Gender at Work in Economic Life

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Women and Work in a Brazilian Agricultural Frontier

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INTRODUCTION

A frontier area is not only a new biophysical environment but a new socioeconomic context for those arriving; every individual becomes part of new communities, social networks, associations, and conflicts. Agricultural frontiers also tend to be areas where there is an unbalanced demographic distribution, usually favoring men, and to be areas characterized by abundance of land and scarcity of labor. Migrating to a frontier area thus may bring new gender roles to women, as a variety of socioeconomic and cultural factors interact with one's household composition and previous experiences.

Studies of women in agricultural frontier areas in South America have demonstrated that women there may increase their participation in agricultural and household decision making in comparison to their previous situation in their places of origin (Meertens 1993). In other cases, women will experience a diminished access to resources and land security and an increased trend toward "housewifization" (Townsend 1993a), that is, the confinement of women to reproductive roles and house chores. Being confined to the household realm thus tends to decrease women's power within the household economic life and in the public arena (Townsend 1993a, 1993b). However, as diverse as other aspects of frontier life, gender roles vary within and across frontier settlements. Indeed, the few but important studies on women and frontier areas in South America confirm that inferences about women's work and role in frontier areas need to be grounded in empirical research.

In this chapter, we examine the role of gender in the patterns of family labor allocation and land use among household farmers on a frontier area in the Brazilian Amazon settled since 1970. Our discussion is based on data collected among 402 households in Eastern Amazon in 1998.[1] More specifically, we focus on the microlevel determinants of female household heads' participation in agricultural activities. In this chapter, "female household head" refers to the

woman who is married to the male head. We examine the degree to which these women's participation in farm activities is affected by individual and household characteristics, household size and composition, patterns of land use (e.g., annual crops versus perennial crops versus pasture) and extrafamilial labor. Moreover, by taking into account variations in household characteristics, women's characteristics (e.g., age, education), and their economic role (e.g., off-farm activity) we examine the participation of female household heads in the household decision-making processes that relate to farm activities, household expenditures, and use of birth control methods. In presenting and discussing our results, we aim to contribute to the broader literature on women and agricultural work, especially to the still-sparse literature on women and frontiers and on joint household heads.

This chapter is organized in three parts. First, an overview of women and frontiers in South America and background information on Brazilian Amazon colonization are presented. The second part includes a description of the study area, data collection and processing, and results. The third part discusses the key topics of the chapter: household characteristics, land use and labor allocation, and women's participation in farm work and household decision making. Lastly, our conclusions are presented.

WOMEN AND FRONTIERS IN SOUTH AMERICA

As a family settles on a new farm lot, the initial work in a tropical frontier necessarily involves clearing of the forest, an activity requiring a large amount of labor. Subsequent land clearing will be affected by the households' consumption needs and production possibilities, in addition to macroeconomic opportunities (markets, credits, prices) and constraints (lack of roads, transport costs, market). As members of the household age and household composition changes over time, household farm strategies also change.

Migrating to a frontier may bring new roles to women but can confine them to old ones. Reviewing the sparse bibliography on women's agricultural participation in frontier areas in South America, Townsend (1993a, b) observes that overall there are at least four different processes changing gender roles in these areas. In her area of study (a Colombian frontier area), despite scarcity of labor, women are mainly confined to their reproductive roles when they migrate to the frontier. This pattern is further reinforced by the out-migration of daughters to cities, the unbalanced sex ratio favoring men, and a pattern of land distribution in which land is titled to men rather than to the couple. Out-migration of daughters to urban areas in search of off-farm jobs and/or schooling tends to increase the workload of female household heads in a sociocultural context in which domestic chores are considered women's work. Meertens studied another contrasting frontier area in Colombia, where women have increased their participation in agricultural activities and in

household decision-making processes. Most of the women in this area claim that their reproductive roles are more valued there than they were in their place of origin (see Meertens 1993). In this second Colombian example, women also play an important role in cattle raising.

The differences between these two Colombian frontier areas are partially explained by cultural differences as well as by economic ones. Meertens's study area was mainly composed of Andean family households, which are reported to be much more egalitarian (see also Hamilton 1998; Weismantel 1988) than Latino ones. As well, livestock and trading are considered women's activities rather than men's among Andean groups. Moreover, the second site is also an area where profits generated by coca cultivation have supported the expansion of livestock activities, permitting women to remain in charge of several activities—agriculture, ranching, and trading. Yet most women in lowland Bolivia, despite also coming from an Andean culture, lose control over land resources and also the income generated by trading and care of small livestock when moving to a frontier area (Townsend 1993b). Finally, Townsend mentions the example of the eastern Brazilian Amazon, where "housewifization" of women is a consequence of capitalist penetration in the farming system, as exemplified by the work of Lisansky (1979; see also Hecht 1985b). In this case, the expansion of cattle ranching activities, greatly supported by government development programs, displaced smallholders, making both men and women landless. The few jobs available in the ranch enterprises are mainly for men, as cowboys. In this context, women mainly work as housewives, maids, and, in many cases, prostitutes (see Lisansky 1979; Hecht 1985b).

Our study case differs from the ones described by Lisansky and Hecht. It is a settlement of smallholders who have secure land rights. Although there has been an increase in pasture area during the past fifteen years, this activity is undertaken mainly by small and medium farmers. Thapa, Bilsborrow, and Murphy (1996) present a similar case on the Ecuadorian Amazon frontier, also in a settlement of small farmers. Drawing on data collected from 367 households in 1990, they discuss the determinants of women's agricultural participation. The authors show that women's participation in farm activities is strongly affected by the type of land use. Greater areas in perennial crops (coffee) rather than pasture increase the odds of women's labor. Perennial crops require a greater amount of household labor, including women's. Women with previous experience in agriculture are more likely to work on the farm, as well as those who have more children, even young ones. As pointed out by the authors, women here are doubly burdened by their reproductive and agricultural roles. Off-farm income has a strong effect of reducing women's participation in agricultural work, and higher educational level and an older age of the women have only a slight effect on their work loads (ibid., 1327). In summary, "housewifization" of women in this context is a function of land use (pasture versus coffee), higher income, and age. In the one side, pasture expansion, although

leading to higher deforestation, lessens women's farm workload; conversely, it may undermine their decision-making status within the household. Less participation in agricultural activities can indeed represent less workload and higher economic and social status for women; however, the consequences of "housewifization" for the internal dynamics of the households' decision making are still not well understood.

GOVERNMENT COLONIZATION PROGRAMS IN THE BRAZILIAN AMAZON

In 1970, with financial loans from international banks and multinationals, the Brazilian government started a new "modernization" program for the country as a whole, and especially for the Amazonian region (see figure 12.1). The *Plano de Integração Nacional* (PIN—The National Integration Plan) was created and was aimed at interconnecting the various parts of the Amazon region internally and with the rest of the country while promoting human occupation

FIGURE 12.1
Study area.

of the region through government colonization programs. These colonization plans were a conservative political alternative to calls for land reform by landless people from several parts of the country. They were also a strategy to guarantee national security, as it was believed that Brazil could lose this part of its national territory and its natural resources to foreign countries if it was not fully occupied and developed. A major feature of the national integration plan was the construction of a road network to integrate Amazonia from east to west by means of the Transamazon Highway, and from north to south by means of the Cuiabá-Santarém Highway (in parallel to the Belém-Brasilia connection). Once completed, these roads would then connect most of the region, previously accessible only by boat or airplane. The first part of the plan proposed colonization by small farmers and livestock investment, each one fulfilling a role in a larger scheme that involved roads, urbanization, and multipurpose infrastructure without any precedent in Brazilian history.

The colonization plan aimed to settle 100,000 families (over five years) in 100-hectare lots along the Transamazon Highway. According to the plan, small farmers would specialize in food crops for the first three years, and each year colonists would plant more of their land in permanent and cash crops, such as coffee, sugar, black pepper, and *guaraná*. Each colonist was to also leave 50 percent of his total area as a reserve of untouched forest. The bulk of candidates for colonists were landless people from the Northeast region and other parts of the country. Candidates from the South and Southeast regions, the most economically developed regions of Brazil, were considered essential as "cultural brokers," as governmental planners believed colonists from these regions could bring innovative technologies to the area and would help "modernize" colonists from other parts of the country. A large family, literacy, and extensive agricultural experience were also considered essential characteristics of the preferred candidates. They were also supposed to be no younger than twenty-five or older than forty-five years old (Moran 1981). Land titles were given to men and rarely to women.[2]

In order to attract settlers, the government promised a variety of benefits, such as bank credits for subsistence crops, six months of minimum wage at the time of arrival, food subsidies, school, medical and health services, and transportation, storage, and commercialization of the colonists' production (ibid.). However, the first three years of colonization were considered unsuccessful, and they were interpreted as a failure of the plan (Browder 1988; Hecht 1985a; Ianni 1979; Mahar 1979; Velho 1972; Schmink and Wood 1992; and others). "Blaming the victim" (Wood and Schmink 1979) is probably the best expression to describe the end of the government-directed small farmer colonization projects in the Amazon. After 1974, the government changed its focus away from small farm colonization and started financing large enterprises, such as cattle ranches, mining, lumber, and large-scale agriculture for export. Fewer and fewer resources were devoted to colonization projects. By

1980, INCRA (*Instituto Nacional de Colonização e Reforma Agrária*)—the governmental institution responsible for the colonization project—recognized that fewer than 8,500 families had been settled in the Amazon through their program (Miranda 1990: 41).[3]

THE STUDY AREA

The Altamira region was one of the most important foci of the governmental colonization program briefly described above. The majority of farm properties were initially settled between 1970 and 1978, but farm plot occupation continues up to this date. The first colonists were located in plots of about 100 ha (500 m × 2,000 m) along the highway or along its feeder roads, and close to Altamira town. New waves of migrants moved further down the highway or further along the feeder roads. The pattern of colonization exhibits the "fish-bone" pattern of many land-distribution colonization projects in the Brazilian Amazon (Moran, Brondizio, Mausel, and Wu 1994).

In Altamira, which is among the oldest agricultural frontiers in the Amazon, about 30 percent of the original colonists remain on their plots. These farmers have settled permanently, breaking the pattern of continued migration. In many ways, the region of Altamira is no longer a frontier but a settled group of people, although new plots continue to be opened at the ends of feeder roads by farmers driven by their own needs and efforts as well as by farmers settled by governmental agencies.[4]

Our study area was defined by a group of approximately 3,800 farm lots arranged according to different adjacent projects implemented by INCRA during the past thirty years. It cuts across the municipalities of Altamira, Brasil Novo, and Medicilândia, in the state of Pará (see figure 12.1) and encompasses an area of about 355,000 ha stretching from about 18 km to 140 km of the Transamazon Highway west of Altamira town.

In terms of economic and land use/agriculture phases, the history of the study area can be divided into three main periods: 1972–1978: subsistence crops such as rice and beans were dominant in the region; 1978–1988: highest production of perennial crops such as cocoa and black pepper; 1988–present: cattle ranching expansion and coexistence with other farming activities (Castellanet, Simões, Celestino Filho 1994).

DATA COLLECTION AND DATA PROCESSING

In 1998, two survey instruments were used to collect information from a sampled 402 farmers, about 1,986 individuals, along the Transamazon Highway and its feeder roads. One was related to household social and demographic characteristics, and the other was related to environmental characteristics and land use history of the property. The fieldwork team consisted of a pair of interviewers. The former survey was usually carried out with the female household head, and the latter with the male household head. The interviews lasted about 1.5 to 2.5 hours each, with additional time taken to visit the lot and for conversations addressing issues raised during interviews.[5]

We used a stratified sampling frame for selecting properties and households according to the time of settlement. Farm plots were selected according to exploratory data analysis of five land use/cover maps from aerial photomaps (1970 and 1978) and from Thematic Mapper satellite images (1985, 1988, 1991, 1996), on which a property grid layer was overlaid (see also McCracken et al. 1999; Brondizio et al. 2002). The descriptive and statistical analysis presented here was carried out using the Access database program and Stata 5.0 statistical software.

For this chapter, several models were developed to analyze the microlevel determinants of female household heads' participation in domestic tasks and childcare, gardening and yard animals, cattle care, agricultural tasks, and off-farm activities.[6] We coded each activity with a 1 if the woman was involved in the activity and a 0 otherwise. We then carried out a multivariate logistic regression analysis on individual characteristics of these women, their households, household composition, agricultural emphasis, and the use of extrafamilial labor. We present our results in the form of odd ratios in table 12.1. Values above 1 imply a greater probability of women's participation in any of the listed activities, and values below 1 represent less probability associated with the variable category. We aggregated the agricultural activities into two groups, "moderate" and "heavy." The former includes harvesting, planting, weeding, and product processing (making manioc flour, drying cocoa and/or pepper). The latter includes felling trees and burning. Our category of "cattle care" also includes milking.

We ran six models, one for each of the activities, each considering four sets of independent variables.[7] Our first set of independent variables included women's demographic characteristics, such as age, age squared, and years of schooling. As discussed above, among the study population, domestic and agricultural activities are associated with gender and age. We predicted that years of schooling would affect women's participation on agricultural work and off-farm activities; that is, that more years of schooling would lower a woman's probability of working in agricultural activities and raise her probability of having off-farm activities. The second set of variables included some characteristics of the women's husbands and of their household, such as whether her husband worked off-farm, the regional origin of the household, and religion. Our third set of variables included those related to household composition. We predicted that a higher number of children under age five in the household would reduce women's participation in farm and off-farm activities. Overall, we also predicted that a higher number of females age fifteen to nineteen in the household would decrease female head participation in domestic tasks, and the number of males age twenty to fifty-nine would decrease

her probability of working in agricultural activities. Our last set of variables included characteristics of the farm and extrafamilial labor. We predicted that a greater percentage area of the farm in crops (annuals and perennials) would increase women's probability of work, and a greater percentage area in pasture would decrease women's demand to work in the farm. We predicted that extrafamilial labor would decrease women's workload in farm activities but would increase their domestic tasks.

RESULTS

Household Characteristics

Out of our sample, about 34 percent of the farmers obtained their land directly from INCRA. Those arriving after 1975 usually bought their farms from earlier colonists or farmer owners, and a small number obtained their properties through inheritance. The time of occupation of the farm plots varied between one and thirty years, including a few (thirty-two farmers) who were in the area before the colonization program (i.e., before 1970). The mean area occupied by our informants is 95.5 ha lots, but there are a few larger landholders (*glebistas*) who have areas of 300–500 ha.

The observed pattern in family size and organization is much closer to the current Brazilian urban pattern than the one expected for a rural area; that is, it is nuclear and relatively small. The current household size is about 4.6 individuals, with a minimum of one individual and a maximum of thirteen. The mean size of household families is similar across all households; that is, there is no significant difference in household size among new and older settlers. Longer-residing settlers tend to have a slightly larger household (<1975 = 5.9) than new ones (>1990 = 4.5). About 80 percent of households are nuclear, formed by a couple or widow and their/her children. In a few cases, we found couples without children, and we found only three cases of single individuals. Couples without children typically were older, and their children had already left the household. In the few cases observed of multiple families living under the same roof, it is usually a son who brings his wife to live in his parent's house, and rarely a daughter who brings her husband to her parents' house. Fewer still are the cases of extended household families, and most of them are formed by an old couple or widow and their/her grandchildren. Marriage is the most common reason (about 68 percent) to leave a parents' household, for both sexes, followed by search for jobs (about 11 percent), schooling (about 10 percent), and other reasons (11 percent). On the other hand, most of the incorporation into the household is through birth (about 72 percent), with marriage representing only about 10 percent.

Figure 12.2 shows the current age and sex distribution of the study population. Overall, this figure illustrates two main processes taking place in the

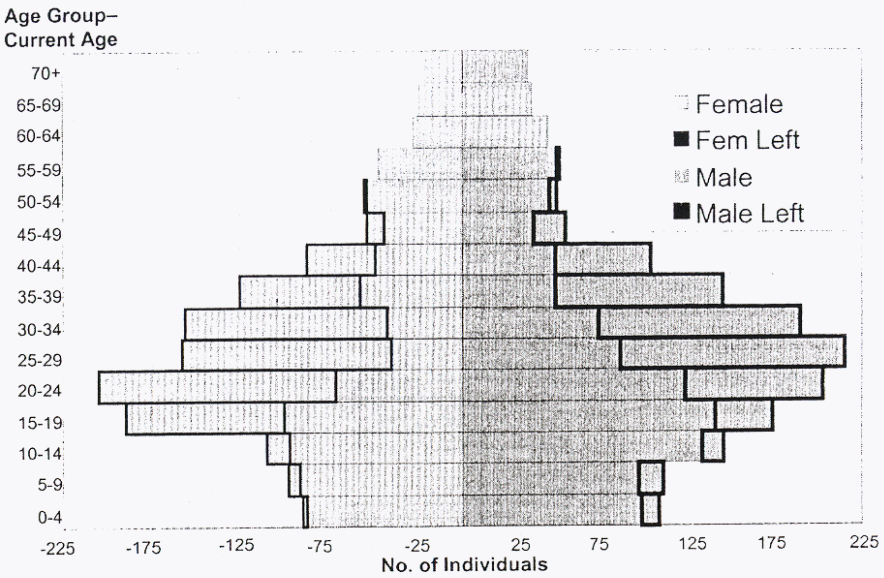

FIGURE 12.2
Current age/sex of household members (original and joining) and children who left home.

area: the general aging process of households on this by-now thirty-year-old frontier, and the overall loss of labor from children as these become young adults and leave their natal households, especially women. In all five-year age intervals there are more males than females, which seems to be a common pattern observed in frontier areas. The sex ratios of children remaining on the farm by age group indicate a differential gender pattern associated with staying in or leaving the domestic unit. Within the age group of fifteen to nineteen, more than half of all daughters no longer live on the farm lot, compared to only 16 percent of their brothers. By age twenty to twenty-four, 81 percent of daughters have left, but 41 percent of sons remain (see also McCracken, Siqueira, Moran, and Brondizio 2002).

The current sex ratio is much more balanced than the initial migration flows to the region. Figure 12.3 illustrates what could be called the "gender selectivity process" on arrival. When arriving on the frontier, households are composed of predominantly young members, with slightly more males than females. This pattern of male-dominated sex ratios, even among infants and children and continuing through the early twenties, suggests selectivity in favor of male labor as families migrate to the frontier. Among children who were age fifteen to nineteen when their parents arrived on the farm lot, only 80 percent of daughters, compared to 94 percent of sons, came as part of the household. Among the age group twenty to twenty-four, 73 percent of sons

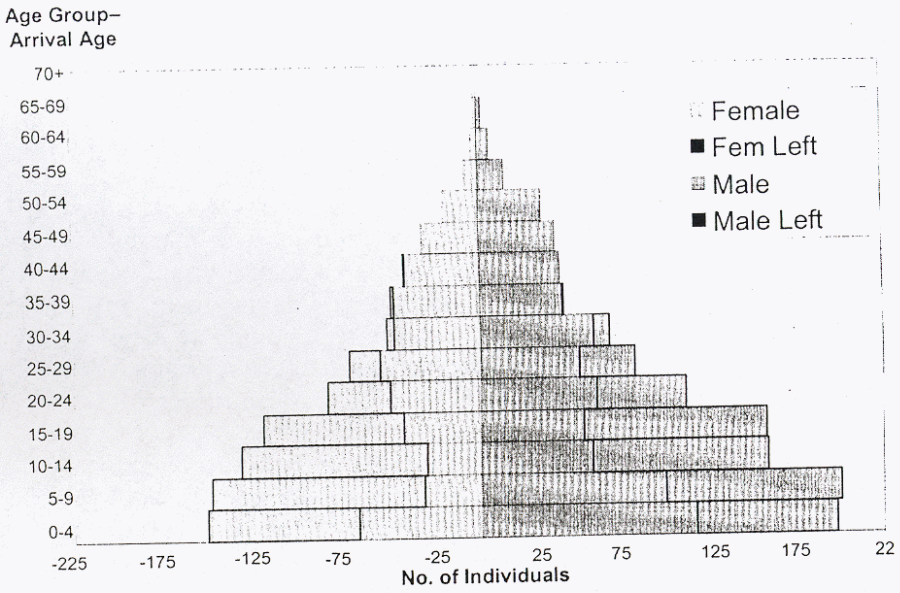

FIGURE 12.3
Age/sex of household members at time of arrival.

came with their parents to the farm, but only 45 percent of daughters did the same.

As discussed elsewhere (see McCracken and Siqueira n.d.), perhaps the most important change taking place at the level of household is related to reproductive behavior, that is, the number of children and women in their reproductive years (age fifteen to forty-nine) are bearing. For the past twenty years, we observed a rapid fertility decline among the women in this frontier area. For the late 1960s and early 1970s, fertility for women in the study was very high, on the order of ten to eleven children per woman. However, these higher levels of fertility observed were probably inflated by the fact that government programs favored large families in the initial years of colonization. By the 1980s, fertility declined to about 4.3 children, and we observed that by age twenty-nine, more than 40 percent of women had been sterilized by tying their tubes. Sterilization is a common procedure elsewhere in Brazil, but it was unexpected on a frontier area due to the reported scarcity of labor. The current fertility rate is still between 0.5 and 0.8 children above the rest of rural Brazil, but the decline in fertility observed here is as important as the rapid fertility decline observed in the country as a whole.

Land Use, Labor Allocation, and Women's Participation in Farm Work

Cattle ranching activities are nowadays considered the most profitable and economically secure activity by local farmers. As in other parts of the Amazon

Basin (and not only in Brazil), small farmers regard cattle ranching as the primary avenue to a higher economic and social status (Pichon, Marquette, and Murphy 2002). Independent of their time of arrival in the region, the majority of our informants (about 95 percent) have some area in pasture, whose extent varies between 1 and 370 ha. The mean area in pasture is about 41 ha, and the mean size of the cattle herd is sixty-eight head. However, the variation among farmers is also great, with a minimum of 1 and maximum of 2,000 animals. Most of the cattle production is for beef, and only about 20 percent of our informants sell fresh milk or cheese to local urban markets. Compared to agricultural activities, cattle demand a smaller amount of labor once the pasture is established. Care of cattle is usually a men's activity that starts at an early age. For the ten- to fourteen-year-old age group, about 61 percent of male household members are already involved with cattle care, but only 18 percent of females in this age interval are. The highest percentage of male participation in this activity is in the fifty to fifty-four age group, with about 79 percent of all males carrying out this activity. The highest female participation rate in caring for cattle is in the age group of thirty-five to thirty-nine years old (about 29 percent) (see figure 12.4). Milking cows is also a men's activity, but women are usually involved in the process of making cheese. The overall women's participation in milking/caring for cattle is 22 percent.

Our data suggest that on farms that have an emphasis on cattle ranching, female household heads tend to work less in agricultural activities and more in domestic tasks (table 12.1). This sign of "housewifization," however, is not statistically significant. The number of men between twenty and fifty-nine years old in the household does affect women's participation in cattle care. For each man between twenty and fifty-nine years old in the household, the probability of the female household head working in this activity decreases by about 35 percent. We clearly observe a "work substitution" effect; that is, those men are doing work that otherwise the female household head would probably do. Presence of temporary labor also suggests a reduction in women's cattle work, but it is not statistically significant. If her husband has an off-farm activity, a woman's probability of cattle work decreases enormously (82 percent according to our analysis).

Felling forest and/or cleaning off secondary succession vegetation from a pasture area are mainly done by men and involve heavy physical labor, given the fact that most of these activities are done manually. Pasture maintenance is done all year long and also often with the help of hired labor. Fifty percent of our sample households reported hiring temporary labor to carry out this job and/or to help them do it. The overall women's participation in these "heavy" agricultural tasks is 32 percent. The number of children in the household under five years old and the number of men between twenty and fifty-nine years old reduce a female's probability of working on this activity by 40 percent and 30 percent, respectively (table 12.1). It seems that care of children

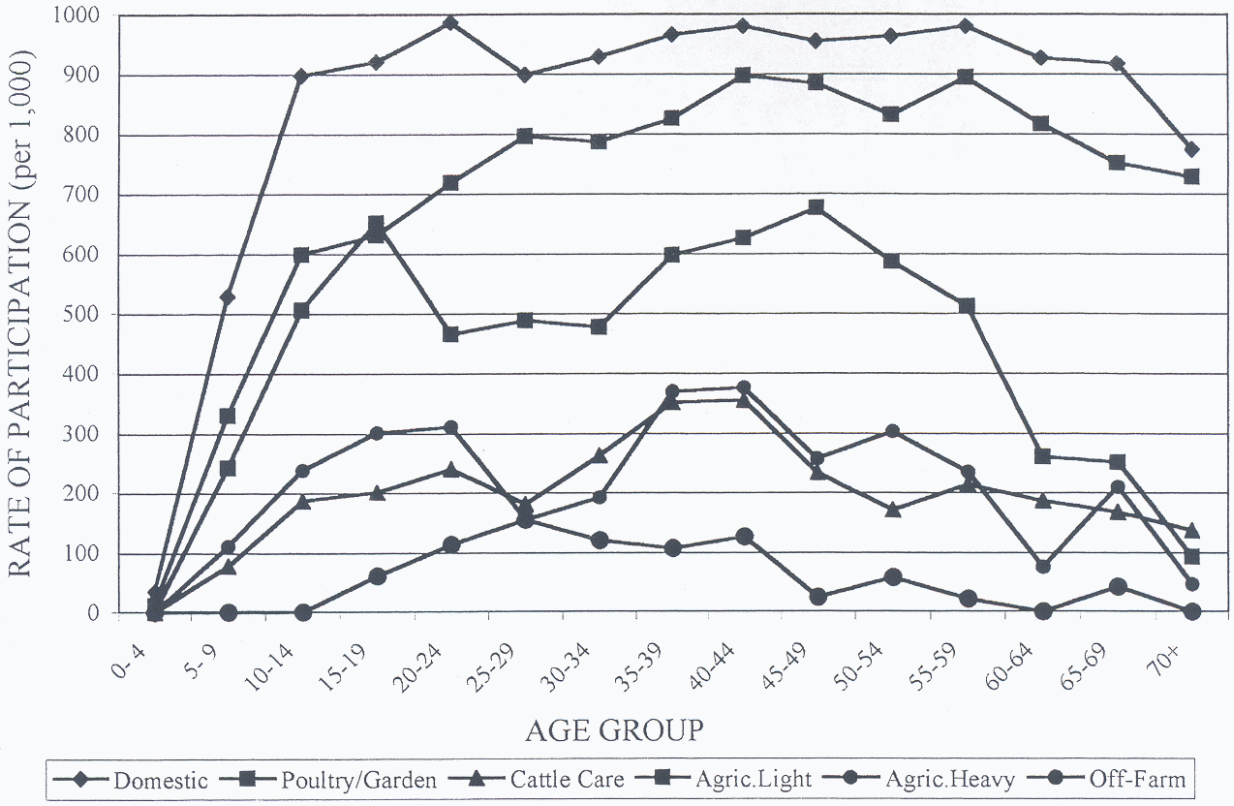

FIGURE 12.4
Age-specific rates of participation, females, Transamazon Highway.

Table 12.1. Predictors of Female Household Head Work in Domestic, Farm, and Off-Farm Activities

	Odds Ratios					
Dependent Variables	*Domestic Task*	*Gardening Poultry*	*Cattle Care*	*Agric. Tasks "Moderate"*	*Agric. Tasks "Heavy"*	*Off-Farm Activity*
Independent Variables						
Individual						
Age	1.1112	1.1043	1.1768**	1.2534**	1.1574*	1.4265*
Age-squared	0.9984	0.9987*	0.9980**	0.9971**	0.9979**	0.9954**
Yrs. 0f Schooling	1.1276	0.8685**	1.0130	0.9430	0.8870*	1.5069**
Household/Husband						
Husband Works Off-Farm	0.0892**	0.3065*	0.1806**	P0.4882	0.9258	2.7811
Regional Origin of HH: NE	0.6290	0.8692	0.6236*	1.0155	0.9801	1.2512
Religion of HH: Protestant	0.5023	0.7962	1.0249	0.8384	0.9021	4.9140**
Household Composition						
No. of Children <5	0.8180	0.9404	1.2261	0.8865	0.6183**	0.8594
No. of Children 5–9	0.9436	1.2801	0.7777	0.9359	0.9651	0.7523
No. Females Age 10–14	0.7236	0.8197	1.1480	1.4305	1.4355	0.5127
No. Males Age 10–14	(Not Incl.)	1.1569	1.0670	1.0943	1.2713	0.7008
No. Females Age 15–19	0.4178	0.8816	1.0398	1.0124	1.1757	2.2788*
No. Males Age 15–19	1.3335	0.9146	0.9539	0.9661	0.7204	0.6624
No. Females Age 20–59	1.5971	1.0859	0.8810	1.1539	1.7984*	3.3424**
No. Males Age 20–59	0.8783	0.9331	0.6669**	0.8172	0.6778**	0.7816
Farm Activities/Extrafamilial Labor						
Agricultural Emphasis: Pasture	1.6963	0.9369	1.5091	0.7216	0.7510	2.4467
HH Hires Temporary Labor	0.3768*	0.6586*	0.6736	0.3977**	0.3073**	0.1490**
HH has Sharecroppers/Perm. Workers	0.3295	1.0570	0.8251	0.7208	0.3350**	0.1545*
Number of Observations	274	372	372	372	372	372
Chi-sq.	25.07	27.93	33.68	79.05	72.12	55.53
Prob > chi-sq.	0.0686	0.0458	0.0092	0.0000	0.0000	0.0000
Pseudo R2	0.2056	0.0896	0.0818	0.1535	0.1698	0.3217
Log Likelihood	−48.4366	−141.8898	−180.9884	−217.9833	−170.3585	−58.5289

Note: ninety-eight cases not used in model 1 as var. m10-14 explains activity completely.
*0.05 level; **0.10 level.

under five is less compatible with heavy agriculture work than with other domestic and farm activities, and men between twenty and fifty-nine years old in the house substitute for the female household head in this work. On the other hand, a higher number of women between twenty and fifty-nine increases the probability of a female household head working in this activity by 80 percent. As expected, the presence of temporary and permanent/sharecropper labor reduces her probability of work to about 70 percent. Education also has a significant negative effect on this work, reducing it by about 12 percent for each year of schooling.

Groves of cocoa, a perennial crop, exist on 35 percent of the farms. On average the groves have about 14.2 ha or about 14,200 trees, with a minimum of 0.10 ha and maximum of 50 ha. Unlike pasture, cocoa cultivation requires better soils (alfisols—*terra roxa*). A cocoa tree takes about three to five years to produce fruit, and it can continue for several decades. The maintenance of the grove requires continuous pruning of the trees. Once fruit production is established, the annual harvesting and breaking of the cocoa shell to extract its seeds are the activities that require the greatest amount of labor. At this time, all members of the household, including children, take part in this activity. The seeds are then dried in the sun in order to take off the fruit pulp. Once dried, the seed is sold to local brokers. The overall women's participation in cocoa production is about 65 percent. Among those cultivating the fruit, the use of sharecroppers is becoming a common arrangement—16 percent of all sample farmers had sharecropper arrangements at the time of the interview.

Currently, black pepper is only cultivated by 13.4 percent of all informants, on an average area of about 1.6 ha, with a minimum of less than 1 ha and a maximum area of 6 ha. Pepper does not require fertile soil, but the cost of inputs is high. It starts to produce after about two years. Prices in the market are increasing recently, but the farmers' response to this stimulus may be slower due to higher investments and recent experience with a fungus disease (*Fusarium s. piperi*). Like cocoa, the harvesting and drying of pepper involve all household members, regardless of gender (figures 12.4 and 12.5).

Annual crops, such as rice, beans, corn, and manioc, are cultivated by 50 percent of the farmers, and most of this production is currently for household consumption. The reported mean area in annuals was about 2.5 ha, with a minimum of less than 1 ha and a maximum of 40 ha. Slash and burn is the method used and usually is carried out by men, but the weeding and harvesting involve women of different age groups.

Besides age, the only other variable that has a significant effect on a female household head's participation in "moderate" agriculture is the presence of hired labor in the farm. This reduces the female head's probability of work in this activity by about 60 percent. Our data suggest that the presence of sharecroppers reduces women's participation as well, but these results are not statistically significant (table 12.1).

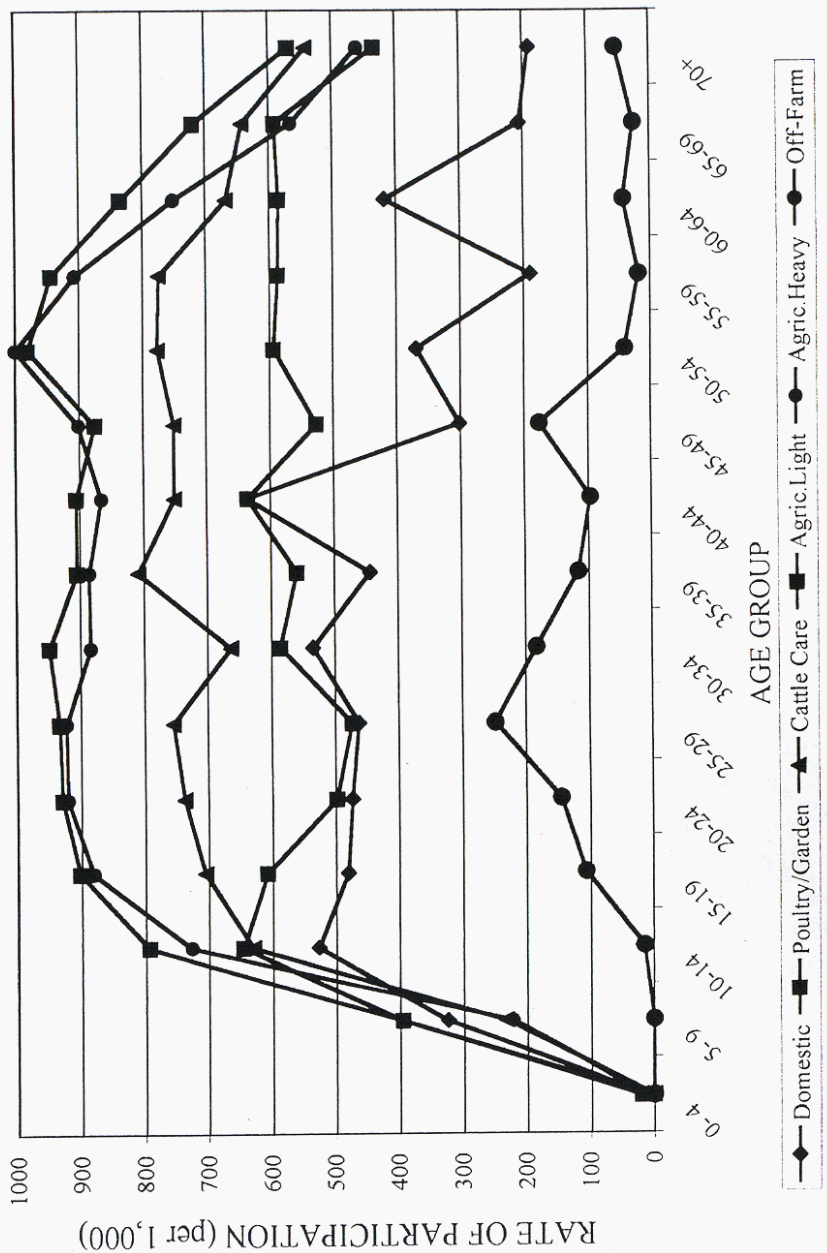

FIGURE 12.5
Age-specific rates of participation, males, Transamazon Highway.

A combination of several agricultural activities, such as slashing, burning, planting, weeding, harvesting, drying cocoa and pepper, and processing manioc flour involves about 60 percent of all members of the study households. Usually household members are involved in more than one activity. This participation in the farm's activities starts at an early age, about ten years old for both sexes. For the age group ten to fourteen, between 20 percent and 70 percent of male children and between 5 percent and 40 percent of female children are helping their parents and/or siblings in one of these activities. In all age groups, men's participation is higher than women's (figures 12.4 and 12.5).

About 40 percent of the study households have home gardens, and 97 percent of them raise yard animals, both mainly for household consumption. Women tend to be responsible for caring for small animals more often than their male counterparts (see figures 12.4 and 12.5), but there are no clear gender differences in gardening activities, and they tend to increase for both men and women with age. The overall women's participation in these activities is 62 percent.

Increased age and years of schooling affect women's participation in gardening and care of yard animals; in both cases they tend to work less in these activities (table 12.1). The husband's off-farm activity reduces the wife's probability of working by 70 percent in gardening and with poultry, and the presence of temporary labor reduces her probability by about 35 percent of working in these activities. Household sex and age composition do not have any effect on female head's participation in these activities.

Domestic chores (including house cleaning, preparing food, and childcare) are carried out predominantly by women, although at young ages both boys and girls are involved in these household-related activities. The overall women's participation is 92 percent. The gender gap tends to increase with age. More than 90 percent of young teenage girls are engaged in domestic tasks, and approximately 90 percent of boys are involved in agricultural activities. These participation rates also illustrate the importance of children's labor to the overall economy of colonists' households (figures 12.4 and 12.5).

Last but not least, years of education, household composition, and presence of extrafamilial labor do have strong effects on the probability that a female household head has an off-farm activity (table 12.1). For each year of schooling, a female head's probability of having an off-farm activity increases about 50 percent. The number of other women between ages fifteen and nineteen and twenty to fifty-nine years old in the household increases her odds of taking up an off-farm activity about two and three times, respectively, so these women in the household are probably substituting for the female household head in other farm and domestic activities. On the other hand, the presence of temporary and permanent labor on the farm decreases the female head's probability of having an off-farm activity by about 85 percent in both cases. Being a Protestant also increases her probability almost five times, but its significance needs further investigation to be understood.

Household Decision Making

Based on information provided by the female household heads related to decision making in the household, we now examine which individual and household characteristics may affect household dynamics. We focus on three subjects: what to cultivate in the farm, household expenditures, and use of birth control; and how these decisions are affected by women's participation in agriculture work, women's participation in off-farm activities, schooling, husbands' age, and the current capital index of the household.[8]

What to plant and how are decisions that farmers have to face periodically. About 50 percent of the husbands make these decisions by themselves, in comparison to only 6 percent of wives. However, about 26 percent of women reported making these decisions as a couple, and 18 percent as a family (table 12.2). Do women who take part in agricultural activities tend to have higher participation rates in deciding what to plant and how? The percentage of women who decide by themselves is almost two times higher for those who work in agricultural activities than for those who do not work, but even so the percentage is low (about 7.5 percent and 4 percent, respectively). Joint decisions increase slightly for women who work in comparison to those who do not work, from about 22 percent to 29 percent. However, for both groups of women, decisions made by husbands by themselves are still high, about 50 percent.

More than on farming, about 60 percent of households make joint decisions on how to allocate household resources. About 27 percent and 3.5 percent of husbands and wives, respectively, decide by themselves about household expenditures. Women who work on off-farm activities make more decisions about this subject than those who do not work (8.7 percent and 3 percent, respectively) (table 12.2).

The age of the male household head affects the percentage of their joint decisions. The older the husband is, the lower the percentage of couples making joint decisions. Younger husbands seem to be more democratic than older ones. However, for older husbands, family participation in decisions related to the farm activities increases, to almost three times greater than for younger ones. This is probably related to the household developmental cycle, in which farm activities also include grown children (usually male children). In relation to birth control, the situation is reversed. Wives with young husbands have a higher percentage of joint decisions, and wives of older ones (age fifty or older) tend to make this decision as individuals, and less often as a couple (table 12.2).

Current household capital index (see note 8) also has a positive effect on the percentage of joint decisions. The higher the capital index, the higher

Table 12.2. **Percent Participation on Decision Making in the Households, Altamira Region, Brazil, 1998**

	Agriculture		*Age of the Household Head*			*Years of Schooling*				*Capital Index*		
What to Plant	*Yes*	*No*	*<30*	*35–49*	*50+*	*None*	*1–3*	*4*	*5+*	*High*	*Medium*	*Low*
Wife	7.34	3.97	7.41	2.7	7.25	7.14	3.14	11.27	5.17	0	11.43	5.13
Husband	49.32	50.33	51.85	54.95	46.38	47.62	49.06	47.89	56.9	41.38	47.14	51.28
Couple	28.96	21.19	33.33	35.14	18.84	25	22.01	30.99	31.03	55.17	25.71	22.71
Family	13.57	23.18	7.41	7.21	25.6	17.86	25.16	8.45	6.9	3.45	12.86	20.15
Others	0.81	0.66	0	0	1.45	2.38	0	1.4	0	0	1.43	0.73
DK	0	0.67	0	0	0.48	0	0.63	0	0	0	1.43	0
Total (%)	100	100	100	100	100	100	100	100	100	100	100	100
	Off-Farm		*Age of the Household Head*			*Years of Schooling*				*Capital Index*		
Spend Money	*Yes*	*No*	*<30*	*35–49*	*50+*	*None*	*1–3*	*4*	*5+*	*High*	*Medium*	*Low*
Wife	8.7	3.15	1.85	2.7	4.35	4.76	3.77	1.41	3.45	3.45	5.71	2.93
Husband	17.39	27.79	27.78	21.62	29.95	29.76	27.67	28.17	20.69	20.69	27.14	27.84
Couple	73.91	59.89	70.37	71.17	52.66	52.38	59.12	61.97	75.86	72.41	55.71	60.81
Family	0	8.6	0	4.5	12.08	11.9	8.81	8.45	0	3.45	11.43	7.69
Others	0	0	0	0	0.97	1.19	0.63	0	0	0	0	0.73
DK	0	0.57	0	0	0	0	0	0	0	0	0	0
Total (%)	100	100	100	100	100.01	100	100	100	100	100	100	100
			Age of the Household Head			*Years of Schooling*				*Capital Index*		
Birth Control			*<30*	*35–49*	*50+*	*None*	*1–3*	*4*	*5+*	*High*	*Medium*	*Low*
Wife	—	—	14.81	19.82	22.22	30.51	24.46	17.46	27.66	16.67	22.64	25.97
Husband	—	—	3.7	6.31	3.86	5.08	5.76	7.94	2.13	8.33	5.66	5.19
Couple	—	—	68.52	60.36	43.48	57.63	60.43	68.25	70.21	70.83	60.04	61.47
Family	—	—	0	0.9	0.48	0	0.72	1.59	0	0	6	0.87
Others	—	—	0	1.8	8.21	6.78	8.63	4.76	0	4.17	5.66	6.49
DK	—	—	12.96	10.81	21.14	0	0	0	0	0	0	0
Total (%)	—	—	100	100	100	100	100	100	100	100	100	100

the percentage of couples taking joint decisions on all three subjects. Women in households with a low capital index tend to decide alone more often about their contraceptive methods than those with a higher capital index (table 12.2). However, the higher the capital index, the lower is the percentage of family participation in decisions on farm crops and household expenditures.

DISCUSSION

We still observe a demographic imbalance in this thirty-year-old frontier area in favor of men. Women are more likely to leave their family households at earlier ages than men, usually for marriage and schooling. Young men are more likely to stay on the farm longer, which seems to be a household "labor retention" strategy in an environment with a reported scarcity of labor. Women's reported access to land rights through inheritance is also inferior to that reported for their male siblings. On the other hand, families tend to invest in girls' schooling more often than boys'; and education increases women's off-farm activities and income. Investing in women's education seems to also be a household strategy of spreading risks while broadening the household's social and economic network and/or a way of compensating women for their decreased access to land.

The rapid fertility decline observed among women in the frontier and decisions regarding use of contraceptives are also positively correlated with women's level of education and reported better access to health care. These young generations are breaking a pattern of large rural families, even in the face of a scarcity of labor. Patterns of household size, composition, and fertility rates are close to urban ones. Most families are nuclear and relatively small. The rapid fertility decline observed among women in this frontier area is similar to the rates observed in Brazil as a whole, illustrating a narrowing of rural-urban patterns. The overall point to be made is that the Brazilian fertility decline was marked during a relatively short period of time and has been unexpectedly no less important on the frontier area than in the rest of the country. Women's perspectives on their reproductive behavior often included considerations related to children's education costs. Fewer children mean more chances that the family may be able to afford paying for their educations. Despite recognizing the importance of children's participation in farming activities, education is perceived as a key factor for the children and also for the family's economic success in the future. Most of the women interviewed expect their children to study, and ideally, to succeed in a paid job occupation in the city. Urban life, usually perceived as the possibility of having a permanent job, is considered far easier than making a living on the farm. Women also mentioned a reduced number of children as a way to improve their well-being. For them, fewer children mean less workload. It also means

better health, as bearing many children was mentioned as a way to decrease women's vitality (field notes 1998, 2001).

Family labor is still essential for colonists' farming activities. Women from different age groups participate in all household economic domains, including domestic chores, farm labor, and off-farm activities. Their participation in different activities varies according to the developmental cycle of their household, their years of education, the presence of extrafamilial labor, and also the farming system.

Age is a consistently important predictor of women's pattern of participation in farm work, except in the case of domestic tasks. That is, women of all ages are involved in domestic activities. What we observe is a curvilinear relationship between age and these activities. It is lower below twenty years, increases in the twenties and thirties, and decreases again after the forties.

A few variables explain most variations in the amount of domestic tasks performed by female household heads. When the husband has some off-farm activity and the household hires temporary labor, women work significantly less in the house. Off-farm activities usually indicate a higher cash flow in the household, and thus greater probability of hiring outside labor. However, in our model we predicted increased demand for domestic services in the presence of hired farm labor, as women tend to cook for hired workers, but not the reduction of work that we observed. Our data suggest that young women between ages fifteen and nineteen are the ones taking the responsibility for domestic tasks instead of the female household head.

Our data also suggest that on farms with emphasis on cattle ranching, female household heads tend to work less on farm activities and more on domestic tasks. When we control for the current household composition, we observe that female household participation in agricultural activities is not statistically significantly affected by the type of land use. The number of male household members twenty to fifty-nine years old has an important correlation with the probability of women's participation in agricultural activities, independently of whether there is an emphasis on perennial crops, annual crops, or pasture. The presence of hired labor is also an important factor in reducing the number of agricultural activities women carry on.

Women's participation in "heavy" agricultural tasks is affected by household composition, the presence of temporary and permanent extrafamilial labor, and women's education, but in different directions. Extrafamilial labor, the presence of male adult household members, women's education, and having children under five years old in the household all decrease women's participation in heavy agricultural tasks. It seems that only in this case is women's participation in farm activities affected by the presence of young children in the household. On the other hand, the presence of other female household members increases the female household head's participation in heavy agricultural work. We observe a "work substitution" effect

in which these women are "filling in" for the female household head in her domestic duties.

Female household head participation in "moderate" agricultural activities is more predictable. Besides women's age, the only other variable that has a negative effect on female household head participation on "moderate" agriculture is the presence of hired labor. A woman's participation in off-farm activities is clearly related to her educational level, but also is related to the availability of other women in the household able to "substitute" or "fill in" with expected gender roles. This includes the presence of family members or extrafamilial labor. Off-farm activities for women often include teaching and health care positions, as well as trading.

On decisions related to the management of the farm, such as what to plant and how, women's participation tends to be limited. On the other hand, women are more actively involved in the allocation of household resources. In both cases, however, a woman's decision-making power reflects her level of involvement in direct agricultural labor, her contribution to household income, her level of education, and her proximity to her kinship network, providing a safety net of social and economic support in the frontier area.

CONCLUSION

Overall participation rates in farm and domestic activities suggest strong patterns associated with age, gender, and years of education, but they also vary according to household composition and/or socioeconomic conditions, and they vary over the course of farm development. In general, young adolescent girls take on domestic duties early on, and are involved with caring for younger children and tending to animals. Teenage boys are incorporated into caring for cattle and milking, areas in which they are twice as likely to be involved as their female counterparts. Gender differences are most pronounced throughout adulthood in activities such as felling trees, burning, and weeding, in which men are three to four times more likely to be involved. The gender differences are less in harvesting and processing agricultural products, in which a larger share of women is involved. The pattern of participation in these agricultural activities typically declines for women in their early twenties as they begin childbearing, increases again, and then declines after age forty-five. For men, participation in these activities reaches a high level by their early twenties, remains high through their early fifties, and then steadily declines. However, in the making of manioc flour or in gardening near the house, there are no clear gender differences.

Regarding women's activities and household labor arrangements, we observe at least three different processes taking place in households in the frontier area. First, women are still fewer in number by comparison to men, even in this already thirty-year-old frontier. They tend to leave their parents' household

at earlier ages than their brothers. They leave to marry or go in search of higher education. For those who stay, we observe that types of land use and family composition affect women's overall participation in farm activities. Second, both cattle ranching and annual crop production are significantly associated with reduced farm work among women, compared to women living on farms with a predominant emphasis on perennial crops such as cocoa. We may say that an emphasis on cattle raising leads to "housewifization" of women, a pattern similar to that described by Thapa, Bilsborrow, and Murphy (1996) in a frontier area in the Ecuadorian Amazon. Third, we also observe a "work substitution" effect, freeing female heads from the farm and domestic workload. On the one hand, availability of younger male household members as well as hired labor significantly reduces the agricultural workload of women, leading them toward "housewifization," off-farm employment, or on-farm entrepreneurship. On the other hand, a high number of other adult women in the household increases the head's probability of work in heavy agriculture and off-farm activities. Again, we observe a "work substitution" effect. In this case we observe an inverse of "housewifization" for the female household head, as her participation in farm activities increases as younger women in the household are taking up the slack in domestic activities. In summary, domestic chores are predominantly carried out by women (wives, daughters-in-law), but who is taking the greatest share of them varies according the household's composition and its developmental cycle.

Women's participation in agricultural and off-farm activities does have an effect on the decision-making processes taking place inside the households. Women who work in agricultural and off-farm activities tend to have a higher percentage of joint decisions related to farm activities and household expenditures. We may say that a woman increases her bargaining power in the household realm when she undertakes any economic activity. However, more years of schooling, younger husbands, and higher capital index seem to have an independent effect of increasing women's joint participation in all decisions.

Perhaps the explanation for the observed rapid fertility decline among frontier women rests on the broader institutional, economic, and cultural changes taking place in the country as a whole since the late 1950s. Rapid urbanization, the expansion of the consumer society, the extension of social security coverage, the increase in mass communication, and better access to health care are possible causes or incentives for the changes observed in household decisions and women's reproductive behavior of these frontier women. Despite being in a rural environment, people in our study area have been affected by those broad national changes. Reported access to health care in the frontier is usually better than in the woman's place of origin. Exposure to TV is widespread. Most of the people have continual ties with regional urban centers, such as Altamira. Children and teens attend schools in towns; wives and husbands go shopping and market farm produce. Rather than being isolated, these frontier women and men are engaged in urban life in many ways. Rather than being separate worlds, rural and urban areas form a continuum. Women's increased access to education, information, and birth control may be building up a new role for women and reinforcing an ideal of joint households, where men's and women's work alike are considered essential to farm maintenance.

NOTES

1. The data presented in this chapter are part of a broader study that addresses the relationships between household demography and socioeconomic characteristics and the patterns of land use observed at the level of the farmer's individual plot. This was funded by the National Institutes of Health as "Amazonian Deforestation and the Structure of Households: A Georeferenced Approach," with coprincipal investigators E. Moran and S. McCracken, Anthropological Center for Training, Department of Anthropology, Indiana University, 1997–2001, NICHD #9701386A. (See also McCracken et al. 1999; McCracken et al. 2002; Moran et al. 2002; and Brondizio et al. 2002.)

2. Only after the new National Constitution in 1988 were women entitled to receive land tenure rights in government programs of colonization and/or land reforms in Brazil (see Deere and Leon 1999 for further discussion on gender and agrarian reform in Brazil).

3. Yet in 1980 the number of colonists along the Transamazon Highway was estimated as much higher than the official figure, due to "spontaneous" migration to the region that occurred mainly after 1974, when the government interrupted most of its colonization plans (Miranda 1990).

4. At the time of our fieldwork research a new settlement of colonists was underway in our study area. The municipal government of Medicilândia was distributing land at the ends of feeder roads with the technical assistance of INCRA (*Gleba Surubim*) (field notes 1998).

5. In the summer of 2001, about one-third of the households sampled in 1998 were interviewed again, and the first author carried out several in-depth interviews with women regarding their reproductive choices.

6. For the discussions on the predictors of women's participation in domestic, farm, and off-farm activities, we included only the female household heads (n=372), excluding widows, divorced women, and those who did not live on the farms. However, they are included in our original sample and analysis of labor allocation.

7. Previously, we had included in our models variables indicating the socioeconomic status of the household. Those were tossed out because they did not explain any of the differences observed.

8. Current capital indexes were calculated based on the assets (rural property, rural house, urban house, business) the farmer family reported having at the time of the interview. The index ranges from 1 to 3. Higher scores mean a greater number of assets.

REFERENCES

Brondizio, E., S. D. McCracken, E. F. Moran, A. Siqueira, D. Nelson, and C. Rodriguez-Pedraza. 2002. "The Colonist Footprint: Towards a Conceptual Framework of Deforestation Trajectories among Small Farmers in Frontier Amazônia." In *Patterns and Processes of Land Use and Forest Change in the Amazon*, ed. by Charles Wood and Roberto Pooro, 133–61. Gainesville: University of Florida Press.

Browder, J. 1988. "Public Policy and Deforestation in the Brazilian Amazon." In *Public Forest and the Misuse of Forest Resources*, ed. by R. Rapetto and M. Gillis. New York: Cambridge University Press.

Castellanet, C., A. Simões, and P. Celestino Filho. 1994. *Diagnóstico Preliminar da Agricultura Familiar na Transamazônica: Indicações para Pesquisa-Desenvolvimento.* Belém, Brazil: EMBRAPA/CPATU.

Deere, C. D., and M. León. 1999. "Towards a Gendered Analysis of the Brazilian Agrarian Reform." Occasional Papers, Latin American Studies and Caribbean Studies, Storrs, Conn.: University of Connecticut.

Hamilton, S. 1998. *The Two-Headed Household, Gender, and Rural Development in the Ecuadorian Andes.* Pittsburgh: University of Pittsburgh Press.

Hecht, S. 1985a. "Environment, Development, and Politics: Capital Accumulation and the Livestock Sector in Eastern Amazonia." *World Development* 13(6): 663–84.

———. 1985b. "Women and the Latin American Livestock Sector." In *Women as Food Producers in Developing Countries*, ed. by Jamie Monson and Marion Kalb, 51–69. Los Angeles: UCLA African Studies Center and African Studies Association OEF International.

Ianni, O. 1979. *A Luta pela Terra.* Petrópolis, Brazil: Editora Vozes.

Lisansky, J. 1979. "Women in the Brazilian Frontier." *Latinamericanist* 15(1): 1–3.

Mahar, D. 1979. *Frontier Development in the Brazilian Amazon: A Study of Amazonia.* New York: Praeger.

McCracken, S. D., E. Brondizio, D. Nelson, E. F. Moran, A. Siqueira, and C. Rodriguez-Pedraza. 1999. "Remote Sensing and GIS at Farm Property Level: Demography and Deforestation in the Brazilian Amazon." *Photogrammetric Engineering and Remote Sensing* 65(11): 1311–20.

McCracken, S. D., and A. Siqueira. n.d. *Fertility Decline in an Amazonian Agricultural Frontier of Brazil: New Evidence for Old Debates, Population and Development.* Paper presented at the Annual Meeting of the Population Association of America, Los Angeles, California, March 23–25, 2000.

McCracken, S. D., A. Siqueira, E. F. Moran, and E. Brondizio. 2002. "Land-Use Patterns on an Agricultural Frontier in Brazil: Insights and Examples from a Demographic Perspective." In *Patterns and Processes of Land Use and Forest Change in the Amazon*, ed. by Charles Wood and Roberto Porro, 162–92. Gainesville: University of Florida Press.

Meertens, D. 1993. "Women's Roles in Colonisation: A Colombian Case Study." In *Different Places, Different Voices: Gender and Development in Africa, Asia, and Latin America*, ed. by Janet H. Monsen and Vivian Kinnaird, 256–69. New York: Routledge.

Miranda, M. 1990. "Colonização Oficial na Amazônia: O Caso de Altamira." In *Questões sobre a Gestão do Território*, ed. by B. Becker, M. Miranda, and L. Machado, 35–46. Brasilià, Brazil: UNB and UFRJ.

Moran, E. F. 1981. *Developing the Amazon.* Bloomington: Indiana University Press.

Moran, E. F., E. Brondizio, P. Mausel, and Y. Wu. 1994. "Integrating Amazonian Vegetation, Land Use, and Satellite Data." *Bioscience* 44(5): 329–38.

Moran, E. F., E. Brondizio, and S. D. McCracken. 2002. "Trajectories of Land Use: Soils, Succession, and Crop Choice." In *Patterns and Processes of Land Use and Forest Change in the Amazon*, ed. by Charles Wood and Roberto Porro, 193–217. Gainesville: University of Florida Press.

Pichon, F. C. 1996. "Settler Agriculture and the Dynamics of Resource Allocation in Frontier Environments." *Human Ecology* 24(3): 341–71.

Pichon, F., C. Marquette, and L. Murphy. 2002. "Choice and Constraint in the Making of the Amazon Frontier: Settler Land Use Decisions and Environmental Change in Ecuador." In *Patterns and Processes of Land Use and Forest Change in the Amazon*, ed. by Charles Wood and Roberto Porro. Gainesville: University of Florida Press.

Schmink, M., and C. Wood. 1992. *Contested Frontier in Amazon.* New York: Columbia University Press.

Siqueira, A., and S. D. McCracken. 2001. *Frontier Women and the Rural-Urban Continuum: Fertility Decline, Household Labor Strategies, and Schooling along the Transamazon Highway.* Paper presented at the XXIII Annual Meeting of the Latin American Studies Association (LASA), Washington, D.C., September 6–10, 2001.

Thapa, K. K., R. E. Bilsborrow, and L. Murphy. 1996. "Deforestation, Land Use, and Women's Agricultural Activities in the Ecuadorian Amazon." *World Development* 24(8): 1317–32.

Townsend, Janet. 1993a. "Housewifisation and Colonisation in the Colombian Rainforest." In *Different Places, Different Voices: Gender and Development in Africa, Asia, and Latin America*, ed. by Janet H. Momsen and Vivian Kinnaird, 270–77. New York: Routledge.

———. 1993b. "Gender and the Life Course on the Frontiers of Settlement in Colombia." In *Full Cycles: Geography of Women over the Life Course*, ed. by Cindi Katz and Janice Monk. New York: Routledge.

Velho, O. 1972. *Frentes de Expansão e Estrutura Agrária.* Rio de Janeiro, Brazil: Zahar.

Weismantel, M. 1988. *Food, Gender, and Poverty in the Ecuadorian Andes.* Philadelphia: University of Pennsylvania Press.

Wood, C., and M. Schmink. 1979. "Blaming the Victim: Small Farmer Production and Amazon Colonization Project." *Studies in Third World Societies* 7: 77–93.