds of women migrating are 38 percent lower in 1999–2000 than in 1997–98, but those odds shrink to 27 percent lower when selective factors are controlled for. For men in 1999–2000 the odds of migrating are 47 percent than in 1997–98 in model 1 and only 40 percent lower when migrant selective factors in model 2 are controlled for.

The specific effects of selective attributes on the likelihood of migration follow expected patterns and mirror earlier work. As individuals age they are more likely to migrate, but this falls off at later ages.⁹ Marriage significantly deters migration, especially for women. Having completed secondary education significantly increases the odds of migrating. Women who were temporary migrants in 1984 are significantly more likely to be migrants at any point, while this is not true of men. On the other hand, men who live in households where there has been a temporary migrant in 1984 are more likely to migrate. Near-landless households (1–10 rai) are more likely to send female migrants than households with greater land ownership. For men, the land ownership effect is not as strong and barely significant. The fact that poor households tend to send female migrants is indicative that females move only when households are really in need of more income, or in the most difficult situation (Curran and Meijer-Irons 2014). Household receipt of remittances increases the odds of migration by 200 percent for women and 150 percent for men. However, larger consumer asset indices significantly lower the likelihood of migration by just over 10 percent. Village remoteness increases the odds of migration significantly for both men and women. We surmise that this is related to the limited agricultural infrastructure in these origin villages that would necessitate seasonal migration during the dry season.

In model 3 we add to the model 2 specifications and include the accumulated migrant experience variables. The inclusion of the migrant cumulative causation variables changes the year effect for the earlier years for both men and women. Specifically, when migrant social capital is controlled for, if all individuals in our model had access to the same migrant social capital, they would have even odds of migrating in the earlier years of the panel until 1990 compared to the reference year of 1997–98. By the 1990s, equal access to migrant social capital increases the odds of migrating relative to the 1997–98 period. After the 1997–98 period, equal access to migrant social capital reduces the odds of migrating. This pattern of effects is similar for both the male and female samples. This pattern fits our expectations

⁹The inclusion of year and age variables in this model introduces a concern about our interpretations conflating period cohort effects. Evaluating and estimating age-period-cohort models is currently undergoing significant scientific development and not without debate (Smith 2008; Y. Yang 2006; Y. Yang and Land 2008). To address this concern, we took a very simple approach and estimated models 2 and 3 with the inclusion of a large bracketed cohort measure identifying individuals born during the pre-baby boom (1949–60), the peak fertility years (1961–69), and the post-demographic transition (1970–83) (bracketed periods identified in the Thai fertility transition. These results are available upon request). There are no changes to year and age effects, although there are effects of these large, bracketed measures of cohorts—namely, being a member of the demographic dividend increases the likelihood of migration (Bloom and Williamson 1998; Fargues 2011). We have recently assessed these results in a working paper presented at Population Association of America in 2014, and they are available upon request.

because we expected migrant social capital to facilitate out-migration and return migration. We do not observe the rebound effect because the postcrisis observation in our panel may not be long enough. Previous research indicated a three- to five-year lagged migration rebound, and we observe only a two-year lagged postcrisis migration possibility.

When we examine the specific effects of migrant social capital for each sample, there are notable differences and similarities in effects. First, both men's and women's own prior migrant experiences (measured in terms of trips) significantly increase the likelihood of migration. For women the odds of migration increase by 16 percent, and for men the odds increase by almost 20 percent with each additional prior trip. Second, the effect of accumulated migration experience of other household members is different for men and women. These results are similar to those reported in our earlier work (Curran et al. 2005). With each additional trip made by a male household member, a women's likelihood of migration is reduced by 15 percent. For men, the opposite is true. With additional trips made by another male household member, the odds of migrating increase by 14 percent for men. Time spent away by other male household members does not influence the migration of women but does influence the migration of men. Rather than encouraging migration, time spent away by other male household members reduces the odds of migrating by 16 percent for men. This suggests that there is an attenuation of the tie between that other household member and the current household members, especially if they are men. The conveyance of information and knowledge about migration either does not occur or conveys information that discourages migration. Since we do not know the content of the information that is conveyed we can only make conjectures. Earlier fieldwork reported in Curran et al. (2005) suggests that the longer male migrants are away, the less they communicate or even visit households. The accumulated migrant experiences of other female household members significantly influence the migration of women but do not do so for men. Again, these results have been reported on in earlier work (Curran et al. 2005). Third, village-level migrant cumulative causation significantly influences women's migration and does not have a significant effect upon men's migration, although the direction of effects is similar. More trips by other male and female villagers increase the odds migration for women. The length of time that other village men are away significantly discourages women's migration.

Since the year effects changed so dramatically between models 2 and 3, we examined the possibility of significant interactions between year and migrant social capital measures. We estimated separate models for interactions between years and each sex-segregated level of aggregated migrant social capital: that is, we estimated year by accumulated individual trips, year by accumulated months, year by male household member trips, year by female household trips, and so on. We evaluated BIC and AIC improvement in model fit, and we evaluated whether the interactions were statistically significant. All results are available upon request. We find that effects are relatively small for each coefficient and slightly improve model fit for both the female and male samples. The models that show the greatest improvement in model fit and a full range of coefficients are those that interact individual trips and months away with year. Rather than report a table of results for all models, we generated predicted probabilities for ease of interpretation for the individual migrant social capital models only. The model for estimating predicted probabilities holds all measures at their mean and varies only the year value and the migrant social capital values. We estimate

effects for each year and three values of migrant social capital (0, 1, and 5 trips; 0, 5, and 30 months). We report these results in figure 7. Each line in the figure represents a different accumulated number of trips or duration of time away (months). Each panel represents the results from a separate model. The results mirror the narrative describing how migrant social capital changes year effects. The images show the importance of individual accumulated experiences earlier in the observation period, but these tail off significantly by the end of the time frame. The effect of migrant social capital appears to disappear by the end of the time frame. However, the decline is precipitous for those with the most migrant social capital and particularly higher rates of decline after the 1993–94 period and after the 1997–98 periods, indicated with red arrows on each panel in the figure. This is more apparent for men than for women.

Migrants' Return to Nang Rong—How did the economic downturn affect migrant returns to the origin communities? In table 3 we follow a similar series of estimations as those displayed in table 2. First, in model 1 the year effects, while not consistently significant, indicate either even odds or increased odds of return migration relative to the reference year. The 1993–94 period is a statistically significant year effect for men and women. In that year, a major military coup and large street demonstrations coincided with significant labor unrest in Bangkok. For women migrants, another high mark of return migration occurred during 1989–90, relative to the 1997–98 period. For the 1999–2000 period, in this reduced-form model, neither men nor women appear to increase or decrease their relative propensity to return relative to the 1997–98 period. Introducing individual, household, and village characteristics in model 2 diminishes the differences in 1989–90 period effects for women, but the 1993–94 period remains statistically significant. For men the 1993–94 period effect disappears in magnitude and statistical significance. For the male migrant sample, the introduction of factors that selectively influence migration yields a slight shift in the year effects. For men in the model 2 specification the period immediately following the economic crisis significantly increases the odds of returning home by more than 40 percent.

The influence of each of the migrant selective factors on the likelihood of migration is similar for men and women, although the male migrant sample is far more significantly affected by these factors. With each year of aging, migrants are more likely to return, with the likelihood diminishing very slightly at older ages (squared term coefficient is negative). Marriage greatly and significantly increases the odds of returning home. Any education beyond primary schooling diminishes the likelihood of returning. Any work in the service sectors (janitors, hotel service industry) or manufacturing (factory work) reduces the odds of returning. These occupations offer steady jobs and little time for leave. Any preexisting temporary migration experience in 1984 diminishes the likelihood of returning. This is also true if the individual lives in a household where another member was a temporary migrant in 1984. The only other household factor that influences return migration behavior is if the household is a recipient of remittances. Receiving remittances diminishes the likelihood of return migration by more than 40 percent. Finally, individuals from origin villages that are very remote are significantly less likely to return home.

Introducing the migrant cumulative causation measures in model 3 slightly diminishes the year effects, although the patterns remain similar for both migrant men and women. With this model specification, women's return migration after the 1997–98 period becomes statistically significant and mirrors that of men. The more trips an individual has made, the more likely he or she is to return—a likely indication of participating in a circular migration pattern. Longer durations away lower the likelihood of return. Longer durations away mark a different kind of migration, possibly more permanent than circular. If another member of the origin household makes multiple trips, this lowers the likelihood of the individual returning home because the other household member is returning. This result suggests there may be some coordination among household members regarding who is coming and going. Similarly, when another household member is gone for longer durations there is a slight and significant increase in the likelihood that the individual will return home. In other studies, researchers investigating migration patterns with these data note how the household economy and family relations influence migration. Households are unlikely to lose too many household members to migrant destinations, given the need for agricultural labor and care-giving in the origin household (Curran et al. 2005; VanWey 2005). Rather than amplifying year differences, as with the models of out-migration, migrant accumulated experience only slightly diminishes differences across years.

What appears to clearly demarcate the likelihood of return is the occupation of migrants in the year prior. Here the year effects are most pronounced for men. Controlling for destination occupations in year $t - 1$ among migrant women means that there are no significant differences across time periods. Instead, the year effects for female migrants are largely due to their occupational status at the destination. Once this is controlled for, migrant women are neither more or less likely to return in any given period relative to 1997–98. Figure 6 already describes this possible pattern. Relative to construction work, all other occupations are far less likely to lead to a return home among women. For migrant men the occupational pattern of effects is the same as for migrant women. Male construction workers are far more likely to return home than any other migrant workers. In addition, if we compare the year effects between model 3 and model 4, controlling for occupation increases the relative effect of 1999–2000, increasing the odds of return migration from 24 percent to 33 percent. Because the construction occupation is the reference group in model 4, one interpretation of this increased effect can be attributed to the decline in the construction sector. To facilitate the ease of interpretation, we estimate the predicted probabilities from the model 4 results and present those in figure 8. For both men and women construction work has a higher probability of return migration across the entire period. For both men and women there is an uptick in return migration after the 1997–98 period. Overall, migrant men working in construction were far more responsive to the economic downturn than were other workers, returning home at much higher rates after the Asian Financial Crisis.

Discussion

Our study set out to investigate how responsive potential migrants and current migrants were to the Asian Financial Crisis and concomitant economic downturn between 1997 and 1998 within Thailand. Our study takes advantage of a unique data set that observes annual patterns of migration in and out of one rural district in northeastern Thailand during a period

of rapid economic growth, rapid contraction, and economic rebound from 1984 to 2000. While the origin communities' local economies are relatively homogeneous in how they would have been affected by the economic downturn, they do vary greatly in the patterns of migration connecting them to destinations. Some villages have many migrants coming and going from origin to destinations and others have fewer. Furthermore, villages experienced differing rates of growth in their migrant streams (see figure 4). This gives us some leverage in estimating the impact of migrant social capital on the exogenous impact of the Asian Financial Crisis as it relates to the propensity to migrate. We answer several different questions with regard to out-migration: How does out-migration vary systematically by year for men and women? How do these year effects, that proxy economic growth and recession, change when selective factors that influence migration are included in our models? How do accumulated migration experiences or migrant social capital further influence year effects, and do these migrant social capital measures moderate the year effects? As with other research that has examined the impact of economic recessions on migration (both international and internal) (Cadena and Kovak 2013; Castles 2011; Green and Winters 2010; Villarreal 2014), we find that the Asian Financial Crisis significantly reduced migration after 1997–98. Potential migrants are generally dissuaded from migrating following an economic downturn, but that effect is slightly diminished after accounting for migrant selectivity.

A contribution of this study lies with the possibility these data afford for evaluating the role of migrant social capital. We hypothesized that migrant networks linking origin and destinations and the associated high-quality information that travels through that network serve to accelerate the responsiveness of potential migrants to shifting economic conditions. During all periods prior to 1996, migration increases far faster when individuals have access to migrant accumulated experience and decreases far faster after an economic downturn, in our case after 1997. Men and women show similar patterns in terms of how migrant social capital measures change the influence of year effects. However, for women, the migrant social capital measure coefficients are influential at all levels of aggregation, from individual accumulated experiences to household and village accumulated migrant social capital. Our sex-disaggregated migrant social capital measures indicate that women's dependence on prior networks of associations with other household members and other villagers significantly facilitates migration. Migration is inherently a risky proposition and particularly risky for women. Departures are facilitated with knowledge about the destination and with help from prior migrants in finding jobs. It is crucial for women to draw upon trustworthy ties to facilitate movement to destinations. Just as we have reported elsewhere, migrant social capital is gendered and its influence is gender differentiated (Curran et al. 2005). For men, the moderating influence of migrant social capital on the year effects primarily derives from their own accumulated migration experiences and not the experiences of others in the household or village. Once a young man has moved, that experience profoundly informs subsequent choices to move and significantly moderates the year effects of migration. The moderating effects of migrant social capital are relatively modest. While there are some effect significant effects, especially due to individually accumulated migrant experiences, it is the direct effect of migrant social capital that either facilitates migration prior to the Asian Financial Crisis or significantly diminishes migration after the crisis.

Our study also investigated the responsiveness of migrants in destination communities to returning back to their origin community after an economic downturn. We asked how year effects influence return migration, how year effects differentially influence men and women's return migration, how selective migration factors change the year effects influencing return migration, how migrant social capital factors change year effects influencing return migration models, and how migrants' sectoral work status changes the year effects influencing return migration.

To our knowledge there are no relatively large-scale studies of the impact of economic crises on return migration. Most studies evaluate the impact of economic crises on out-migration from origins, arrivals at destinations, unemployment at destinations, and remittances back to origins (Cadena and Kovak 2013; Castles 2011; Green and Winters 2010; Huang et al. 2011; Jha et al. 2010; Martin 2009; Villarreal 2014; D. Yang 2008). Our study may be the first to evaluate return migration in response to an economic crisis. We find that a reduced-form estimation of our year effects shows higher odds of migrating after the 1992–93 political unrest. These effects are mostly reduced with the addition of factors that control for the selectivity of migration. Only then does the effect of the economic crisis appear for men. Once our models are adjusted to include migrant social capital and a migrant's occupation at the destination, we find strong year effects for the economic crisis. More access to migrant social capital and employment in a construction sector occupation significantly increases the odds of returning after 1997–98.

Our study provides important new insights about migration because it can draw upon a unique set of observations that affords both temporal and spatial variability. Origin information allows us to prospectively observe individual propensities to migrate given individual, household, and village characteristics. Migrant social capital allows us to observe the accumulated experiences that inform migration decision making for origin-based individuals and households. Finally, destination information, measured first as period effects and later for migrants as occupation, accounts for destination conditions.

Our study provides evidence for a model of migration that explicitly and distinctly assesses how migrant cumulative causation moderates the influences of conditions in origin and destination communities. While previous studies have documented how economic downturns influence outgoing migration and remittances, they also show differential responsiveness across types of potential migrants and migrants, as well as instances of dramatic rebounds of migrant experiences. We extend earlier work to show how migrant social capital is partially responsible for the responsiveness of individuals to shifting economic conditions that might predict migration. Migrant social capital facilitates migration during periods of economic growth and facilitate quick responses to economic contractions. A limitation of our research is that the last year of observation is 2000, which is only two to three years after the 1997–98 period. Given that there is a notable lag in employment responses to the economic contraction and then a subsequent rebound, our study captures only the very early responses to the economic contraction. Some scholars have noted that there could be a three- to five-year response and that most recoveries would not be visible until after five years (Castles 2011).

The year effects and migrant social capital effects are far less profound for return migration. This may be due to the fact that our models do not completely assess destination living and working contexts for the migrants. While our models include a rich set of factors for origin conditions, the only destination conditions that we assess are those related to occupation. Our study of migrant social capital effects upon migration is rooted in associations at the origin (accumulated to the household or village level) and spreads out to destinations. An alternative model would examine a destination-based measure of migrant social capital that reaches back to origin communities or other destinations. The information conveyed via this form of migrant social capital might provide more critical information than origin-based migrant social capital. Future research should further investigate the degree to which migrant cumulative causation or migrant social capital continues to enhance migrant responsiveness to economic conditions.

Some have argued that migration may be increasingly disarticulated from the economic conditions at origin and destination (Castles and Delgado Wise 2008; de Haas 2010). In this study, we do not find that this is the case, especially with regard to decisions to migrate away from origin communities and to destinations. If anything, migrant social capital appears to significantly improve migrant responsiveness to shifting economic conditions. In particular, women are substantially influenced by the accumulated migration experiences of their fellow household and village members. Future research should take care to assess the differential articulation and disarticulation of men's and women's migrant networks to what are typically sex-segregated labor markets in destinations and differential relationships to communities of origin (Curran et al. 2005). □

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GNP Growth and Employment, Thailand, 1988–2006
(NSO <http://web.nso.go.th>, NESDB www.nesdb.go.th/)

FIGURE 1. Economic growth and employment, 1988–2006.

Sources: Thai National Statistical Office (NSO) and Thai National Economic and Social Development Board (NESDB).

FIGURE 2. Economic growth of selected economic sectors, 1994–2006.

Source: Thai National Economic and Social Development Board (NESDB).

FIGURE 3.
Map of study site

Migration Prevalence Rates of 22 Migrant Villages 1984–2000

FIGURE 4. Migrant prevalence rates by village and year, 1984–2000.

Source: Nang Rong data, University of Washington. Migrant prevalence rate is the proportion of people who have ever migrated in a village up to that year among people living in the village in that year.

FIGURE 5.
Occupations among Nang Rong migrants, 1984–2000

FIGURE 6.
Returned migrants' destination occupations prior to return

FIGURE 7.

Migration probabilities conditional on year and individual prior migrant experiences. Derived from multilevel, discrete-time event history models estimating interactions between year and individual accumulated migration experiences (measured separately as trips and months away) and controlling for all other variables described earlier. Predicted probabilities estimate mean values for all other variables in the model. Full model results not reported here but available from authors. The red arrows indicate the 1993–94 and 1997–98 significant interaction effects discussed in the text.

FIGURE 8.
Patterns of return migration between 1984 and 2000 depending on occupation status in destination

TABLE 1..

Characteristics of Nang Rong Villagers in 1984 and 2000

	1984				2000			
	Female		Male		Female		Male	
	N= 1895	Mean	SD	N = 2028	N= 3305	Mean	SD	N = 3154
	Mean	SD		Mean	Mean	SD		Mean
Ever migrated					0.64	0.48		0.75
Ever migrated and returned					0.43	0.49		0.56
								0.50
Individual Characteristics								
Age	18.91	4.35	19.08	4.46	29.06	6.79	29.16	6.98
Married	0.30	0.46	0.21	0.40	0.76	0.43	0.66	0.47
Primary education or less	0.77	0.42	0.70	0.46	0.68	0.47	0.62	0.48
Some secondary	0.19	0.39	0.25	0.43	0.19	0.39	0.24	0.43
Completed secondary	0.04	0.19	0.05	0.21	0.13	0.33	0.13	0.34
Temporary migrant in '84	0.09	0.28	0.10	0.30	0.04	0.19	0.05	0.22
Household Characteristics								
Any temp. migrants in '84	0.20	0.40	0.18	0.39	0.15	0.35	0.13	0.34
Owens no land	0.10	0.29	0.10	0.30	0.09	0.29	0.09	0.28
Owens 1–10 rai	0.21	0.41	0.21	0.41	0.26	0.44	0.25	0.44
Owens 11–25 rai	0.26	0.44	0.26	0.44	0.30	0.46	0.32	0.47
Owens 25+ rai	0.43	0.50	0.43	0.50	0.35	0.48	0.34	0.47
Received remittances	0.14	0.35	0.13	0.33	0.52	0.50	0.51	0.50
Consumer assets	0.64	1.39	0.80	1.44	4.19	1.91	4.08	1.90
Village Characteristics								
Somewhat remote	0.67	0.47	0.65	0.48	0.65	0.48	0.64	0.48
Very remote	0.17	0.38	0.18	0.39	0.18	0.38	0.19	0.39
Electrified by year <i>t</i>	0.31	0.46	0.31	0.46	1.00	0.00	1.00	0.00
Migrant Cumulative Causation (through $t - I$)								
# indiv. trips out of origin					1.76	2.66	2.34	3.02
# indiv. months outside origin					43.98	53.60	54.73	56.21

	1984				2000			
	Female		Male		Female		Male	
	N = 1895	SD	N = 2028	SD	N = 3305	SD	N = 3154	SD
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
# of trips by male hh. members (excluding indiv.)					0.77	1.18	0.41	0.73
# months outside origin by male hh. members (excluding indiv.)					17.16	22.72	12.11	19.65
# of trips by female hh. members (excluding indiv.)					0.30	0.62	0.58	0.94
# months outside origin by female hh. members (excluding indiv.)					10.48	19.506	13.94	20.70
# of trips outside origin by male villagers (excluding hh. and indiv.)					1.08	0.2	1.08	0.20
# months outside origin by male villagers (excluding hh. and indiv.)					25.70	4.51	25.51	4.54
# of trips outside origin by female villagers (excluding hh. and indiv.)					0.84	0.21	0.85	0.21
# months outside origin by female villagers (excluding hh. and indiv.)					21.72	5.81	22.03	5.92

TABLE 2.

Log-odds Predicting Migration out of Nang Rong

Year Effects	Model 1		Model 2		Model 3	
	Female	Male	Female	Male	Female	Male
1984–1986	0.635 ***	0.679 ***	0.317 ***	0.548 ***	.947	1.226
1987–1988	0.821	0.824 +	0.442 ***	0.655 ***	1.153	1.303
1989–1990	1.113	1.000	0.653 ***	0.809 +	1.452 +	1.432 **
1991–1992	1.440 ***	1.251 **	0.978	1.035	1.792 ***	1.627 ***
1993–1994	1.712 ***	1.782 ***	1.339 ***	1.585 ***	2.029 ***	2.109 ***
1995–1996	1.064	1.066	0.948	1.033	1.20 +	1.214 +
1997–1998 (referent)						
1999–2000	0.620 ***	0.534	0.739 **	0.603 ***	0.572 ***	0.518 ***
Individual Characteristics						
Age			1.177 ***	1.232 ***	1.084 *	1.151 ***
Age-squared			0.996 ***	0.996 ***	0.997 ***	0.996 ***
Married			0.342 ***	0.653 ***	0.390 ***	0.733 ***
Primary education or less (referent)						
Some secondary			0.692 ***	0.869 +	0.761 ***	0.911
Completed secondary			2.698 ***	2.168 ***	2.504 ***	1.948 ***
Temporary migrant in 1984			1.796 **	0.784	1.370 +	0.728 +
Household Characteristics in Origin						
Any temporary migrants in '84			1.125	1.333 *	1.038	1.203 +
Owens no land			0.997	1.002 +	0.999	1.047
Owens 1–10 rai (referent)						
Owens 11–25 rai			0.803 **	0.982	0.823 **	1.002
Owens 25+ rai			0.720 ***	0.850 +	0.740 ***	0.872 +
Received remittances			2.097 ***	1.544 ***	1.771 ***	1.420 ***
Consumer asset measure			0.880 ***	0.893 ***	0.867 ***	0.901 ***

Year Effects	Model 1		Model 2		Model 3	
	Female	Male	Female	Male	Female	Male
Origin Village Characteristics						
Not remote (referent)						
Somewhat remote			1.189 ⁺	1.078	1.065	1.015
Very remote			1.657 ^{***}	1.580 ^{***}	1.429 ^{***}	1.395 ^{***}
Electrified by year <i>t</i>			1.086	1.155	1.031	1.093
Migrant Cumulative Causation (through <i>t - 1</i>)						
# indiv. trips out of origin					1.165 ^{***}	1.199 ^{***}
# indiv. months outside origin					1.003 ⁺	1.000
# of trips by male hh members (excluding indiv.)					0.847 ^{***}	1.139 ⁺
# months outside origin by male hh members (excl. indiv.)					1.002	0.844 ^{***}
# of trips by female hh members (excluding indiv.)					1.23	1.002
# months outside origin by female hh members (excl. indiv.)					1.008 ^{**}	1.001
# of trips outside origin by male villagers (excl. hh and indiv.)					2.075 ⁺	1.142
# months outside origin by male villagers (excl. hh and indiv.)					0.972 ⁺	0.992
# of trips outside origin by female villagers (excl. hh and indiv.)					1.784 ⁺	1.385
# months outside origin by female villagers (excl. hh and indiv.)					1.020	1.010
Model Statistics						
s.e (u)	1.413	1.240	1.302	1.227	0.867	0.769
Rho	0.378	0.318	0.340	0.314	0.186	0.152
Wald chi square	257.18	355.82	1017.1	707.080	1430.23	1113.77
N	35273	33146	35723	33146	35273	33146

⁺ p < .05

* p < .01

** p < .005

*** p < .001.

TABLE 3.

Log-odds Predicting Migration out of Nang Rong

Year Effects	Model 1		Model 2		Model 3		Model 4	
	Female	Male	Female	Male	Female	Male	Female	Male
1984–1986	1.134	0.832	1.164	0.852	1.027	0.707	0.957	0.685
1987–1988	1.239	1.006	1.250	0.944	1.107	0.800	1.021	0.769
1989–1990	1.366**	0.983	1.333	0.863	1.242	0.789	1.089	0.732
1991–1992	1.170	1.051	1.049	0.855	1.084	0.861	0.941	0.800
1993–1994	1.366**	1.330**	1.311*	1.175	1.311 ⁺	1.175	1.171	1.072
1995–1996	1.030	0.978	1.086	0.966	1.034	0.921	0.987	0.868
1997–1998 (referent)								
1999–2000	1.128	1.330	1.176	1.415**	1.254**	1.518***	1.352*	1.617***
Individual Characteristics								
Age								
			0.982	1.129**	1.010	1.161***	0.981	1.148***
Age-squared			1.000	0.997**	0.999	0.997***	1.000	0.997***
Married			2.315**	1.982**	2.102***	1.791***	1.913***	1.698***
Primary education or less (referent)								
Some secondary			0.543**	0.746**	0.586***	0.783***	0.633***	0.845*
Completed secondary			0.404**	0.419**	0.427***	0.485***	0.501***	0.577***
Temporary migrant in 1984			0.726	0.493**	0.615 ⁺	0.499***	0.632*	0.531***
Household Characteristics in Origin								
Any temporary migrants in '84			0.675*	0.741 ⁺	0.999	1.007 ⁺	1.011	1.006
Owens no land			0.841	0.983	0.846	0.964	0.911	0.985
Owens 1–10 rai (referent)								
Owens 11–25 rai			0.990	1.095	0.988	1.060	1.054	1.127
Owens 25 + rai			1.077	1.091	1.084	1.045	1.167	1.154 ⁺
Received remittances			0.546**	0.584**	0.639***	0.6850***	0.662***	0.723***
Consumer asset measure			1.012	0.996	1.023	1.016	1.033	1.025
Origin Village Characteristics								

Year Effects	Model 1		Model 2		Model 3		Model 4	
	Female	Male	Female	Male	Female	Male	Female	Male
Not remote (referent)								
Somewhat remote			0.722 ⁺	0.864	0.795 ⁺	0.913	0.885	0.974
Very remote			0.514 ^{**}	0.785 ⁺	0.627 ^{**}	0.934	0.801	1.163
Electrified by year t			0.945	1.170	0.949	1.140	0.897	1.035
Migrant Cumulative Causation (through $t - I$)								
# indiv. trips out of origin			1.105 ^{***}		1.128 ^{***}		1.128 ^{***}	1.141 ^{***}
# indiv. months outside origin			0.994 ^{**}		0.992 ^{***}		0.994 ^{***}	0.992 ^{***}
# of trips by male hh. members (excluding indiv.)			1.007		0.818 ^{**}		0.996	0.813 ^{**}
# months outside origin by male hh. members (excluding indiv.)			0.843 ⁺		1.002		0.837 ⁺	0.952
# of trips by female hh. members (excluding indiv.)			0.988 ^{***}		0.982 ^{***}		0.992 ^{**}	0.986 ^{***}
# months outside origin by female hh. members (excluding indiv.)			0.970 ^{***}		0.989 ^{***}		0.974 ^{***}	0.991 ^{***}
# of trips outside origin by male villagers (excluding hh. and indiv.)			3.121 ^{**}		1.15		2.439 ⁺	1.045
# months outside origin by male villagers (excluding hh. and indiv.)			0.960 ⁺		0.991		0.970	1.001
# of trips outside origin by female villagers (excluding hh. and indiv.)			0.899		1.653		1.038	1.788
# months outside origin by female villagers (excluding hh. and indiv.)			1.024		0.999		1.009	0.987
Occupation in Destination $t - I$								
Farmer							0.163 ^{***}	0.188 ^{***}
Factory worker							0.275 ^{***}	0.290 ^{***}
Construction work (referent)								
Service							0.250 ^{***}	0.242 ^{***}
Other occupation							0.328 ^{***}	0.329 ^{***}
No occupation							0.232 ^{***}	0.380 ^{***}
Model Statistics								
s.e (u)	1.753	1.560	1.696	1.520	1.300		1.044	0.845
Rho	0.483	0.425	0.467	0.413	0.339		0.249	0.178
Wald chi square	18.27	45.75	301.55	361.62	561.12		977.61	1405.76
N	16116	20234	16116	20234	16116	20234	16116	20234

100' > d

500' > d
**
10' > d
*
50' > d
+

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