HHS Public Access

Author manuscript

Res Sociol Educ. Author manuscript; available in PMC 2016 August 26.

Published in final edited form as:

Res Sociol Educ. 2003 ; 14: 59–102.

EDUCATIONAL OPPORTUNITIES FOR BOYS AND GIRLS IN THAILAND

Sara R. Curran, **Chang Y. Chung**, **Wendy Cadge**, and **Anchalee Varangrat**

Abstract

Within individual countries, the paths towards increasing educational attainment are not always linear and individuals are not equally affected. Differences between boys' and girls' educational attainments are a common expression of this inequality as boys are more often favored for continued schooling. We examine the importance of birth cohort, sibship size, migration, and school accessibility for explaining both the gender gap and its narrowing in secondary schooling in one district in Northeast Thailand between 1984–1994. Birth cohort is a significant explanation for the narrowing of the gender gap. Migration, sibship size, and remote village location are important explanations for limited secondary education opportunities, especially for girls.

INTRODUCTION

As developing societies are integrated into the global economy, the perceived value of education tends to increase in national governments, communities, families, and among individuals. Individuals' levels of educational attainment tend to rise as a result of changes in state policies, community contexts, and family dynamics (Buchmann & Hannum, 2001). Within individual countries, the paths towards increasing educational attainment are not always linear and not all members of the population are equally affected (Shavit & Blossfeld, 1993). Differences between boys' and girls' educational attainments are one of the most common expressions of this inequality as boys are more often favored for continued schooling than are girls (Appleton & Collier, 1995; Fuller & Liang, 1999; King, 1991; King & Hill, 1993; Kurz & Prather, 1995; Richter & Pong, 1995; Stash & Hannum, 2001; Subbarao & Raney, 1995; Tsai et al., 1994; United Nations Development Program, 1994).

Differences in boys' and girls' educational attainment are understood to have important influences upon the extent and pace of social and behavioral change associated with development (Appleton & Collier, 1995; Axinn & Barber, 2001; Axinn & Yobiku, 2001; Behrman et al., 1997; Blossfeld & Huinink, 1991; Hadden & London, 1996; King & Hill, 1993; Malhotra & Mather, 1997; Subbarao & Raney, 1995; Summers, 1994; Tzannatos, 1999). And, targeting women's literacy through informal education programs and girls' expanded educational opportunities has been a central goal of governmental, multilateral, and non-governmental organizational efforts to promote efficient economic development (Knodel & Jones, 1996; Summers, 1994; Tzannatos, 1999).

Explaining why the gender gap persists or why it narrows are questions in educational attainment research that are less well understood (Buchmann, 1996; Fuller & Liang, 1999).

Answers vary from family of origin characteristics (e.g. the number and sex composition of siblings) (see Conley, 2000, for a review), cultural institutions (like patriarchy or the structure and character of schools or some combination of both) (Fuller & Liang, 1999; Stromquist, 1998, 1990), or economic institutions (either those within families determining resource pooling and allocation or those outside the family that structure extra-familial labor market opportunities) (Buchmann & Hannum, 2001; Fuller & Liang, 1999; King, 1991; King & Hill, 1993).

We join the growing literature on this topic, with a prospective study of boys' and girls' transitions to secondary school over a 10-year period (1984–1994) of both rapid economic development (especially during the first two-thirds of the decade) and rapid expansion of secondary schools in rural northeastern Thailand. We take up the challenge proffered by Buchmann and Hannum (2001) that research on educational attainment must include analysis of the dynamics of social change with simultaneous attention to the multiple levels at which social change occurs, including the individual, family, and community.

We focus on five factors related to the social change occurring in Thailand from 1984 to 1994 that might diminish the relative schooling advantages of boys over girls. The first factor is birth cohort. We are especially interested in the opportunities afforded to children born after 1976 when the Thai government initiated a significant expansion of primary education. The second is declining fertility as measured by the number of siblings at the beginning of the period (1984) and any additional siblings born after 1984. The third factor is the role of migration, specifically rural-urban migration, in stimulating demand for education through expansion of non-agricultural labor market opportunities and increasing its afford-ability through remittances. The fourth factor is accessibility of schools, through school building in villages or nearby villages. And a fifth factor is the remoteness of the village location relative to the district town. The district town, Nang Rong, is the center of commerce and trade and is situated at the intersection of highways connecting villagers to migrant destinations.

Our study builds on other work that examines cohort and number of siblings as factors determining educational attainment (for reviews see Conley, 2000 and Shavit & Blossfeld, 1993). We add to these studies in two ways. First, we examine the role of migration, a rarely studied topic in educational attainment research in developing countries (for an exception see Kandel & Kao, 2000, who examine educational aspirations and migration among Mexican youth). Second, we examine the impact of school building and remoteness of village location. To our knowledge, this is the first prospective study of accessibility and educational attainment in the Thai context, and it captures the period when Thai educational policy shifted significantly towards addressing the need for expanded secondary education. Beyond the importance of this study for understanding the Thai context, to our knowledge, this is the first time a systematic analysis of prospective data has been used to analyze the combined influence of individual, family, and community factors, especially migration, upon gendered differences in educational outcomes.[1]

[1]Kaufman et al. (1998) conduct a multilevel analysis but use a cross sectional database from South Africa.

BACKGROUND

Previous International Stratification Research about Gender, Migration, Family Dynamics, and School Accessibility

Previous research on gender stratification in educational attainment shows persistent male advantages in some countries, shrinking sex differentials in others, and growing female advantages in still other countries. The empirical evidence for these patterns yields complex interpretations and explanations that point to the simultaneous importance of family dynamics, labor markets, rates of economic growth or contraction, and social context. Adding to this complexity is some evidence that transition rates from one level of schooling to another do not change at the same pace for boys and girls, nor are the factors predicting the probability of transitions the same at each level for boys and girls (Ashby, 1985; Greenhalgh, 1985; Knodel, 1997; Shavit & Blossfeld, 1993). In this section, we briefly review explanations for gender differentials that include family dynamics, economic change, and school accessibility. We also discuss the ways in which migration might be an important factor for explaining educational attainment and gender differences, in attainment as migration offers both increased income and competing alternatives to education.

Much research focuses upon family dynamics to explain gender differentials in educational attainment. These studies emphasize family size, the number of siblings and sex composition, parental attitudes, parental educational attainment, and family economy (current opportunity costs and future returns to the family economy and familial social support systems). Blake's (1989) hypothesized resource dilution effect has been supported with evidence from a number of settings (e.g. Knodel & Wongsith, 1991) in Thailand; Lloyd and Gage-Brandon (1994) in Ghana; Pong (1997) in Malaysia; Ann et al. (1998) in Vietnam; Kaneda (1998) and Ono (forthcoming) in Japan; Powell and Steelman (1993) in the U.S. But the negative effect of number, of siblings upon education attainment is not uniform across children within families (Fuller & Liang, 1999). When examined, size tends to have a more pronounced effect upon girls than boys (Lloyd & Gage-Brandon, 1994).

Contrary to the resource dilution hypothesis, others have argued that, in particular settings, large, extended families can provide greater opportunities for educational opportunities. In part, these findings depend on which unit of analysis is considered (household or family) and the porous nature of household boundaries, especially with regard to resource pooling, risk minimization, the spreading of reproductive investment burdens (like family care giving and children's schooling). Thus, researchers have found that extended families can also improve educational opportunities in Botswana (Chernichovsky, 1985), in Thailand (Richter & Pong, 1995), and among some groups in Israel (Shavit & Pierce, 1991) and South Africa (Fuller & Liang, 1999; Kaufman et al., 1998).

Significant research effort has also been devoted to understanding sibling dynamics within families and their effect upon educational attainment. And, again, gender is an important factor. These studies have yielded mixed results (see Conley, 2000 for a review of the literature in the U.S.). In Asia, there is some evidence that although brothers are generally advantaged for schooling, sisters gain access to some schooling insofar as it assists either their marriage prospects or their labor market opportunities and subsequent contributions to

the natal family's economy, their brothers' educational attainment (Ashby, 1985, in Nepal; Greenhalgh, 1985, in Taiwan; Lillard & Willis, 1994, in Malaysia) or younger siblings' education prospects (Parish & Willis, 1993, in Taiwan).

Parental attitudes, as well as parental education, is another element of family dynamics that has provided some leverage in explaining sex differentials in education and, in some cases, changing parental attitudes have narrowed gender gaps. Perceptions of limited labor market opportunities constrain girls' educational opportunities in Kenya (Buchmann, 2000) and in the Gambia (Bakarr, 2000). On the other hand, in Asia the constraining factor is parental attitudes about how the education of children may or may not disrupt the family economy.

In Thailand, Knodel (1997) finds that, especially among rural families, sons were preferred recipients of education investments during the early period of economic growth. Daughters, on the other hand, especially youngest daughters, were not preferred recipients for fear they might not be available to care for their parents when they got older (the traditional expectation). However, towards the middle of the economic expansion (early 1990s), parent's gender preferences had diminished considerably, mirroring statistical observations that the gender gap had shrunk. Nevertheless, family economic concerns, especially among rural parents, predominated in discussions about the tradeoffs of children's education versus work and migration. Daughter's remittances, the reliability of their sending behavior, and their greater level of remittance back to their natal home were important alternative considerations for parents.

The preceding discussion highlights how current and future family economic considerations on the part of parents appear to be an important element in the calculus of education resource allocation. These considerations are inevitably influenced by the social and economic context within which the family economy is situated. Rapid expansion of labor market opportunities in countries where educational attainment is low, especially in some developing country contexts, are likely to be disassociated with education or technical skills. In these cases, low-wage, low-skill jobs may provide competing alternatives to education. To the extent that these job opportunities may be sex-segregated, such labor market expansion may also explain sex differentials in education outcomes (King & Hill, 1993; Kingdon, 1998). The dramatic increase in outsourcing of textile and electronics manufacturing throughout Southeast Asia is one such example – where the production technology did not demand a highly skilled labor force. In fact, Richter and Pong (1995) found a drop in school enrollments during the early periods of Thailand's move towards export lead manufacturing (from 1985–1990).

For rural residents, particularly from impoverished agricultural regions, migration to low-wage factory jobs provides an important competing alternative, especially when there are high opportunity costs associated with schooling. This has certainly been the case for Mexican migrants (Massey, 1990), where educational attainment is associated with lower odds of migration. In the Mexican case, Kandel and Kao (2000) found that children with family migrant experience in the U.S. are less likely to aspire to a university education in Mexico, although they do aspire to work in the U.S. and perhaps pursue an education in the U.S. Although a study of aspirations, Kandel and Kao's (2000) study does suggest that there

may be multiple stages of behavior that initially select against education in favor of migration, but not over the long run, at least in the Mexican case.

Migration may relieve family economy budgets in very poor settings, freeing up resources that might be invested in the remaining younger family members' education. This would yield a resource concentration effect, rather than resource dilution. This would be especially true if the migrant limits the ties between her/himself and the family in the community of origin, i.e. disassociating her/himself from the family economy in the place of origin.

One way in which ties between migrants and their families in places of origin are maintained is through remittances. The literature on how remittances from migrants are used in places of origin points in two directions. One line of argument is that remittances are used to smooth income, provide insurance, or, even more basically, to ensure survival (Itzigsohn, 1995; Stark, 1991). Another line of argument is that remittances are used for investments (Durand et al., 1996), yielding growing social and economic inequality in places of origin (Reichert, 1982; Stark et al., 1988; Taylor, 1992). Whether and to what extent migrant remittance income is used to invest in education is not known. To our knowledge, until now these relationships have not been explored systematically in the research on education and stratification.

Beyond family dynamics, state policies and community contexts can influence educational opportunities. Initial state education policies to expand educational attainment are usually to build schools and train teachers. These policies are then followed with accreditation, more training, and attention to curricular content – or the improvement of school quality. Accessibility of schooling has been a considerable barrier to children's educational opportunities, especially girls' (Kaufman et al., 1998; King & Lillard, 1987). But, accessibility is not the only factor.

Some argue that school quality is more important than school accessibility for girls (Mensch & Lloyd, 1998; Tindigarukayo, 1996), particularly in the perception of school safety (Knodel, 1997; Mensch & Lloyd, 1998). Schools located close to local communities and families can be monitored by families, and school officials and administrators held accountable by community members for children's safety and school quality. In addition, it is rare that data is available that links school quality, accessibility, and educational achievement, especially in developing countries. It is also rare to show the impact of school building upon educational attainment. In our study, we were not able to examine school quality directly, but we do measure whether or not the establishment of a secondary school during the ten-year period had any impact upon educational attainment.

THE CASE OF THAILAND, 1984–1994

Thailand is on the Indo-Chinese peninsula of Southeast Asia, neighboring Malaysia, Burma, Cambodia, and Laos. Its geographic location, cultural underpinnings, and history have been offered as explanations for a variety of social and economic differences which set it apart from its neighbors, especially concerning the relative status of women and the rapid rate of

economic development. Map 1 situates Thailand within Southeast Asia, delineates the regional distinctions in the country, and the location of the study site.

Thailand between 1984–1994 provides an ideal place and time to examine the narrowing of the gender gap in education. This is the time period when Thailand experienced the fastest economic growth rate in the region, with an average increase in Gross Domestic Product of 10% annually (Slagter & Kerbo, 2000; Warr, 1993). Despite this growth, development was not uniform and Thailand remains a predominantly rural country with more than 65% of the populace living in the countryside in 2000. More than 30% of the rural population lives in absolute poverty, and income inequality appears to be growing (Phongpaichit & Baker, 1996; United Nations Development Program, 1994; Warr, 1993). Poor conditions are particularly evident in Northeast Thailand, where people were disadvantaged economically and educationally relative to the rest of the country, even into the late 1980s (Fry & Kempner, 1996).

Nevertheless, educational attainments in all of Thailand have increased dramatically. Data from the Thai National Statistical Office (the Thai Socio Economic Survey) displayed in Fig. 1 shows that those with some lower secondary schooling, some upper secondary schooling, and completed secondary education increased dramatically between 1975 and 1992. This increase in education, however, was not distributed evenly among the population. The gender gap in education changed between 1975 and 1992, narrowing during the 1980s for the country as a whole. Access to lower secondary school shows little difference for boys and girls at the national level, but in the Northeast the gap expanded and narrowed precisely during the time period covered by the survey we will be analyzing (the top graph in Fig. 1). Access to upper secondary school shows a longer period for which a gender gap exists at both the national and regional levels (the middle graph in Fig. 1). Secondary school completion rates are significantly different for men and women at both the national and regional level throughout the 1980s, but narrow in the early 1990s (the bottom graph in Fig. 1).

To understand changes in the gender gap in schooling in Thailand, it is important to briefly consider the history of education in Thailand through 1994. Prior to the establishment of a uniform national education system at the beginning of the 20th century, literacy was gained through study in Buddhist temples, and this opportunity was only available to males as part of preparation for entry into monkhood (Keyes, 1991). Since the 1930s, primary schooling was mandated for both boys and girls as a way to unite a disparate country and supersede local political power structures and local patronage systems (Keyes, 1991). Between 1960 and 1978, four grades of primary education were mandatory, and in 1978 mandatory schooling was extended through six years. The mandatory policy of primary schooling was preceded by two years of significant primary school construction and training of teachers. Thus, from 1976 heightened awareness of education and its value, at least through primary school, permeated villagers' consciousness (Keyes, 1991). Cohorts of children born since 1976 are likely to have grown up in an atmosphere with a heightened sense of the importance of education compared to older cohorts.

Secondary education is currently divided into two levels, lower level and upper level, each for three years. Following significant school construction and training of teachers during the mid-1990s, in 1997 mandatory schooling levels were again changed and extended through nine years of schooling. These more recent changes to mandatory levels of schooling have not affected the children and time period of interest in this study, but the significant school construction has certainly influenced opportunities for the younger cohorts of students.

Education has been an important part of the most recent national development plans in Thailand, and changes were evident by the early 1990s in terms of national finances, the number of schools, and the number of teachers. Between 1985 and 1995 the percent of Gross Domestic Product (GDP) spent on educational expenditures was fairly consistent, averaging 3.2%. The educational budget increased relative to the national income in the latter part of that period during the 7th National Plan between 1993–1995. Between 1984 and 1994, the total number of schools increased from 1,988 to 7,243. The percentage of schools offering secondary education increased dramatically from 6 to 20%, especially between 1990 and 1994 for the entire country (Ministry of Education, 1984–1994), though the increases in Nang Rong lagged slightly behind the rest of the country (from 3 to 18% over this time period). Nevertheless, the changes were relatively dramatic in Nang Rong: in 1984 there were three schools in the district offering some secondary education, but by 1994 there were 14 schools. The total number of teachers in Thailand also increased between 1987–1994, although the number in Nang Rong remained relatively constant during the period (Ministry of Education, 1984–1994).

In Nang Rong, as in other areas of Northeast Thailand since the 1980s, Thailand's export manufacturing-oriented economic policies have become more important for men's, women's and families' hopes for improved standards of living and even upward mobility (Phongpaichit & Baker, 1996). Migration became an increasingly important social phenomenon in the region during the decade of the 1980s. Much of the migration from the Northeastern part of the country provided the factory and construction labor that contributed to Bangkok's population and economic growth (Chamratrithirong et al., 1995). A majority of the labor provided to the export-manufacturing sector was met by women (Bello et al., 1998; Mills, 1999; Phongpaichit & Baker, 1996), construction sites were equally likely to have male and female laborers, and the rapidly growing service sector provided many jobs for women (Phongpaichit & Baker, 1996). Hence, as opposed to many other contexts, men and women were equally likely to migrate out of the Northeastern region of the country by the early 1990s (Chamratrithirong et al., 1995).

However, as the demands of the global economy shifted, so did Thailand's position as a supplier of labor and producer of manufactured goods relative to its neighbors, Vietnam, Burma, Cambodia, and Laos (Bello et al., 1998; Phongpaichit & Baker, 1996). By the late 1980s, there was a growing demand for higher skilled labor, increasing the returns to secondary education investments, a previously under-invested sector in the Thai economy (Sussangkarn, 1993). In the early 1990s, returns to secondary education in the urban labor market were twice those of primary education (Sussangkarn, 1993). However, in rural areas, knowledge among villagers about these returns to secondary education lagged behind those of urban dwellers (Curran, 1996). The initial solution to this was to take advantage of

existing sex differentials in educational attainment, drawing men into the higher-wage sectors while women remained in the low-wage sector (Phongpaichit & Baker, 1996; Richter & Pong, 1995; Warr, 1993). In the next section, we briefly discuss family relations and some qualitative evidence from fieldwork conducted throughout the 1990s.

SCHOOLING, MIGRATION, AND FAMILY DYNAMICS IN NANG RONG

The Thai government's and private sector's economic focus on export manufacturing and associated increase in service sector and construction jobs from 1980 onward, created a large demand for labor, which was met primarily by rural migrants. During the middle to late 1980s, large flows of young people migrated from the Northeast to the Bangkok metropolitan area. A 1992 national study of migration showed that the majority of migrants to the Bangkok region were from the Northeast, were primarily young people between the ages of 12 and 18, and were equally likely to be young women or men (Chamratrithirong et al., 1995).

Further, many of these young people, especially women, sent money home to their families to repay debts, purchase farming supplies and consumer durables, and pay for siblings' education. Young people and families repeatedly indicated that young women were preferred migrants since they were more likely to send wages home, due to their traditional obligation to their families and the lower likelihood that they would spend their wages "unwisely" on entertainment and fun with friends (Curran & Saguy, 2001; Mills, 1999).

The needs of the Thai government, the private sector, and the forces of market globalization coincided with the structure of family relations and family economy in Northeastern Thailand. Qualitative evidence of these relations provides justification for a quantitative analysis to explain how the gender gap in educational attainment may have narrowed. Most of the interview material comes from ethnographic work conducted in 1991 by the first author. This is supplemented by observations from five rounds of briefer ethnographic work conducted since then.[2]

Like many other places in Southeast Asia, Thai family relations are generally described as being governed by bilateral inheritance, little or no son preference, and matrilineal residence preferences (with preference for the youngest daughter and her husband to live with her parents, providing care giving and inheriting most of the property). This is partly due to the family's economic dependence on growing rice, combined with the value of women's labor (planting, weeding, and harvesting) and their knowledge of land use and history (Yoddumnern–Attig et al., 1992).

[2]Fieldwork was conducted during eight months in 1991, one month in 1993, three months in 1994, one month in 1996, one month in 1997, one month in 1998, one month in 2000. Fieldwork included in-depth interviews, observation, and focus group interviews on a variety of topics related to migration, education, farming, and livelihoods in Nang Rong with young people, parents, teachers, government workers, factory managers, and village leaders. The initial fieldwork in 1991 was used to establish a list of villagers that were then re-interviewed through either in-depth or focus group interviews in subsequent fieldwork. The villagers included in the in-depth interviews primarily came from one village in the district, but the focus group interviews came from 17 other villages in the district. During several of the fieldwork trips, migrants were interviewed in their place of destination, primarily in the Bangkok metropolitan area.

Family relations in Northeastern Thailand epitomize this generalization. By the mid-1980s, the once-frontier region faced a closing of the frontier, resulting in limited land for growing families, combined with the highest family sizes in the country, and growing poverty. At the time, this region and its population sorely needed economic alternatives, especially for its youth. By the time the first author arrived to conduct fieldwork in 1992, parents were observing:

> All of our children are going and coming back. They are working at temporary jobs. During droughts or after harvesting seasons, they go elsewhere to work. They return during farming season.

And, in another interview with a father:

> (Our children go) to find work. In the village there is no work to do after the farming seasons. As for me, I do not have my own land, I rent all of the land I work on…(It is difficult to say whether they should go to the city.) If they stay with us, they would not have anything to do. If they go to the big city, even if they do not have an education, at least they have work to do.

Villagers in Nang Rong are well aware of the gender differential in the labor market and its relationship to education. In 1992 an explanation offered by one 19-year-old woman was an oft-heard refrain:

> If girls and boys finish the fourth or sixth grade, usually girls will find work more easily because they can sew and usually industrial factories have sewing. A boy who finishes at this level will have trouble finding work.

Another 24-year-old woman in a different in-depth interview in 1994, said:

> Most industrial factories want women. They only want men who have a high education, like artisans or professionals. They can then find work. Even if they finish ninth grade, men have a hard time finding work."

When considering the tradeoffs between work and education, Richter (1989) finds that parents tended to favor girls for migration and work earlier than boys, and that boys were favored for education.

One of the reasons parents preferred to have their daughters migrate was their higher remittance rate compared with sons. One parent observed in 1992:

> If girls make 5,000 baht[3] they will send 5,000 baht. The boys would not send us any money!…He would not send any money to his mother. They do not even make enough for themselves. You cannot depend on sons.

And in a 1992 focus group interview, one woman explained (with enthusiastic head-nodding among participants):

> I think girls (send more money) because boys use money for cigarettes, whiskey, having fun and partying. Boys use a lot of money. If there is any money left over,

[3]This is the national currency; worth 1/25 of a dollar in 1991.

> they go out again. Girls have chances to have fun, but fewer than boys. They must be more responsible than boys…Daughters think more about their future at home because they must wait for money from us.

Migrant women echoed these sentiments during interviews throughout the Bangkok metropolitan area. For example, one migrant woman explained during an interview in 2000:

> We send money home very often. When the end of the month comes, we save and send it all home. We do not have any personal responsibilities. We get money and send it home. We have to take care of the family. We all have to help. The younger ones are still little, and we do not want them to have it tough. We would like them to study. I would like to improve the financial status at home.

In addition, parents in Nang Rong tend to view education as a double-edged sword, as both a risky investment in non-agricultural futures and a challenge to traditional familial hierarchies associated with filial obligation and respect. In a focus group interview among fathers, 40–55 years old, one father explained:

> Parents worry about their children. They send their children to school, but their children cannot find any jobs. They return to the countryside and have nothing to do, which makes their parents worry and become frustrated.

The lack of information about the returns to education pervaded attitudes among parents. In addition, educated children seemed more capable of challenging traditional hierarchies. As one young woman explained in 1992:

> My parents are conservative. They would not send their children (to school). Back then, even for sixth grade, they would not send us. They said I could only go to fourth grade. We had already made my school uniform and they said there would not be anyone to work the fields. They said, “You study and then are naughty; you may have a husband too soon. Why should you study?” So, I did not go.

Parents sometimes went to great lengths to prevent their daughters from studying, as one 19-year-old migrant explained:

> My parents wanted me to quit to help work the fields and stay at home. They did not want me to study. They had to send me to stay with relatives in Bangkok and work there, because if I stayed in the village, the teachers at the school would come after me to make me finish grade six. So my parents sent me to Bangkok. I really wanted to study, but my parents would not let me, so I did what they wanted.

And in a 1992 focus group interview with women, 40–55 years old, the first author asked:

> Your child who finishes grade six and your child who finishes high school, are they different from each other? Do they have different jobs? One woman replied: “They are different. Those who study are unable to farm. They have enjoyed a comfortable life for a long time. However, those who finish grade six, they can farm. They work harder. Those who study at a higher level do not work hard in the fields.” Another woman added: “They do not like to farm, they like to do other things. They like light work. They do not like strenuous jobs.

As the preceding data illustrates, tradeoffs between schooling and migration are commonplace. Limited knowledge of the labor market returns to education and evidence of widespread opportunities in the urban labor market, independent of educational training, seemed to drive choices. These biases work against both boys' and girls' educational opportunities, but especially girls' educational advancement. Nevertheless, parents often observed that daughters are better students than sons. Knodel (1997) has also noted this – daughters are perceived as more diligent and harder working at their studies.[4] Thus, although they may have slightly lower rates of access to secondary education or making the transition from primary to lower secondary, once they do they may be more likely to continue to upper secondary than boys.

Based on Knodel's (1997) research and our fieldwork, parental attitudes concerning school safety and their lack of knowledge about the returns to education are critical factors limiting secondary schooling opportunities. Proximity of schools was seen as extremely important for limiting exposure to bad influences, the adoption of delinquent behavior, or other worrisome behavior (Knodel, 1997, p. 77). According to Knodel's respondents, if villagers, parents, and neighbors could keep a watchful eye on children, this would ease concerns about the risks associated with secondary schooling. Boys were perceived as being more prone to misbehavior and less diligent as students. But, as the young woman quoted earlier noted, parents were overwhelmingly concerned with girls becoming sexually active, eloping with partners, and terminating their schooling as a result. These concerns are also found in Knodel's study (1997, p. 78).

Furthermore, the consequences of such behaviors for girls were understood to be profoundly shameful for the girl and her family and more burdensome for the family than if a boy had become sexually active or eloped. Similarly, threats to physical safety were perceived to be greater for girls than boys, and greater if the school was located outside of the locality (Knodel, 1997, p. 79). Finally, schools in nearby localities reduced travel time and decreased the opportunity costs of schooling, providing students were still able to contribute housework and fieldwork hours to the family economy.

Proximity to the district town increases villagers' exposure to a wide range of evidence relating education to social mobility, and increases access to markets that enhance villagers' incomes. Villagers living in villages less remote from the major district towns are more likely to know about the returns to secondary education and to see successful examples of young people with secondary schooling. The presence of a vibrant middle class in Nang Rong's district town, also known as Nang Rong, includes civil servants from all levels of government (district, provincial, and central), finance officers (mostly bank tellers and bankers), employees of non-governmental organizations, and hospital staff (doctors, nurses, laboratory technicians and administrators).[5] Their presence and contributions to the community, and interactions with villagers may provide concrete examples of how education translates into upward mobility.

[4]During the 1991 fieldwork, parents often observed that girls are more diligent at their studies than are boys.
[5]Compared with its Southeast Asian neighbors, Thailand had the highest rates of education among its civil servants as of 1986 (Rock, 2000).

The preceding review of the literature identifies five factors that might explain secondary schooling opportunities, the difference between boys' and girls' educational attainment, and why the differential has persisted in some cases and narrowed in others. Following a discussion of the survey data and methodology used in our quantitative analysis (in the next section), we identify the factors suggested by the literature review and the qualitative evidence, and include them in a model to explain educational attainment and the dynamics of the gender differential in educational attainment. These factors include birth cohort, family size, migration, and school proximity and village accessibility to the district town.

Specifically, we hypothesize that if a person is born after 1976 (coming of school age after dramatic primary school expansion throughout Thailand), they are more likely to have an opportunity to continue on to secondary school, and girls are equally likely and possibly more likely to have an opportunity for continued schooling (given perceptions about their studious diligence). We also hypothesize that fewer siblings increase youth opportunities for schooling, but that this is more important for girls than boys. Further, we hypothesize that if additional siblings are born during the time period of observation – at the point when decisions about transitions to secondary school are made – then youth are less likely to continue on to secondary school, with this effect being more pronounced for girls than for boys.

With regard to migration, we offer three hypotheses. One hypothesis predicts that having a remitting migrant in the household might work against continued education, if migration is perceived to be a competing alternative, and an investment with greater returns, lower opportunity costs, and less risk to the family economy. We expect the competing alternatives hypothesis to be more important for limiting girls' secondary school opportunities, especially if the remitting migrant is female. Another hypothesis suggests that remittances are used to enhance educational opportunities; thus, families with remitting migrants are more likely to invest in the education of their remaining youthful members. We consider this hypothesis to be gender neutral, expecting remittance investments to improve younger siblings' schooling regardless of sex.

Finally, a third hypothesis predicts that migration of other household members, particularly if they are non-remitting (indicating a disassociation from the family economy) lightens the social and economic support burden of households, freeing up resources for remaining members. Given the Thai context and the earlier discussion, we further hypothesize that this effect is likely to be gendered. Having a male non-remitting migrant should lighten the social and economic support burden of the family, especially with regards to education resource allocation. A male, non-remitting migrant, implies few ties of obligation or reciprocity between migrant and family of origin and reduces future family obligations to invest in that male's education, freeing up resources for remaining, youthful family members.

We also hypothesize that greater proximity of schools, through the establishment of a nearby secondary school, will increase the chances that youth will have an opportunity to further their secondary education. Greater proximity of secondary schools to villagers' everyday lives should ease safety concerns about schooling (Knodel, 1997) and diminish its

opportunity costs. This effect should be more pronounced for girls than for boys. Finally, village accessibility to the district town, through ease of transportation (better roads and shorter distances and times to markets) will also increase youth opportunities as parents and community members become more aware of the labor market returns to education. We expect that support for this hypothesis will show little, if any, gender differential.

DATA AND METHODS

Data and Measures

The data is a matched file of individuals, households, and villages from one district in Thailand – Nang Rong District in Buriram Province. The district had a population of about 200,000 people in 1990 and consisted of one municipality or town (also called Nang Rong) and more than 250 villages. The data on individuals comes from a complete household census conducted in 1984 in 50 villages.[6] The census included information about each household member's marital status, relationship to household head, educational attainment, migration status (temporary and/or remitting), and contraceptive behavior (for women between 15–49). In addition, data was collected about household assets. Further, there was an extensive community survey conducted with community leaders. A similar census was conducted in the same villages in 1994.[7] This census was considerably more detailed and complex, and included life history calendars, and information on all siblings and migration. The household data collected was also more complex, with information on land use and networks of social support.

Another community survey was conducted in all of the villages in Nang Rong *(N* = 276). The purpose of the studies in both periods was to examine demographic change. In 1984 the census was designed to provide a baseline for evaluating family planning interventions. In 1994 the census was designed to follow up on the family planning studies and to study migration. Although information about an individual's educational attainment was collected in both 1984 and 1994, this was not the focus of the survey. Schooling information was also collected at both time periods, but merely to develop contextual measures of economic and social infrastructure, not to evaluate school policy. Despite these limitations, the data provides an ideal opportunity to examine prospective education choices during a period of great economic and social change. It also includes information about migration, rarely available in most studies of education.

The 1994 household census includes those people who were present in the village during the 1984 survey as well as those who moved into the village since that time. In 1994, information was also gathered about people who were living in the village in 1984 but had since moved away. For this analysis, we constructed a subset of individuals who were 6–12 years old in 1984 and who had not completed more than primary school. At some point over

[6]Information about this survey and data are available from the following: http://www.cpc.unc.edu/projects/nangrong/

[7]By 1994 the original 50 villages had been administratively split into 76 villages. Administrative divisions occur as the number of households and the population grows. In general, the preferred average village size is about 100 households. This is considered to be a manageable number of households for village headmen (usually men) to manage. For the purposes of this analysis we maintain the original 50 village distinction, since, from our experience, there is considerable social meaningfulness to these boundaries. In 1984 there were 10 villages that were very close and almost indistinct from each other. But in each of these cases, there was a relatively long history of separate administration.

the ten-year period, this group of individuals was faced with the decision of whether to continue on to secondary school. The matching of cases across the two panels is of relatively high quality, given the time lapse between the first and second round of the data. Of an initial sample of 6,652 in 1984, we lost 12% of the cases to sample attrition because entire households moved away and were not followed. The remaining sample of 5,837 was reduced by an additional 2.6% because of a lack of information about siblings needed for this analysis.[8]

We used a three-category measure of educational attainment. We measure whether youth, by 1994, had only completed compulsory education (six years), had attained some lower secondary schooling (7–9 years), or had attained at least some upper secondary schooling (10 or more years). We chose to focus on the transitions from primary to lower secondary, and the transition from lower secondary to upper secondary, rather than on a continuous measure of educational attainment. These are the critical decision points for young people and their parents when considering continued investment in education.

We include measures of sex (female=l, male=0) and birth cohort (1972–1974–1975–1976–1977–1978) in our data set and analyses, plus we test an interaction between sex and birth cohort. The interaction term provides an opportunity to model more accurately the observed trends of narrowing gender differences over time. We expect to see no male schooling advantages in the cohorts born between 1977–1978.

To help explain the gender gap and the narrowing of the gap, we also include measures of the number of siblings (0 siblings, 1 sibling, 2 siblings, 3 siblings, and 4 or more siblings) in 1984 and whether or not an additional sibling is added between 1984 and 1994. We chose to measure the number of siblings as a categorical variable because some evidence from other settings implies a curvilinear relationship (Morduch, 2000). Inequality of resource allocation may be lower in small families (with all children getting equal access to resources) and in large families (with all children getting few resources), but greater in middle-sized families (with some children getting more resources). Although our dependent variable is not a measure of inequality, we expect that a categorical measure of the number of siblings will do a better job of explaining gender differences in educational attainment.

Our measures of migration capture whether the family has some remitting temporary migrants or only non-remitting temporary migrants in 1984. Temporary migrants are those usual household members who have been gone from the household from 2 to 12 months prior to the date of the survey. As a result of the time lag between 1984 and 1994, we suspect that the effects of migration will be relatively attenuated. Unfortunately the measures of migration collected in 1994 do not allow us to adequately account for migration of all family members over the time period. The 1984 measure is the best we can do to ensure

[8]Most of the information about siblings came from a separate data collection instrument used in 1994, which asked about sibling age, sex, and location (line number in the household roster or residence in a district, province, or country). This instrument was applied to current household members in 1994 who were 18–35 years old – but to only one member of the sibling set. Among the sample used in this analysis 56.23% of the cases used sibling information from this source. Another 33% of the cases were migrants in 1994 and so were their siblings. Using information from the migrant portion of the data collection we were able to recover 70% of the sibling information for these respondents. Finally, for 8.4% of the cases we were able to reconstruct sibling structures using information collected on the household roster asking for mother and father's line number.

temporal ordering of events and to avoid problems of endogeneity. If anything, our measure of migration, despite the lagged effect, will reflect the perceptions of early adopters of migration as part of a family economy calculus. We decompose this measure further by the gender composition of migrants, including a measure of whether the family has any remitting female migrants and whether the family has only male, non-remitting migrants.

Our measures of school proximity and village accessibility include the respondent's village location in 1984 and in 1994 relative to the nearest secondary school and to the district town. Our measure of village accessibility or remoteness incorporates aspects of the difficulty of travel to the district town. These "obstacles" include the presence of a portion of the route to the district town that is a cart path (unpaved, rutted, and narrow); the lack of public transportation to the district town; travel time to the district town that takes an hour or more (as reported by a village headman or key informant); four or more months each year when travel from the village is difficult (this is also a measure of road conditions and susceptibility to flooding); and a distance of 20 or more kilometers to the district town. We recoded village remoteness as either not at all remote (0 obstacles), somewhat remote (1–2 obstacles), or very remote (3–4 obstacles).

School proximity is measured by the establishment date of a secondary school within a subdistrict. Subdistricts are small administrative governance units composed of a cluster of 10–20 villages in relatively close proximity to each other (within easy bicycling distance). This measure was constructed based on our knowledge of village locations, Ministry of Education administrative records, and brief interviews with local Ministry of Education officials in Nang Rong. We coded villages according to whether their subdistrict had no secondary school either in 1984 or 1994, whether one was established by 1994, and whether there was an established secondary school in 1984 and 1994. Unfortunately, our data does not include any other information about primary school or secondary school quality. We also do not include a measure of primary schools, since all villages had a primary school.

As control variables, we measure wealth and prior educational experiences of adult members. The wealth measures include land ownership (whether a family is practically landless, owning 10 or fewer rai[9] of land, 11–24 rai, or 25 rai or more) and ownership of a motorcycle. The prior adult educational experience measures whether there is an adult family member with less than primary schooling, or whether there are two or more adults with less than primary schooling. This is measured as fewer than four years of schooling, since laws expanding primary schooling to six years were passed in 1978, after most adults had completed then-own schooling.

Description of Quantitative Analysis

Our analysis begins with two sets of bivariate comparisons. We use a chi-square statistic to evaluate the significance of the comparisons. In the first set of bivariate comparisons, we examine gender differences in schooling outcomes, compare cohort differences, and then compare cohort differences between boys and girls. In the second set of comparisons we examine schooling outcomes across the size and growth of the number of siblings, migration

[9]A rai is a square unit of land. Approximately 2.53 rai are equivalent to 1 acre.

factors, school and village accessibility, land and motorcycle ownership, and prior adult education.

We then pursue a multivariate analysis of schooling outcomes, including all of the factors in a nonlinear regression estimation. We have described educational attainment as a non-linear distribution, and the data shows significant heaping tendencies around the transitions from primary to lower secondary and from lower secondary to upper secondary. Further, rather than estimating a typical ordered logistic model, we estimate a less constraining, multinomial logistic equation (Long & Freese, 2001). We have strong substantive reasons for doing so. An ordered logistic estimation assumes equal distance between categories, estimating a threshold coefficient. Instead, based on work by Knodel (1997) and our own fieldwork, we have reason to suspect that the conceptual distance between transitions is quite different.

The distance between primary schooling and lower secondary is significantly larger than the distance between lower secondary and upper secondary. Further, we suspect that the distance to the first transition is greater for girls than boys, but the distance to the second transition is likely to be lower for girls than boys. We further suspect that the influence of the factors in the models will not be the same in the equations for the transition from primary to lower secondary and the transition from lower to upper secondary. We empirically evaluated our substantive interpretation by estimating an ordered logistic equation and testing the parallel regression assumption (Long & Freese, 2001). For all of our estimated equations, the assumption was violated. For these reasons we chose to evaluate an unordered or multinomial logistic equation. Our model takes the following form:

$$\log\left(\frac{p(M_{ij}=k)}{p(M_{ihj}=1)}\right)=X_i b_k+\mathrm{Sib}_i\alpha_k+\mathrm{Mig}_i\eta_k+\mathrm{School}_i\delta_k+C_i\rho_k+m_j$$

The dependent variable is the log odds that an individual *i* in 1984 in village *j* gains lower secondary schooling or upper secondary schooling *(k)* relative to primary schooling (*l*) by 1994. The first term $(X_i b_k)$ represents the vector of variables for individuals, i.e. sex and birth cohort. The second term ($\mathrm{Sib}_i\alpha_k$) represents the vector of sibling measures, the third term ($\mathrm{Mig}_i\eta_k$) represents the vector of migration measures, the fourth term ($\mathrm{School}_i\delta_k$) represents the vector of schooling measures, and the fifth term ($C_i\rho_k$) represents the vector of control variables. The sixth term is the estimate of the error for the equations. Given the clustering of individuals within villages, the observations are unlikely to be independent, resulting in an underestimate of the error terms associated with each coefficient. A standard cluster adjustment is made to the equation to correct the standard errors (Long & Freese, 2001).

Given that the literature review and our ethnographic fieldwork suggest that explanations for educational attainment may differ for boys and girls, we estimate the same equation separately for boys and girls. We also suspect that the importance of some explanatory factors have changed with time. To evaluate this hypothesis we estimate the same equation

for each cohort. In the next section we review the results of our bivariate and multivariate analyses.

RESULTS

Gender and Cohort Differences in Educational Attainment

Educational attainment among 16–22 year olds in 1994 in Nang Rong is still relatively low. In Table 1, the distribution for the total sample across education categories shows that slightly less than 20% of youth had some lower secondary schooling (9.2%) and some upper secondary schooling (9.5%). These proportions are slightly lower for women; 8.4% had completed some lower secondary schooling and 8.7% had completed some upper secondary schooling. Among boys the proportions are higher; 9.9% had completed some lower secondary schooling and 10.3% had completed some upper secondary schooling. The top panel of Table 1 shows that the gender differences in educational attainment are statistically significant. Also, in the top panel of Table 1, younger cohorts of youth are observed to have greater access to secondary schooling than older cohorts of youth, and these differences are statistically significant. The oldest cohort of youth are much less likely to have completed any level of secondary education, and the youngest cohort is most likely to have completed some lower secondary schooling. The middle cohort is slightly more likely to have finished some upper secondary schooling.

These cohort patterns are not entirely similar for boys and girls (comparing the results in the second two panels in Table 1). In particular, the youngest cohort of girls are more likely to have completed some lower and some upper secondary schooling, whereas amongst boys the youngest cohort is only more likely to have completed some lower schooling. This suggests that among the younger cohort of youth, girls may be more likely to make the transition from lower to upper secondary schooling than boys. This may be a reflection of Knodel's (1997) and our field observations about parents' perception that girls are more studious than boys, combined with growing awareness of the returns to education in the labor market.

Siblings, Migration, School Accessibility, and Educational Outcomes

Table 2 displays the sample distributions for each of the other explanatory factors and their distributions across education categories. Most youth have four or more siblings, reflecting their parents' high fertility rates. Table 2 also shows that number of siblings is negatively associated with educational attainment. Fewer siblings increase youth opportunities for schooling. The addition of a sibling between 1984 and 1994 is relatively rare, but poses a significant deterrent to further education.

In 1984, almost 17% of households had at least one migrant, with slightly more than half remitting. In 1984 migration is still a relatively rare phenomenon among households in Nang Rong, most likely because this is the very beginning of the period of rapid economic expansion that drew migrants from the Northeast to the Bangkok metropolitan area. Not surprisingly, therefore, most households with migrants are more likely to have male migrants than female migrants. The bivariate relationship between migration and educational attainment appears complex (Table 2). Having at least one migrant in 1984 slightly deters

continued education, but not significantly. General remittance patterns also show little relationship with education outcomes. However, when gender composition of migrants is taken into account, significant relationships emerge. Having male migrants in the household marginally improves a youth's educational opportunities. On the other hand, having at least one female remitting migrant significantly deters secondary education for other youthful members.

It would appear from Table 2 that improved school proximity is an important explanation for increased secondary education. Both the recent establishment of a school by 1994 and the existence of a school in 1984 are significantly associated with youth opportunities for secondary schooling, relative to youth who live in villages where there is no secondary school. In addition, village remoteness from towns and markets significantly reduces youth opportunities for secondary schooling.

Finally, wealth and prior adult education are significantly associated with secondary education. Those youth who live in households with larger landholdings are more likely to have attained some secondary education. Households with motorcycles are also more likely to send their youth to secondary school. In addition, households where all adults have completed at least primary schooling are significantly more likely to have sent their children to secondary school.

Factors Narrowing the Education Gender Gap

Although the evidence from Nang Rong shows that there continues to be a gender gap in secondary schooling opportunities among 16–22 year olds (Table 1), the narrowing of the gender gap displayed in Fig. 1 can still be observed by combining measures of gender and birth cohort in one model. Table 3 displays multivariate, multinomial logistic regression results for a model that includes all hypothesized factors and controls.

To simplify our interpretation of the results for the gender and cohort effects, because of the interaction term, we have generated predicted probabilities for the secondary schooling outcomes, holding all other values at their means and only varying the values of gender and cohort. These results are shown in Fig. 2 and demonstrate dramatic increases in girls' secondary schooling opportunities, especially for the youngest cohort (1977–1978). Figure 2 also shows differences in the patterns of educational attainment for girls and boys, as well as shifts in the relative schooling advantages of boys versus girls.

The probabilities of only having completed some lower secondary schooling remain the same for the oldest and middle cohorts of girls (0.06), but more than double for the youngest cohort (0.14). A similar pattern is observed for the boys, but at slightly higher rates. For girls' upper secondary schooling opportunities, the probability of having completed some upper secondary schooling rises from 0.06 for the oldest cohort of girls to 0.11 for the middle cohort and stays at the same level for the youngest cohort.

The boys' pattern is different. The oldest cohort's upper secondary schooling probability is 0.11 and increases to 0.12 for the middle cohort, but then drops to 0.09 for the youngest cohort. This curvilinear pattern signals a reversal of boys' schooling advantage. These

patterns, especially for the youngest cohort's upper secondary schooling probabilities should be cautiously considered, given that these youth are 16–17 years old in 1994. Although they are the appropriate age for having some upper secondary schooling, there may be some lagging students who have not yet completed the transition to upper secondary and still plan to make the transition. This lagging behavior may be related to gender, that is boys may be more likely to lag behind in making transitions than girls, and therefore may not completely signal a reversal in boys' schooling advantage.

Before discussing additional explanations for the narrowing of the gender gap, we briefly discuss the remaining results in Table 3, which, although they do not explain away the effect of gender and cohort, provide additional reasons for secondary school advancement. Despite significant bivariate relationships (shown in Table 2), few of the other factors included in the multivariate model maintain much explanatory power. Number of siblings is still significantly and negatively associated with the transition from primary to lower secondary schooling; however, it is not significantly associated with the transition from lower to upper secondary. In other words, it is a significant barrier to secondary school, but not to continued schooling once a decision to enter secondary school has been made. Similarly, additional siblings reduce the odds of entering secondary school, but have no effect on the odds of continuing secondary school.

The relationship between migration and schooling is weak, at best. There are no statistically significant effects of migrants (remitting or non-remitting) upon educational attainment. The effect of gender composition of migrants, however, is just outside the margins of significance.[10] The effect of remitting females upon educational attainment supports a competing alternative explanation for the transition from primary to lower secondary school.[11] Remitting females reduce the odds of making the transition from primary to lower secondary school. Although not a statistically significant effect, remitting females also improve the odds of a school transition from lower to upper secondary school. Thus, some weak statistical evidence suggests that when the decision to make the transition from primary to lower secondary school is made, then competing alternatives (such as migration) diminishes youths' schooling options. However, when the transition to secondary school has already been made once, then remitting female migrants improve the odds of continued secondary schooling.

Weak statistical support for resource concentration through migration is also evident in the results. Coming from a family where there are only non-remitting male migrants increases the odds of secondary educational attainment.[12] When a migrant no longer remits earnings or goods back to the household of origin, this may be an indication of diminished or non-existent ties to the household. Resources that might have been expended upon the migrant

[10]Given that the measure of migration is taken only in 1984 and quite distant from out-comes considered in 1994, it is plausible to widen our consideration of what is a significant effect.

[11]If a one-tailed *z*-test were used to evaluate significance of the relationship, then the *p*-value for the coefficient associated with remitting females would be 0.097.

[12]If a one-tailed *z*-test were used to evaluate the significance of having only non-remitting male migrants, then the *p*-value would be 0.071.

may be redirected towards other youths and their schooling, producing a resource concentration effect rather than resource dilution.

Taken together, the migration effects in Table 3 provide weak statistical evidence for a family economy perspective, where competing alternatives and resource burdens are important considerations in deciding whether youth have opportunities to further their education. The importance of the family economy is particularly apparent for the transition from primary to secondary school and less *apparent for continued secondary schooling.*

Notwithstanding other factors, school establishment has little effect upon secondary schooling opportunities for youth. However, village remoteness from markets and towns significantly decreases youths' opportunities for secondary education. This effect is only important for the transition from primary to lower secondary school. Land ownership and adult education are also important explanations for transitions from primary to lower secondary. But neither has a statistically significant impact upon the decision to make the transition from lower to upper secondary. Motorcycle ownership significantly improves youths' opportunities for both lower and upper secondary education.

To see whether our full model works differently for boys and girls and if some factors matter more for older cohorts than younger cohorts, we estimate our equations on separate samples of young men and women, as well as separate samples of each cohort grouping. These results are displayed in Table 4 (for young men and women) and Table 5 (for each cohort).

The cohort patterns discussed earlier for Table 3 are also apparent in Table 4. Here, we focus on the difference in importance of number of siblings, migration, and school and village accessibility for young men and women's educational opportunities.

Although there is clearly a negative relationship between the number of siblings and educational attainment for both young men and women, the strength of the relationship is far greater for women than for men. For both young men and women, it is the transition from primary to lower secondary that defines the relationship, not the later transition to upper secondary school. However, the effect of an additional sibling does little to change a girl's schooling opportunities, but it does lower the odds of a boy's entry into secondary school.

At first glance, there are few results to report regarding the relationship between migration and educational attainment, insofar as the relationship differs across young men and women. However, a closer look at the *p*-values for the log-odds coefficients reveals effects just outside the margins of significance. These patterns then reveal differences between how migration differentially influences men and women's educational opportunities. For young women, there are marginal, statistically significant results supporting all of the migration hypotheses: remittance as investment, remittance as competing alternative, and resource concentration through migration. For young women, the odds of making the transition from primary to lower secondary schooling increases by 1.9 times when there is at least one remitting migrant. This suggests some support for remittance investment strategies with regards to education. Further, having only non-remitting migrants in the family improves the odds of lower to upper secondary schooling by 3.17 times[13] and increases the odds of completing some upper secondary schooling relative to primary schooling by two times.

Excluding the preceding migrant factors, if there are any remitting female migrants in the household, the odds that a young woman will make the transition from primary to secondary school are reduced by 55%.[14] This disadvantage is magnified to a 72% reduction in the odds of completing upper secondary rather than primary schooling. Thus, having female remitting migrants in a young woman's family presents an example of a competing alternative, rather than creating educational opportunities for that young woman. For men, none of these relationships are close to being statistically significant.

For both men and women, village accessibility and school proximity affect educational opportunities in the same way. School establishment in a subdistrict has little impact upon either group's access to secondary education. Rather, it is the remoteness of the village from town and markets that determines educational opportunities, particularly the transition from primary to lower secondary school. For both young men and women, decreased accessibility to the district town significantly lowers the odds of going to secondary school.

We now turn briefly to examine the results of the same equation estimated for cohort subgroups (Table 5). Given that the sample sizes diminish significantly, our interpretations of these results are tentative. Rather than discuss the gender and sibship size (number of children in a family) effects, we will only focus upon migration and school and village accessibility effects.

There are no significant migration effects for the oldest cohort of youth. For the middle cohort, migration of other household members positively influences educational opportunities, especially upper secondary schooling. Excluding migration, the competing alternatives hypothesis (female migrant remitters) or the reduced resource dilution hypothesis are not supported among the middle cohort. However, weak statistical support is found for these hypotheses among the youngest cohort. Competing alternatives (any female remitters) reduces the odds by 60% of having some lower secondary rather than primary schooling. Having non-remitting male migrants marginally increases the odds by 2.9 times of having some lower secondary schooling relative to primary schooling;[15] evidence in support of resource concentration through migration.

Shifting our attention to school proximity, school establishment is apparently much more important for the older cohorts of youth. These effects are significant for improving access to upper secondary schooling, rather than lower secondary schooling. Oddly, for the middle cohort, the establishment by 1994 of a secondary school reduces the odds of transitioning to lower secondary school. It may be that this effect reflects some endogeneity (reverse causality), insofar as lowered levels of transitions from primary to lower secondary school in a particular village or locality point to the need for the establishment of schools in that place.

Most of the school building occurred in the two years prior to the 1994 survey, which is after the middle cohort of youth were at risk of making a decision to go to secondary school. Nevertheless, for those youth in the middle cohort that had already made a decision to go to

[13]The coefficient *p*-value is 0.188 for a two-tailed *z*-test statistic.
[14]The coefficient *p*-value is 0.128 for a two-tailed *z*-test statistic.
[15]The coefficient *p*-value is 0.219 for a two-tailed *z*-test statistic.

secondary school, school establishment by 1994 meant improved odds of continuing their schooling. Again, village remoteness from district markets and town significantly reduces the odds of lower secondary schooling across all three cohorts.

In the following discussion we summarize the findings of our analyses of both quantitative and qualitative data. We place these findings in perspective for understanding the Thai context, the role of migration and school accessibility in the literature on cross-national perspectives on stratification processes, and the limitations of this particular research project. We conclude with suggestions for future research.

DISCUSSION

The relationship between social and economic change, educational attainment, and inequality are puzzles that remain to be unraveled, despite significant research effort across many disciplines (Buchmann & Hannum, 2001). We pursue pieces of the puzzle with an analysis of educational attainment between 1984–1994 in rural Northeast Thailand. This is a period of rapid economic growth in Thailand and, during the latter part of the 10-year period, significant expansion of secondary schools. We build upon previous research by examining the role of gender, cohort, sibship size, migration, and school and village accessibility in explaining secondary schooling. Our analysis confirms what other researchers have observed in Thailand: the gender gap has narrowed significantly over the time period (Knodel, 1997; Knodel & Jones, 1996). But, there are several competing forces at work to both widen and narrow the gap.

The data we employ were not originally designed to study this research question, and as such, contain some inherent study design problems. There is no data on individual learning abilities, parental attitudes about schooling, school quality (either primary or secondary), and only limited information about migration. Nevertheless, the data offer opportunities, otherwise unavailable in Thailand (and to our knowledge elsewhere) to follow youth over time, to quantitatively assess explanations for the narrowing of the gender gap, evaluate the role of migration and migrant remittances, the impact of school establishment, the addition of siblings, and village accessibility to markets and towns.

In discussing our results, we first consider the dynamics of the gender differential in educational attainment. Next we discuss the importance of migration for studying educational attainment, and how transitions between levels of schooling vary in their difficulty. We conclude with directions for future research.

The evidence in the Nang Rong data shows a continued gender differential in secondary schooling. However, there is evidence of a narrowing of the gender gap when comparing educational attainment across cohorts. Birth cohort makes a significant difference for youth educational opportunities, particularly girls and young women. The youngest cohort of youth (born after 1976) gains significant advantage in schooling opportunities. Younger cohorts of girls are almost equally likely to go to secondary school as are boys, and they are more likely than boys to continue their secondary schooling.

In addition, other factors appear to diminish the educational differences between boys and girls. Having few or no siblings diminishes the gender difference (although it does not explain it away). Previous high levels of fertility among the mothers of this generation of youth are an important explanation for the very low levels of secondary schooling overall among youth in Nang Rong (less than 20%). The odds of education increase dramatically with each reduction in the number of siblings, suggesting that youth born to the next generation of mothers (among whom average fertility is fewer than two children) will likely benefit greatly in terms of educational opportunities from smaller family sizes. More importantly, the reduced fertility of younger mothers appears to be more beneficial for girls than for boys. Interestingly, additional siblings born at the time when secondary schooling decisions are made, although not disadvantaging girls, do disadvantage boys and helps to narrow the gap between boys and girls insofar as access to any secondary schooling.

Migration appears to narrow the gender differential under some circumstances. This works in two ways – migrant remittances provide families with a source of income for educational investment, and the act of migration helps to concentrate family resources. Having some remitting migrants (of either sex) increases a girls' secondary schooling opportunity, as does living in a household with only non-remitting migrants. Having non-remitting male migrants concentrates resources in favor of girls' continued secondary schooling. Further, once a girl has made a decision to enter secondary school, a female remitting migrant promotes her continued schooling, narrowing the male advantage. Finally, although we expected to find that school proximity would be more important for girls than boys, we found no evidence of such an effect.

Although there are powerful cohort effects that narrow the gender differential – in combination with dramatically smaller family sizes and some positive effects of migration towards educational investments in girls – there are also factors that maintain the male secondary school advantage or female disadvantage. Resource limitations, as expressed by large sibship sizes and landless or near landlessness households, significantly limit girls' secondary schooling but are less inhibiting of boys' education. In addition, limited educational experience among adult members of the household significantly widens the gender differential in schooling. Finally, even though having some remitting migrants increases girls' access to secondary schooling, having female remitting migrants diminishes a girls' access or entry into secondary school. This suggests that when there is evidence that female household members can earn money to support the household economy, they represent a competing alternative option to secondary schooling for the next female household member.

We hypothesized that migration might influence educational attainment in three different ways. First, that remittances sent from migrant household members might be used to invest in youth's education. Second, that migrant remittances, especially from women, might create a competing alternative to schooling. Successful remittance behavior might encourage parents to pursue migration as part of a family economy calculus, rather than invest in riskier educational investments. And third, that migration accompanied by non-remittance would increase educational opportunities, especially if the non-remitting migrants are male. Non-remitting male migrants indicate probable permanent movement out of the household and

disassociation with the family economy. Given that there is a slight preference to invest in boys' education, this serves to concentrate education resources, rather than dilute them.

For the first hypothesis about migration, we found some qualitative evidence that migrant remittances do support other family members' educational opportunities, according to migrant accounts. For the second hypothesis, the competing alternatives, we found some support in the qualitative evidence, especially in accounts from parents and young women. We also found weak statistical support for this hypothesis in the quantitative analysis. For the third hypothesis regarding the positive impact of resource concentration, we did not find evidence in the qualitative data and only weak statistical support for the resource concentration hypothesis. The latter two hypotheses were better supported with evidence from the girls-only sample and the youngest cohort sample.

We suspect that the relationship between migration and education may be different at different points in the migratory and economic history of a particular community and a family's life cycle dynamic (along the lines of Kandel and Kao's (2000) logic and conclusions to their study). Poor, young families (such as many of those represented in the data from Nang Rong in the mid-1980s) are likely to view education as a risky investment, at least initially, but perceive migration as a less risky opportunity to smooth income and lighten family economy burdens. Initially, remittance income is used for family survival, to upgrade the rural quality of life, and in farming. Eventually as families become more economically comfortable and more is known about the labor market returns to education, remittances are more likely to be directed towards education investments. We find some evidence of this effect, especially with regards to continuing secondary schooling, once a decision to attend secondary school has been made. Unfortunately, evidence to evaluate this conjecture would only be apparent during the latter part of the 1990s, which is past the time this study was undertaken.

Even though school proximity shows a strong relationship with secondary schooling in the bivariate analysis (Table 2), the effect completely disappears in a multivariate analysis. It only reappears later among the oldest cohort of youth, promoting their completion of some upper secondary schooling. It could be that the association between school establishment and village accessibility to the district town, although not extreme, is high enough that village accessibility absorbs some of the effect of school establishment. It could also be that since most of the new secondary schools were only established between 1990 and 1994, and a high proportion only established in 1993 and 1994, that fewer youth were able to take advantage of the opportunities offered. Village accessibility to the district town is, indeed, an important factor explaining school opportunities. Limited road improvement efforts (besides main highways) over the last two decades are a significant deterrent to economic development, and they would also appear to be a deterrent of educational attainment.

We find that analyses of secondary education, especially in Thailand, must take into account the fact that some transitions are harder than others. In particular, the transition from primary to lower secondary involves greater barriers and is associated with different factors than is the transition from lower secondary to upper secondary. Attention to the differences in the conceptual distance between the two transitions should be of interest to both educational

researchers and policy makers. Insofar as gender is concerned, the barriers girls face for the first transition are much higher than those faced by boys. However, the female disadvantage then becomes an advantage in making the transition from lower to upper secondary, especially among the youngest cohort of youth (born after 1976). Nevertheless, there are still significant barriers to girls' education that continue to maintain a slight male advantage in schooling.

In conclusion, no other studies have examined the role of migration, and very few sites offer opportunities to evaluate the impact of school establishments upon educational change. Although we can only offer tentative and weak quantitative evidence for their importance in future models of educational attainment, we did find strong evidence of the importance of migration in consideration of education investments in our qualitative data. We suspect that data from more recent time periods would reveal a stronger effect. Similarly, we suspect that the secondary school expansion program had not had a long enough impact within the communities we observed (at most four years and probably only two years) to influence the educational choices of youth in our data.

Our analysis suggests that there is theoretical and substantive reason to suspect the importance of both migration and school establishment for secondary schooling. Our analytic approach introduces elements of the dynamics of social change into prospective models of education. In so doing, our results and discussion demonstrate not only the potential for evaluating the impact of school establishment and migration for educational attainment, but also the potential importance of temporal depth for illuminating how schooling choices shift with the social, economic, and cultural changes occurring in a place. This inevitably places more demands on future data collection efforts and will result in more complex study designs.

NOTES

[1]Kaufman et al. (1998) conduct a multilevel analysis but use a cross sectional database from South Africa.

[2]Fieldwork was conducted during eight months in 1991, one month in 1993, three months in 1994, one month in 1996, one month in 1997, one month in 1998, one month in 2000. Fieldwork included in-depth interviews, observation, and focus group interviews on a variety of topics related to migration, education, farming, and livelihoods in Nang Rong with young people, parents, teachers, government workers, factory managers, and village leaders. The initial fieldwork in 1991 was used to establish a list of villagers that were then re-interviewed through either in-depth or focus group interviews in subsequent fieldwork. The villagers included in the in-depth interviews primarily came from one village in the district, but the focus group interviews came from 17 other villages in the district. During several of the fieldwork trips, migrants were interviewed in their place of destination, primarily in the Bangkok metropolitan area.

[3]This is the national currency; worth 1/25 of a dollar in 1991.

[4]During the 1991 fieldwork, parents often observed that girls are more diligent at their studies than are boys.

[5]Compared with its Southeast Asian neighbors, Thailand had the highest rates of education among its civil servants as of 1986 (Rock, 2000).

[6]Information about this survey and data are available from the following: http://www.cpc.unc.edu/projects/nangrong/

[7]By 1994 the original 50 villages had been administratively split into 76 villages. Administrative divisions occur as the number of households and the population grows. In general, the preferred average village size is about 100 households. This is considered to be a manageable number of households for village headmen (usually men) to manage. For the purposes of this analysis we maintain the original 50 village distinction, since, from our experience, there is considerable social meaningfulness to these boundaries. In 1984 there were 10 villages that were very close and almost indistinct from each other. But in each of these cases, there was a relatively long history of separate administration.

[8]Most of the information about siblings came from a separate data collection instrument used in 1994, which asked about sibling age, sex, and location (line number in the household roster or residence in a district, province, or country). This instrument was applied to current household members in 1994 who were 18–35 years old – but to only one member of the sibling set. Among the sample used in this analysis 56.23% of the cases used sibling information from this source. Another 33% of the cases were migrants in 1994 and so were their siblings. Using information from the migrant portion of the data collection we were able to recover 70% of the sibling information for these respondents. Finally, for 8.4% of the cases we were able to reconstruct sibling structures using information collected on the household roster asking for mother and father's line number.

[9]A rai is a square unit of land. Approximately 2.53 rai are equivalent to 1 acre.

[10]Given that the measure of migration is taken only in 1984 and quite distant from outcomes considered in 1994, it is plausible to widen our consideration of what is a significant effect.

[11]If a one-tailed *z*-test were used to evaluate significance of the relationship, then the *p*-value for the coefficient associated with remitting females would be 0.097.

[12]If a one-tailed *z*-test were used to evaluate the significance of having only non-remitting male migrants, then the *p*-value would be 0.071.

[13]The coefficient *p*-value is 0.188 for a two-tailed *z*-test statistic.

[14]The coefficient *p*-value is 0.128 for a two-tailed *z*-test statistic.

[15]The coefficient *p*-value is 0.219 for a two-tailed *z*-test statistic.

Acknowledgments

Special thanks to the Institute for Population and Social Research, Mahidol University, Nakhom Prathom, Thailand, the CEP-CPC Project at the University of North Carolina for access to the data, a Mellon Foundation grant to the Center for Migration and Development, Princeton University, and continued institutional support from the Office of Population Research, Princeton University. Thanks also to Germán Rodríguez for valuable statistical advice, as well as Melanie Adams and Abigail Cooke for editorial and administrative assistance.

References

Anh TS, Knodel J, Lam D, Friedman J. Family size and children's education in Vietnam. Demography. 1998; 35:57–70. [PubMed: 9512910]

Appleton, S.; Collier, P. On gender targeting of public transfers. In: van de Walle, D.; Nead, K., editors. Public Spending and the Poor. Baltimore, MD: Johns Hopkins University Press; 1995. p. 555-581.

Ashby J. Equity and discrimination among children: Schooling decisions in rural Nepal. Comparative Education Review. 1985; 29(1):68–79.

Axinn WG, Barber JS. Mass education and fertility transition. American Sociological Review. 2001; 66:481–505.

Axinn WG, Yobiku ST. Social change, the social organization of families, and fertility limitation. American Journal of Sociology. 2001; 106(5):1219–1261.

Bakarr, FK. Dissertation Abstracts International: The Humanities and Social Sciences. Teachers College, Columbia University; 2000. Factors that affect girls' access to basic education in the rural areas of the Gambia.

Behrman, JR.; Foster, AD.; Rosenzweig, MR.; Vashishtha, P. Working Paper. University of Pennsylvania; 1997. Women's schooling, home teaching, and economic growth.

Bello, W.; Cunningham, S.; Poh, LK. A Siamese tragedy: Development and disintegration in modern Thailand. London: Zed Books; 1998.

Blake, J. Family size and achievement. Berkeley, CA: University of California Press; 1989.

Blossfeld HP, Huinink J. Human capital investments or norms of role transition? How women's schooling and career affect the process of family formation. American Journal of Sociology. 1991; 97(1):143–168.

Buchmann C. The debt crisis, structural adjustment and women's education: Implications for status and social development. International Journal of Comparative Sociology. 1996; 37(1–2):5–30.

Buchmann C. Family structure, parental perceptions, and child labor in Kenya: What factors determine who is enrolled in school? Social Forces. 2000; 78(4):1349–1379.

Buchmann C, Hannum E. Education and stratification in developing countries: A review of theories and research. Annual Review of Sociology. 2001; 27:77–102.

Chamratrithirong, A.; Archavanitkul, K.; Richter, K.; Guest, P.; Varachai, T.; Boonchalaksi, W.; Piriyathamwong, N.; Vong-ek, P. National migration survey of Thailand. Bangkok, Thailand: Institute for Population and Social Research, Mahidol University; 1995.

Chernichovsky D. Socioeconomic and demographic aspects of school enrollment and attendance in rural Botswana. Economic Development and Cultural Change. 1985; 33:319–332.

Conley D. Sibship sex composition: Effects on educational attainment. Social Science Research. 2000; 29:441–457.

Curran, SR. Intrahousehold exchange relations: Explanations for education and migration outcomes. Seattle Population Research Center; 1996. Working Paper No. 96–5

Curran SR, Saguy AC. Migration and cultural change: A role for gender and social networks. Journal of International Women's Studies. 2001; 2(3):54–77.

Durand J, Parrado EA, Massey DS. Migradollars and development: A reconsideration of the Mexican case. International Migration Review. 1996; 30(2):423–444. [PubMed: 12291750]

Fry G, Kempner K. A subnational perspective for comparative research: Education and development in northeast Brazil and northeast Thailand. Comparative Education. 1996; 32(3):333–360.

Fuller, B.; Liang, X. Which girls stay in school? The influence of family economy, social demands, and ethnicity in South Africa. In: Bledsoe, CH.; Casterline, J.; Johnson-Kuhn, J.; Haaga, J., editors. Critical Perspectives in Schooling and Fertility in the Developing World. Washington, DC: National Academic Press; 1999. p. 181-215.

Greenhalgh S. Sexual stratification: The other side of "growth with equity" in east Asia. Population and Development Review. 1985; 11(2):265–314.

Hadden K, London B. Educating girls in the third world: The demographic, basic needs, and economic benefits. International Journal of Contemporary Sociology. 1996; 37(1–2):31–46.

Itzigsohn J. Migrant remittances, labor markets, and household strategies: A comparative analysis of low-income household strategies in the Caribbean basin. Social Forces. 1995; 74(2):633–655.

Kandel W, Kao G. Shifting orientations: How U.S. labor migration affects children's aspirations in Mexican migrant communities. Social Science Quarterly. 2000; 81(1):16–32.

Kaneda, T. The effects of gender composition and birth order of siblings on educational attainment: The Japanese case. Annual Meeting of the Population Association of America; Chicago, IL. April 2–4; 1998.

Kaufman, C.; Maharaj, P.; Richter, L. Children's schooling in South Africa: Transitions and tensions in households and communities. Annual Meeting of the Population Association of America; Chicago, IL. April 2–4; 1998.

Keyes, CF. The proposed world of the school: Thai villagers' entry into a bureaucratic state system. In: Keyes, CF., editor. Reshaping Local Worlds: Formal Education and Cultural Change. New Haven, CT: Yale University Press; 1991. p. 89-130.

King, E. Educating girls and women: Investing in development. Washington, DC: World Bank; 1991.

King, EM.; Hill, MA. Women's education in developing countries. Baltimore, MD: Johns Hopkins University Press for the World Bank; 1993.

King E, Lillard L. Education policy and school attainment in Malaysia and the Philippines. Economic Education Review. 1987; 6:167–181.

Kingdon GG. Does the labour market explain lower female schooling in India? Journal of Development Studies. 1998; 35(1):39–65.

Knodel J. The closing of the gender gap in schooling: The case of Thailand. Comparative Education Review. 1997; 33(1):61–81.

Knodel J, Jones G. Post-Cairo population policy: Does promoting girls' schooling miss the mark? Population and Development Review. 1996; 22(4):683–702.

Knodel J, Wongsith M. Family size and children's education in Thailand: Evidence from a national sample. Demography. 1991; 28(1):119–131. [PubMed: 2015939]

Kurz, KM.; Prather, CJ. Constraints limiting girls' quality of life. In: Kurz, KM.; Prather, CJ., editors. Improving the Quality of Life of Girls. New York, NY: UNICEF; 1995. p. 9-29.

Lillard LA, Willis RJ. Intergenerational educational mobility: Effects of family and state in Malaysia. Journal of Human Resources. 1994; 29(4):1126–1166.

Lloyd CB, Gage-Brandon AJ. High fertility and children's schooling in Ghana: Sex differences in parental contributions and educational outcomes. Population Studies. 1994; 48(2):293–306.

Long, JS.; Freese, J. Regression models for categorical dependent variables using stata. College Station, TX: Stata Press; 2001.

Malhotra A, Mather M. Do schooling and work empower women in developing countries? Gender and domestic decisions in Sri Lanka. Sociological Forum. 1997; 12(4):599–630.

Massey D. Social and economic origins of immigration. ANNALS AAPSS. 1990; 510:60–72.

Mensch B, Lloyd C. Gender differences in the schooling experiences of adolescents in low-income countries: The case of Kenya. Studies in Family Planning. 1998; 29(2):167–184. [PubMed: 9664630]

Mills, MB. Thai women in the global labor force: Consuming desires, contested selves. New Brunswick, NJ: Rutgers University Press; 1999.

Ministry of Education. Educational Statistics in Brief. Bangkok, Thailand: Ministry of Education; 1984–1994.

Morduch J. Sibling rivalry in Africa. American Economic Review. 2000; 90(2):405–409.

Ono H. Are sons and daughters substitutable? Allocation of family resources in contemporary Japan. Journal of the Japanese and International Economies. in press.

Parish WL, Willis RJ. Daughters, education, and family budgets: Taiwan experiences. Journal of Human Resources. 1993; 29(4):863–898.

Phongpaichit, P.; Baker, C. Thailand's boom!. New South Wales, Australia: Allen and Unwin; 1996.

Pong SL. Sibship size and educational attainment in Peninsular Malaysia. Sociological Perspectives. 1997; 40:227–242. [PubMed: 12293107]

Powell B, Steelman LC. The educational benefits of being spaced-out: Sibship density and educational progress. American Sociological Review. 1993; 58(June):367–381.

Reichert JS. Social stratification in a Mexican sending community: The effect of migration to the United States. Social Problems. 1982; 29:422–433.

Richter, K. Transitions to adulthood in rural and urban Thailand. Annual Meeting of the Population Association of America; Baltimore, MD. March 30–April 1; 1989.

Richter, K.; Pong, SL. Schooling and work among Thai adolescents: Household dynamics under rapid economic and demographic change. Population Research Institute; 1995. Working Paper 95–11

Rock, MT. Thailand's old bureaucratic polity and its new semi-democracy. In: Khan, M.; Sundaram, JK., editors. Rents, Rent-Seeking and Economic Development: Theory and Evidence in Asia. Cambridge, UK: Cambridge University Press; 2000. p. 182-206.

Shavit, Y.; Blossfeld, H-P. Persistent inequality: Changing educational attainment in thirteen countries. Boulder, CO: Westview Press; 1993.

Shavit Y, Pierce J. Sibship size and educational attainment in nuclear and extended families: Arabs and Jews in Israel. American Sociological Review. 1991; 56(June):321–330.

Slagter, R.; Kerbo, H. Modern Thailand: A volume in the comparative societies series. New York: McGraw Hill; 2000.

Stark, OJ. The migration of labor. Cambridge, MA: Basil Blackwell; 1991.

Stark OJ, Taylor E, Yitzhaki S. Migration, remittances, and inequality: A sensitivity analysis using the extended Gini Index. Journal of Development Economics. 1988; 28:309–322.

Stash S, Hannum E. Who goes to school? Educational stratification by gender, caste, and ethnicity. Comparative Education Review. 2001; 45:354–378.

Stromquist NP. Gender inequality in education: Accounting for women's subordination. British Journal of Sociology of Education. 1990; 11(2):137–153.

Stromquist NP. The institutionalization of gender and its impact on educational policy. Comparative Education. 1998; 34(1):85–100.

Subbarao K, Raney L. Social gains from female education: A cross national study. Economic Development and Cultural Change. 1995; 44(1):105–128.

Summers L. Investing in all the people: Educating women in developing countries. Economic Development Institute of the World Bank: EDI Seminar Paper Number. 1994; 45

Sussangkarn, C. Labour markets. In: Warr, PG., editor. The Thai Economy in Transition. Cambridge, UK: Cambridge University Press; 1993. p. 355-400.

Taylor EJ. Remittances and inequality reconsidered: Direct, indirect, and intertemporal effects. Journal of Policy Modeling. 1992; 14(2):187–208.

Tindigarukayo JK. Gender differentials in education and labour force in Jamaica. Canadian Journal of Development Studies. 1996; 17(3):449–467.

Tsai SL, Gates H, Chiu HY. Schooling Taiwan's women: Educational attainment in the mid-20th century. Sociology of Education. 1994; 67(4):243–246.

Tzannatos Z. Women and labor market changes in the global economy: Growth helps, inequalities hurt and public policy matters. World Development. 1999; 27(3):551–569.

United Nations Development Program. Human development report 1994. New York, NY: United Nations; 1994.

Warr, P. The Thai economy in transition. New York: Cambridge University Press; 1993.

Yoddumnern-Attig, B.; Richter, K.; Soonthorndhada, A.; Sethaput, C.; Pramualratana, A. Changing roles and statues of women in Thailand: A documentary assessment. Salaya, Nakhon Prathom, Thailand: Institute for Population and Social Research, Mahidol University; 1992.

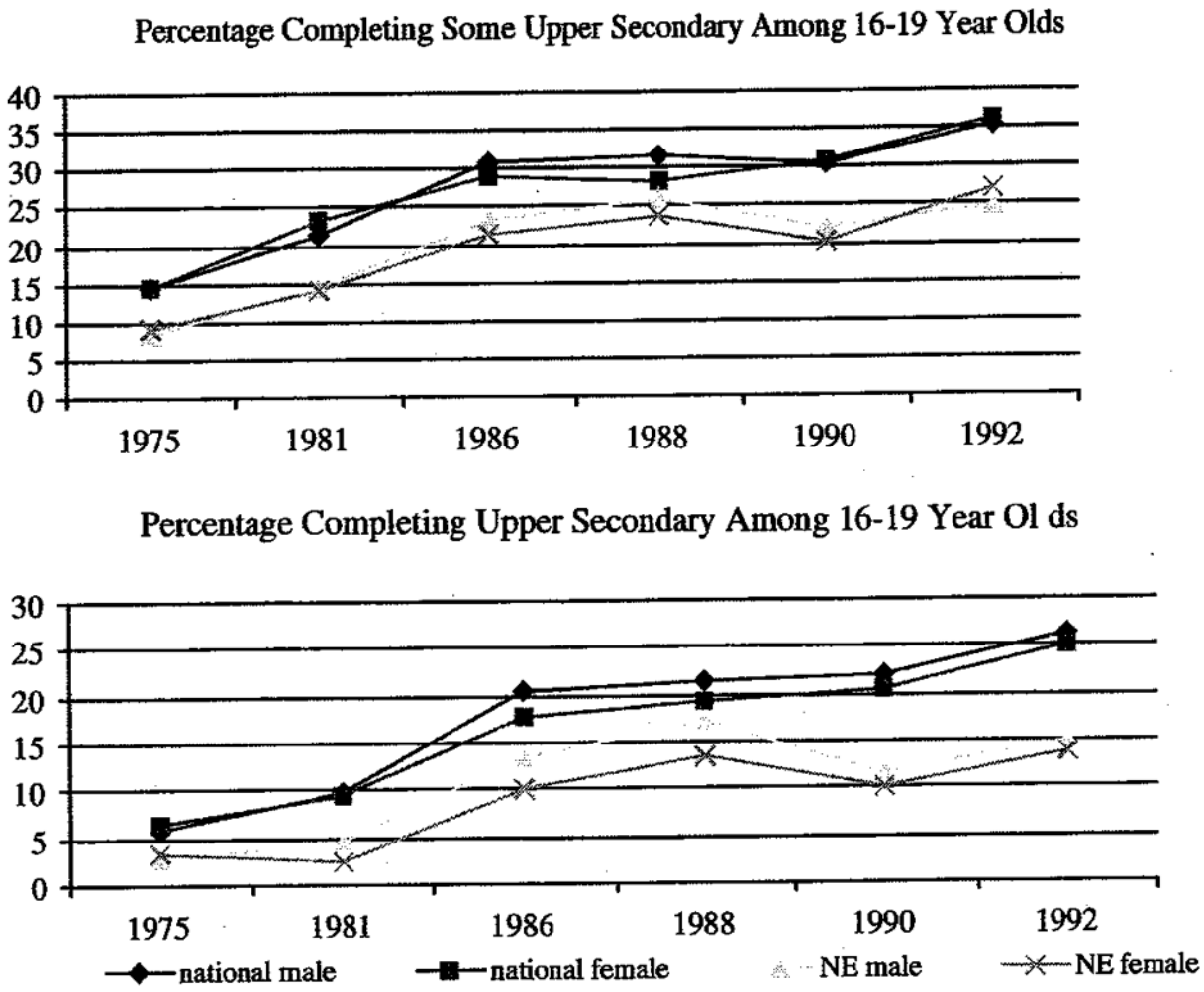


Fig. 1.

Secondary School Completion Rates for Thailand and Northeast Region, 1975–1992. *Note:* National Statistics Office. Socio-Economic Survey, 1975–1992. Bangkok: Ministry of Interior, National Statistics Office.

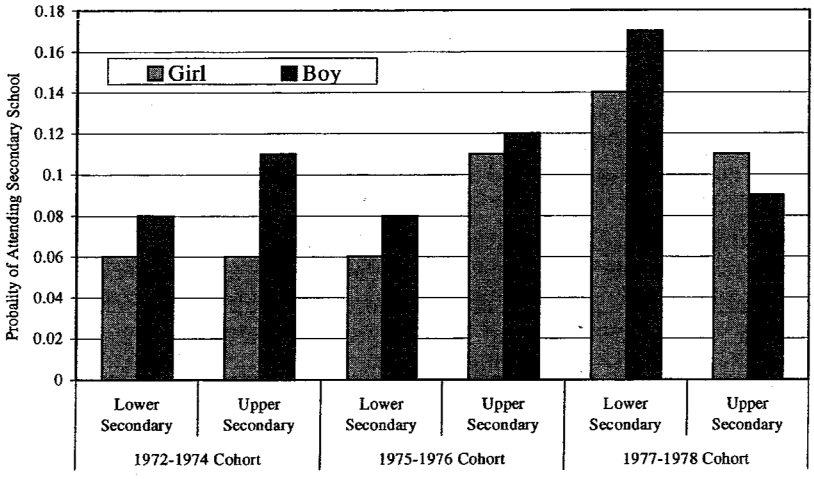
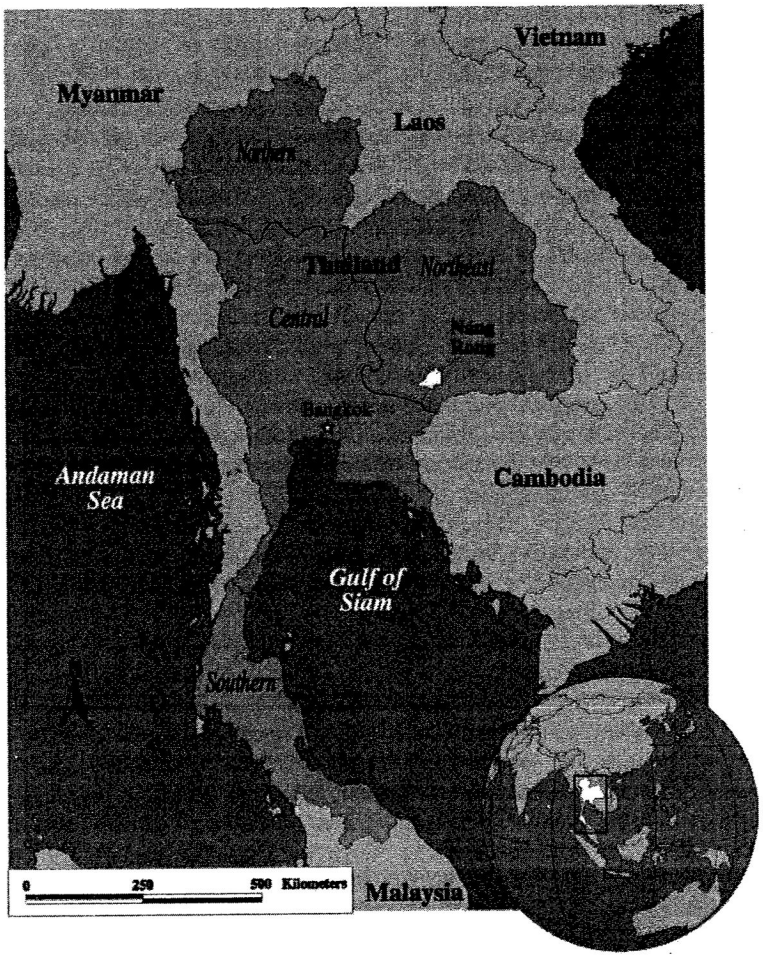


Fig. 2.

Predicted Probabilities Estimating Secondary Education Outcomes For Girls and Boys Across Cohorts (Estimated from Results in Table 3).



Map 1.

Index Map of Thailand, Northeast Region, and Nang Rong, the Study Site. *Note:* Base Map Prepared by the CEP-CPC Project, Carolina Population Center, University of North Carolina, Chapel Hill, North Carolina.

Table 1

Distribution of Educational Attainment by 1994 by Gender and Birth Cohort for 6–12 Year Olds in 1984 in Nang Rong, Thailand.

Variable	Primary (0–6) (%)	Lower Secondary (7–9) (%)	Upper Secondary (10 or more) (%)	All
Gender				
Young women	50.28	45.05	45.03	49.31
Young men	49.72	54.95	54.97	50.69
		$\chi^2 = 9.752$, df = 2, $p = 0.008$		
Birth cohort				
1972–1974	46.41	31.59	40.51	44.49
1975–1976	28.15	21.12	30.92	27.77
1977–1978	25.44	47.29	28.57	27.74
		$\chi^2 = 119.604$, df = 4, $p = 0.000$		
N	4,749	535	553	5,837
%	81.36	9.17	9.47	100.00
Gender and birth cohort				
Young women				
1972–1974 Cohort	47.07	32.37	35.34	44.82
1975–1976 Cohort	28.56	21.99	31.33	28.25
1977–1978 Cohort	24.37	45.64	33.33	26.93
		$\chi^2 = 61.216$, df = 4, $p = 0.000$		
N (Young women)	2,388	241	249	2,878
%	82.97	8.37	8.65	100.00
Young men				
1972–1974 Cohort	45.74	30.95	44.74	44.17
1975–1976 Cohort	27.74	20.41	30.59	27.31
1977–1978 Cohort	26.51	48.64	24.67	28.52
		$\chi^2 = 66.096$, df = 4, $p = 0.000$		
N (Young men)	2,361	294	304	2,959
%	79.79	9.94	10.27	100.00

Note: Values (except the *N* and *%* rows) represent percentages within the educational attainment category (column percentages).

Table 2

Distribution of Sibling Characteristics, Access to Secondary Schools, and Other Independent Variables for 6–12 Year Olds in 1984, Nang Rong, Thailand, Across Educational Attainment by 1994.

Variable	Primary (0–6) (%)	Lower Secondary (7–9) (%)	Upper Secondary (10 or More) (%)	All
Sibship size				
No siblings	2.21	2.99	2.17	2.28
One sibling	7.64	14.02	12.12	8.65
Two siblings	18.76	22.62	27.85	19.98
Three siblings	19.48	19.44	20.25	19.55
Four or more siblings	51.91	40.93	37.61	49.55
		$\chi^2 = 84.295$, df = 8, $p = 0.000$		
Any additional siblings 1984–1994 *	8.60	5.36	7.37	8.19
None	91.4	94.64	92.63	91.81
		$\chi^2 = 6.865$, df =2, $p = 0.032$		
Migration				
At least one temporary migrant in 1984	17.06	15.51	15.19	16.74
None	82.94	84.49	84.81 :	83.26
		$\chi^2 = 1.871$, df =2, $p = 0.392$		
By remittance				
Only remitting migrants	8.99	8.41	5.79	8.63
Only non-remitting migrants	6.82	6.17	7.96	6.87
Both remitting and non-remitting migrants	1.26	0.93	1.45	1.25
Neither	82.92	84.49	84.81	83.24
		$\chi^2 = 8.200$, df = 6, $p = 0.224$		
By sex				
Only female migrants	5.18	4.3	3.44	4.93
Only male migrants	8.76	9.91	9.58	8.94
Both male and female migrants	3.14	1.31	2.17	2.88
Neither	82.92	84.49	84.81	83.24
		$\chi^2 = 11.4980$, df = 6, $p = 0.074$		
Female migrants by remitting				

Variable	Primary (0–6) (%)	Lower Secondary (7–9) (%)	Upper Secondary (10 or More) (%)	All
Only female remitting migrants	4.70	3.74	2.35	4.39
Only female non-remitting migrants	3.22	1.68	3.07	3.07
Both remitting and non-remitting female migrants	0.40	0.19	0.18	0.36
No female migrants	91.68	94.39	94.39	92.19
		$\chi^2 = 12.3458$, df = 6, $p = 0.055$		
Male migrants by remitting				
Only male remitting migrants	5.98	5.23	4.7	5.79
Only male non-remitting migrants	5.33	5.23	6.15	5.4
Both remitting and non-remitting male migrants	0.59	0.75	0.9	0.63
No male migrants	88.1	88.79	88.25	88.18
		$\chi^2 = 3.281$, df = 6, $p = 0.773$		
School accessibility				
No School in Subdistrict	38.66	36.45	29.48	37.59
Secondary school in 1994 only	39.17	39.25	45.39	39.76
Secondary school in 1984 and 1994	22.17	24.30	25.14	22.65
		$\chi^2 = 18.811$, df = 4, $p = 0.001$		
Remoteness				
Not at all remote in 1984	31.96	37.94	42.86	33.54
Somewhat remote village	51.36	54.58	48.28	51.36
Very remote	16.68	7.48	8.86	15.09
		$\chi^2 = 65.706$, df = 4, $p = 0.000$		
Controls				
Land ownership **				
10 or fewer rai	54.56	45.22	41.23	52.43
11–24 rai	22.14	24.20	25.50	22.65
25 or more rai	23.30	30.58	33.27	24.92
		$\chi^2 = 52.994$, df = 4, $p = 0.000$		
Household owns at least a motorcycle ***				
Yes	4.47	11.92	26.35	7.35
No	95.53	88.08	73.65	92.65
		$\chi^2 = 292.479$, df = 2, $p = 0.000$		

Variable	Primary (0–6) (%)	Lower Secondary (7–9) (%)	Upper Secondary (10 or More) (%)	All
Household education				
One adult with less than 4 years of school	23.33	19.81	15.73	22.29
Two or more adults with less than 4 years of school	9.35	7.85	5.24	8.82
No adult with less than 4 years of school	67.32	72.34	79.02	68.89
		$\chi^2 = 35.411$, df = 4, $p = 0.000$		
Household size in 1984	7.07 (2.20)	6.67(2.25)	6.54(2.10)	6.98 (2.20)
N	4,749	535	553	5,837

Notes: Values represent percentages within educational attainment categories, except the “Household size in 1984” row where the numbers are the means and standard deviations (in parentheses). For the asterisked items, *N* is different from the above, due to the different number of missing values.

* Primary: 4,594; lower secondary: 504; upper secondary: 529; all: 5,627.

** Primary: 4,729; lower secondary: 533; upper secondary: 553; all: 5,815.

*** Primary: 3,604; lower secondary: 428; upper secondary: 444; all: 4,476.

Table 3

The Role of Gender, Birth Cohort, Sibship Size, Additional Siblings, Composition of Migrants With Respect to Remitting, School Accessibility, and Remoteness for Explaining Educational Attainment, Multinomial Logistic Regression Results (Odds-Ratios Presented).

Variable	Lwr vs. Prm	Upr vs. Lwr	Upr vs. Prm
Gender			
Young woman	0.814	1.547**	1.259
Young man	–	–	–
Birth cohort			
1972–1974	0.411***	2.823***	1.162
1975–1976	0.437***	2.950***	1.288
1977–1978	–	–	–
Gender and birth cohort interaction			
Young woman born in 1972–1974	0.907	0.409***	0.371***
Young woman born in 1975–1976	0.886	0.735	0.651
Young man or born in 1977–1978	–	–	–
Sibship size			
No siblings	2.432**	0.925	2.249*
One sibling	2.449***	1.083	2.653***
Two siblings	1.652***	1.373	2.269***
Three siblings	1.601**	1.219	1.953***
Four or more siblings	–	–	–
Additional siblings	0.647*	1.362	0.881
Composition of migrants with respect to remitting			
Some remitting migrants	1.520	0.877	1.333
Only non-remitting migrants	0.807	2.149	1.735
Neither	–	–	–
Composition of migrants with respect to gender and remitting			
Any remitting female migrants	0.579	0.843	0.488
No remitting female migrants at all	–	–	–
Non remitting male migrants only	2.373	0.530	1.259

Variable	Lwr vs. Prm	Upr vs. Lwr	Upr vs. Prm
Any other than non-remitting male migrants	–	–	–
School accessibility			
No secondary school in 1984 or 1994	–	–	–
Secondary school in 1994 only	0.921	1.402	1.291
Secondary school in both 1984 and 1994	0.853	1.217	1.038
Remoteness			
Not at all remote in 1984	–	–	–
Somewhat remote in 1984	0.919	0.795	0.731
Very remote in 1984	0.297***	1.302	0.387**
Controls			
Land ownership			
10 or fewer rai	0.685**	0.891	0.611***
11–24 rai	–	–	–
25 or more rai	1.434***	0.945	1.356*
Household owns at least a motorcycle			
Yes	2.674***	2.565***	6.857***
No	–	–	–
Household education			
One adult with less than 4 years of school	0.674**	0.915	0.617***
Two or more adults with less than 4 years of school	0.822	0.827	0.679
No adults with less than 4 years of school	–	–	–
N		4311	
Log likelihood		−2432.85	
Ward X^2		4318.82***	
Pseudo R^2		0.10	

* p ≤ 0.1.

** $p \leq 0.05$.

*** $p \leq 0.01$.

Res Sociol Educ. Author manuscript; available in PMC 2016 August 26.

Table 4

The Role of Birth Cohort, Sibship Size, Additional Siblings, Composition of Migrants With Respect to Remitting, School Accessibility, and Remoteness for Explaining Educational Attainment, Multinomial Logistic Regression Results. Young Woman And Young Man Compared (Odds-Ratios Presented).

Variable	Young Men			Young Women		
	Lwr vs. Prm	Upr vs. Lwr	Upr vs. Prm	Lwr vs. Prm	Upr vs. Lwr	Upr vs. Prm
Birth cohort						
1972–1974	0.441***	2.572***	1.135	0.349***	1.190	0.416***
1975–1976	0.460***	2.769***	1.273	0.369***	2.222***	0.820
1977–1978	–	–	–	–	–	–
Sibship size						
No siblings	1.973	0.742	1.463	2.894**	1.095	3.169**
One sibling	2.723***	0.800	2.179**	2.236***	1.459	3.264***
Two siblings	1.739**	1.280	2.226***	1.549*	1.475	2.285***
Three siblings	1.350	1.001	1.351	2.121***	1.437	3.048***
Four or more siblings	–	–	–	–	–	–
Additional siblings	0.509*	1.851	0.942	0.784	1.034	0.811
Composition of migrants with respect to remitting						
Some remitting migrants	1.240	0.722	0.896	1.977	0.943	1.864**
Only non-remitting migrants	0.882	1.577	1.391	0.714	3.091	2.206*
Neither	–	–	–	–	–	–
Composition of migrants with respect to gender and remitting						
Any remitting female migrants	0.545	1.531	0.835	0.502	0.574	0.288*
No remitting female migrants at all	–	–	–	–	–	–
Non remitting male migrants only	2.479	0.521	1.292	2.100	0.576	1.209
Any other than non-remitting male migrants	–	–	–	–	–	–
School accessibility						
No secondary school in 1984 or 1994	–	–	–	–	–	–
Secondary school in 1994 only	0.719	1.628	1.170	1.280	1.148	1.469
Secondary school in both 1984 and 1994	0.700	1.595	1.116	1.087	0.845	0.918
Remoteness						

Variable	Young Men			Young Women		
	Lwr vs. Prm	Upr vs. Lwr	Upr vs. Prm	Lwr vs. Prm	Upr vs. Lwr	Upr vs. Prm
Not at all remote in 1984	–	–	–	–	–	–
Somewhat remote in 1984	0.876	0.840	0.735	0.952	0.755	0.718
Very remote in 1984	0.289***	1.374	0.398**	0.288**	1.320	0.380*
Controls						
Land ownership						
10 or fewer rai	0.905	0.691	0.625**	0.435***	1.324	0.576***
11–24 rai	–	–	–	–	–	–
25 or more rai	1.146	1.277	1.463*	1.775***	0.697	1.237
Household owns at least a motorcycle						
Yes	3.518***	2.062***	7.253***	1.938***	3.385***	6.560***
No	–	–	–	–	–	–
Household Education						
One adult with less than 4 years of school	0.772	0.790	0.610**	0.544**	1.138	0.619**
Two or more adults with less than 4 years of school	0.892	0.711	0.634	0.714	1.065	0.760
No adults with less than 4 years of school	–	–	–	–	–	–
N		2214			2097	
Log likelihood		−1326.25			−1081.95	
Ward X^2		1660.30***			1465.92***	
PseudoR^2		0.10			0.11	

* $p \leq 0.1$.

** $p \leq 0.05$.

*** $p \leq 0.01$

Res Sociol Educ. Author manuscript; available in PMC 2016 August 26.

Table 5

The Role of Gender, Sibship Size, Additional Siblings, Composition of Migrants With Respect to Remitting, School Accessibility, and Remoteness for Explaining Educational Attainment, Multinomial Logistic Regression Results. Three Birth Cohorts Are Compared (Odds-Ratios Presented).

Variable	1972–1974 Birth Cohort Only			1975–1976 Birth Cohort Only			1977–1978 Birth Cohort Only		
	Lwr vs. Prm	Upr vs. Lwr	Upr vs. Prm	Lwr vs. Prm	Upr vs. Lwr	Upr vs. Prm	Lwr vs. Prm	Upr vs. Lwr	Upr vs. Prm
Gender									
Young woman	0.745	0.641	0.478***	0.727	1.117	0.812	0.798	1.559**	1.245
Young man	–	–	–	–	–	–	–	–	–
Sibship size									
No siblings	1.288	0.880	1.133	0.750	2.246	1.684	3.493***	1.431	4.999***
One sibling	4.506***	0.395**	1.779	1.835	1.383	2.536***	2.059**	2.503**	5.153***
Two siblings	2.031**	0.760	1.544**	0.966	2.677**	2.586***	1.834**	2.077**	3.809***
Three siblings	2.518***	0.585	1.472*	1.413	1.847*	2.609***	1.127	2.212**	2.492***
Four or more siblings	–	–	–	–	–	–	–	–	–
Additional siblings	0.674	0.805	0.543*	0.442	2.120	0.937	0.739	2.130*	1.573
Composition of migrants with respect to remitting									
Some remitting migrants	1.587	0.646	1.025	1.669	1.344	2.243*	1.493	0.886	1.323
Only non-remitting migrants	1.393	0.914	1.272	0.722	4.484	3.237**	0.327	2.188	0.716
Neither	–	–	–	–	–	–	–	–	–
Composition of migrants with respect to gender and remitting									
Any remitting female migrants	0.770	0.413	0.318	0.476	0.947	0.451	0.444	1.363	0.605
No remitting female migrants at all	–	–	–	–	–	–	–	–	–
Non remitting male migrants only	2.513	0.471	1.182	1.132	0.753	0.852	4.823	0.824	3.977
Any other than non-remitting male migrants	–	–	–	–	–	–	–	–	–
School accessibility									
No secondary school in 1984 or 1994	–	–	–	–	–	–	–	–	–
Secondary school in 1994 only	0.873	2.210***	1.929**	0.485***	1.953**	0.948	1.286	0.815	1.048
Secondary school in both 1984 and 1994	0.930	1.311	1.219	0.575	1.177	0.677	1.016	1.318	1.339
Remoteness									
Not at all remote in 1984	–	–	–	–	–	–	–	–	–

Variable	1972–1974 Birth Cohort Only			1975–1976 Birth Cohort Only			1977–1978 Birth Cohort Only		
	Lwr vs. Prm	Upr vs. Lwr	Upr vs. Prm	Lwr vs. Prm	Upr vs. Lwr	Upr vs. Prm	Lwr vs. Prm	Upr vs. Lwr	Upr vs. Prm
Somewhat remote in 1984	0.911	0.809	0.737	0.768	0.866	0.666	0.977	0.763	0.745
Very remote in 1984	0.315**	1.439	0.454	0.191***	1.176	0.224**	0.335***	1.345	0.451
Controls									
Land ownership									
10 or fewer rai	0.667	1.017	0.678*	0.463**	1.369	0.633**	0.847	0.615*	0.521**
11–24 rai	–	–	–	–	–	–	–	–	–
25 or more rai	1.243	0.889	1.105	0.920	1.577	1.451**	2.162***	0.824	1.783*
Household owns at least a motorcycle									
Yes	2.435**	3.179***	7.741***	3.205***	1.897*	6.080***	2.694***	2.716***	7.317***
No	–	–	–	–	–	–	–	–	–
Household education									
One adult with less than 4 years of school	0.553*	1.315	0.727	1.111	0.512	0.569**	0.576**	0.881	0.508**
Two or more adults with less than 4 years of school	1.035	0.723	0.748	1.146	0.616	0.706	0.517*	1.045	0.540
No adults with less than 4 years of school	–	–	–	–	–	–	–	–	–
N		1807			1232			1272	
Log likelihood		−881.51			−671.80			−841.26	
Ward X^2		1408.16			547.22***			606.49***	
Pseudo R^2		0.11			0.10			0.09	

* $p \leq 0.1$.

** $p \leq 0.05$.

*** $p \leq 0.01$.

Res Sociol Educ. Author manuscript; available in PMC 2016 August 26.