FOOD SECURITY IN THAILAND: HUNGER IN THE MIDST OF PLENTY

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ABSTRACT

Despite the fact that Thailand produces more than enough food to meet domestic needs and is a major food exporter, abundant food supplies do not automatically translate into food for the poorer groups of Thai society. This research uses data from the 2006 Household Socioeconomic survey of Thailand to study how the probability of a household being food-poor is affected by social, economic and demographic characteristics. The probit regression results show that certain household socioeconomic characteristics including income, household size, gender, and education significantly impact the ability of the household to access food. The study provides important guidance for government efforts to target households most at risk of being food-insecure and recommends that certain policies should be improved to reduce the future probability of households living in food poverty.

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I. INTRODUCTION

Thailand is an agricultural country able to produce food that is sufficient not only to meet domestic demand but also to export to other countries. In 2004, Thai rice production totaled more than 29 million tons, an increase of 16 percent over the previous two years. Public and private investment in agricultural research and development has led to significant increases in yields and land productivity providing Thai agricultural products with a competitive edge in global markets. In addition, the quality of agricultural products has been enhanced in term of hygienic standards. The Food and Agriculture Organization (FAO) has ranked Thailand the 15th largest world food exporter (FAO, 2006).

Despite this food surplus and a sound economic development record, Thailand still has considerable malnutrition. FAO estimates that 17 percent of Thailand's total population is undernourished. In particular, compared to other countries at a similar level of development and to its neighbors, Myanmar (19 percent) and Malaysia (less than 2.5 percent), the percentage of malnourished population in Thailand is extremely high. Ample food production in itself is clearly not enough to cope with the mounting challenge of feeding people. Indeed, due to uneven prosperity in Thai society, Thailand is now enduring a new chapter of nutrition-related health threats (FAO, 2006). While food availability is not the main issue for Thailand, food accessibility remains the big challenge.

This problem has yet to be fully examined and understood. For example, a recent study conducted by Karetsart University focused on the issue of food access at the household level, but its target group was only poor farmers living in rural areas. In addition, the study concentrated on national policy with respect to the issues of food prices and production. However, other studies

from both developed and developing countries have shown that the ability of households to access food is not limited to these factors but varies in accordance with numerous demographic and socioeconomic characteristics. To solve the problem of food access in Thailand, it is necessary to go outside the bounds of agricultural policy.

This thesis uses Thailand's Household Socioeconomic Survey 2006 from the National Statistical Office, Ministry of Information and Communication Technology to examine the relationship between a household's ability to access food and a variety of social, economic and demographic characteristics. Instead of focusing on the availability of food as most studies do, this study provides an in-depth perspective on the household's ability to access food by using this data set to investigate the effect that different household socioeconomic characteristics have on the probability of a household living under the food poverty line.

With limited resources for policy implementation, and given the urgency of the issue due to external factors such as rising food prices, the government has to respond quickly to the needs of households that are most vulnerable to food poverty. This study provides policy makers with information that they should find useful in targeting households most at risk of being food-insecure. In addtion, the study demonstrates the importance of a more comprehensive approach to sustainable food security in Thailand. The evidence clearly suggests that a household's ability to access food can be strengthened through social policies, such as family planning and improved education.

Section II provides an overview of the current food security situation worldwide and in Thailand. Section III reviews the literature on food security, focusing on the government's recent study in Thailand and other examples from developed and developing countries. A conceptual

framework for my thesis, which highlights some of the major determinants of food security, is presented in Section IV. Section V discusses the empirical model, estimation methods, and data that are used in the study. The results obtained from estimating the models are then presented and analyzed in Section VI. Lastly, Section VII draws conclusion from these results and elaborates on the policy implications.

II. AN OVERVIEW OF CURRENT FOOD SECURITY SITUATION

Food security is increasingly recognized as an important element of sustainable development. In this respect, it is one of the seven pillars of the UN Development Program's original concept of human security (IPA, 2007). In addition, numerous international organizations such as the World Bank continue to promote basic human-needs strategy through food security. For example, the 1996 World Food Summit in Rome addressed the World Hunger Program, passing a resolution to reduce by half the absolute number of undernourished people by the year 2015.

Many nations also realize that accomplishing the summit's objective would make a significant contribution to the improvement in the level of human development (Gani, 2004). The notion is that adequately nourished people will enjoy optimal growth, health and well-being. In particular, the nutrition of girls has a major impact on pregnancy, lactation and the nourishment of their children. In addition, achieving food security is far less costly than dealing with the consequences of not meeting this need. Beyond unrealized human potential, the health costs resulting in developing countries from difficult pregnancies and the illnesses experienced by malnourished mothers and their children are estimated at $30 billion per year. Moreover, indirect costs are even higher, and include loss of productivity and income as a result of early deaths, disability, absenteeism, and poor school performance (Behrman, 2004).

Although the number of undernourished people fell by 40 million worldwide between 1990 and 1997, progress is still too uneven to achieve the goal set by the World Food Summit in 1996 (Gani, 2004). According to the Food and Agriculture Organization (FAO), almost 850 million people worldwide were undernourished in 2003-2005 of which 800 million lived in

developing countries. FAO also notes that the number of undernourished people in developing countries decreased by 9 million during the decade following the World Food Summit baseline period of 1990-1992. It further notes that, during the second half of the decade, the number of chronically hungry in developing countries increased at a rate of almost 4 million per year, wiping out the reduction achieved in the previous five years (Gani, 2004).

At the regional level, across Asia and the Pacific, rapid economic growth has contributed steadily to improving levels of human development and, in most countries, children are taller than their parents and better educated. In Asia and the Pacific, between 1990 and 2004, more than 350 million people escaped from poverty. It seems surprising, therefore, that millions of people across the region are still in a situation of food insecurity and children are dying every day from malnutrition-related causes. However, in Asia and the Pacific, food insecure people are rarely visible. They usually live far from centers of power and simply struggle on their own to feed their families. This is largely because what is termed food security is a complex multi-faceted issue, concerning not just agriculture, technology and trade, but is also multiple political and social considerations (UNESCAP, 2009).

While the dimensions and underlying causes of food insecurity and malnutrition are often complex, they may also differ widely among countries and from one location or population to another. In some countries, inadequate food consumption and malnutrition have been partly due to insufficient supplies of food at the national level. Within countries, however, increased food supply does not automatically enhance access to food, especially by the poorest groups. Certain groups of people, especially those in rural areas who have limited purchasing power, are more

likely to face the problem of food insecurity and vulnerability. For these groups, the root of the problem most likely stems from poverty and the resultant lack of access to food.

In Thailand, as in other Southeast Asia countries, rice is the major staple food and is grown throughout the country. The central plain and lower north of Thailand are considered the country's commercial rice bowl. The rice for export mostly comes from this region. During the last several decades, rice-cultivated areas increased relatively slowly, from 8.15 million hectares in 1971-1975 to 10.63 hectares in 2001-2007, or an average increase of 1 percent per annum. Nevertheless, notwithstanding the slow expansion in the cultivated area, rice production steadily increased at an average annual rate of 3 percent. This growth of production is due to Thailand's rice cropping intensity and adoption of modern rice varieties.

For quite some time, the production of food in Thailand, particularly rice production, has been increasing at a rate far greater than that of domestic demand, with the surplus being exported. In 2006-2007, about 42 percent of the country's rice output was exported. Rice exports increased from 1.3 million tons in 1971-1975 to 8.14 million tons in 2006-2007 (Isvilanonda, 2009). However, with the global economic crisis, climate change and the expansion of food-fuel crops, food availability as well as food accessibility has been significantly impacted worldwide.

In terms of protein, livestock and fisheries production are among Thailand's major sources. The development of large scale production provides Thailand with a surplus supply of poultry and aquatic animal products. In addition, Thailand has been self-sufficient in beef, pork, and fresh milk.

While Thailand is able to produce more than enough rice to support its population, some vulnerable households do not have enough food to meet their energy and nutritional needs, particularly in the rural areas. Based on the household national food poverty line of 779 baht (US$22.58)/person/month[1], some 416,410 households were below the food poverty line in 2007 (see Table 1). This represents about 2.62 percent of all households in Thailand[2].

Table 1: Number of households affected by food poverty during 1988-2007 (in thousands)

Region	Area	1988	1992	1998	2000	2002	2004	2006	2007
Whole Kingdom	Urban	223.5	166.7	52.7	75.6	32.1	30.4	29.5	10.9
	Rural	2331.1	1218.4	744.3	975.8	480.2	362.5	554.1	405.5
	Total	2554.7	1385.1	797	1051.5	512.4	392.9	583.6	416.4
Central	Urban	14.8	10.1	4.1	1.3	3.5	6.3	0	0.3
	Rural	144.2	40.4	11.4	35.4	24.2	1.4	26.5	10.1
	Total	159	50.5	15.5	36.8	27.7	7.7	26.5	10.4
North	Urban	76.9	25	16.2	23.3	10.7	6.3	7.6	1.7
	Rural	611.4	362.1	157.3	130.5	267.8	219	197.7	229.4
	Total	688.3	387	173.5	153.8	278.5	225.3	205.3	231.1
Northeast	Urban	116.8	128.8	26.4	44	12.9	16.9	13.1	8.9
	Rural	1369.9	598.5	501	698.9	151.4	86.9	284.4	127.7
	Total	1486.8	711.3	527.5	742.9	164.3	103.8	297.5	136.6
South	Urban	15	18.8	6	7	5	0.9	8.7	0
	Rural	205.5	217.4	74.5	110.9	36.8	55.3	45.5	38.3
	Total	220.6	236.2	80.5	117.9	41.9	56.2	54.3	38.3

Source: National Economic and Social Development Board (NESDB)

Table 1 also shows that, food insecurity in Thailand is mainly a rural phenomenon with 97 percent of the total food-poor households living in rural areas.

[1] The food poverty line is approximately 54 percent of the total poverty line.

[2] In 2007, it is estimated that there were about 15 million households in Thailand.

The number of people affected by food poverty increased during 1998-2000 in the wake of the 1997 financial crisis, and during 2004-2006 with food price inflation. The UN World Food Programme (WFP) has expressed concern over the rising price of food in Thailand. As prices go up, more people have difficulty accessing sufficient food and face the possibility of food starvation. In addition, according to Prasit Boonchuey, president of the Thai Farmers' Association, increased prices do not benefit anyone. Even rice farmers themselves are suffering, because the lack of storage facilities forces them to sell their grain immediately after harvest. The rising price of rice makes it harder for them to sell their product in order to earn money to buy other types of food.

III. LITERATURE REVIEW: RESEARCH ON FOOD SECURITY

Food security is considered differently depending on whether the focus is at the macro or the micro level. At the macro level, food security means that enough food has to be available to cover the whole population's nutritional requirements. At the micro level, for households and individuals, three conditions need to be considered: sufficient food at the macro level, stability in supply, and a regular access to food for all households and their members.

Various studies emphasize food availability at the macro level by focusing on the market elements such as production inputs, labor, consumer goods and credit, quantities supplied and demanded, and prices. On these terms, food security is achieved if subsistence production and market supplies are sufficient to meet total household food requirements. However, in order to successfully provide food security to all citizens, two additional elements of the domestic food system have to be considered. First, individual households must be able to afford the food that is produced. Employment opportunities and how incomes are distributed play an important role here. The second element is food prices. Short-run food price fluctuations and shocks make low income households especially vulnerable to food insecurity (Timmer, 2000; Margaret, 1999).

Furthermore, food may be available globally but not all countries, households within countries, or individuals within households may have access to it. At the national level, persistent food insecurity is the result of development failure that prevents food-deficit countries from either acquiring food in the international markets or producing it themselves. However, even when sufficient food for the entire populations is available, food insecurity may persist. Poverty is often the culprit. The poor do not have adequate means to secure their access to food even when food is available in local or regional markets (Downing, 1998; Stamoulis, 1999).

Research on Thailand

The issue of food security in Thailand has usually been addressed through agricultural development policy at the national level which mainly focuses on food production. A study by the Department of Agricultural and Resource Economics, Kasetsart University (Isvilanonda, 2009) indicates that recent increases in food prices and production costs have impacted the poor, particularly in the rural North and Northeast. Among all groups, small farmers and rural poor are more likely at risk of food insecurity. Even though the poorest subsistence farmers generally consume more than half of their own production, all their food needs cannot be met by their production. For example, overall purchased food expenditures of the poorest farmers accounted for 59 percent of total food consumption and 47 percent of the total money income. Where prices of other non-cereal foods, such as meat, increase dramatically relative to staple grains, some farmers cannot afford to purchase what they do not produce. Currently, the problem is even more severe because higher food prices have decreased farmer's purchasing power. As a result, the poor farming households face difficulties in earning enough income to survive, they may reduce their intake of more nutritious food.

In order for the rural poor to cope with the future impacts of high food prices and rising production costs, the Kasetsart study suggests targeting small farmers and the rural poor with off-farm employment and micro-credit, including related technical assistance and proper farm management plans. This should be complimented by enhancing farm productivity through agricultural research and improvement in village water sources.

The Kasetsart study does an excellent job in presenting the status of food security in Thailand, especially the impact of food insecurity on those farming households in rural areas. It

is also valuable in terms of recommending a strategy to reduce the impact of rising food prices on those poor households. However, the scope of the study is very narrow. While it makes a considerable contribution to the agricultural policy of Thailand, it does not offer much advice for those living in food poverty but who are not food providers themselves. Its main objective is to enhance their production capacity so they are able to earn more income. This strategy, however, can be applicable only to rural agricultural producers. The research needs to be expanded to cover other rural as well as urban households.

Piaseu and Mitchell (2004) conducted a study to assess the urban poor's perceptions of food insecurity and socioeconomic change. The study included a sample of 199 households including families that live in slum areas in Bangkok. Households headed by adult women living with children were a majority of the sample. Many participants lived in unhealthy environments and could not meet their essential needs. Moreover, they had difficulty paying their utility bills, rent, and loans due to increasing debts. Although a majority of the participants had health insurance, they struggled with getting access to health care. The authors found that more than 50 percent of the households they studied experienced food poverty. Participants who reported food insecurity without reporting hunger may not have been hungry, but they were concerned about food or experienced food anxiety, whereas participants reporting food insecurity with moderate or severe hunger were experiencing situations such as not eating the whole day. The authors concluded that maintaining food security among the urban poor is difficult because members of these groups suffer job insecurity in the informal sector unlike the poor in the agricultural sector. Many urban poor families continue to struggle to meet basic human needs and to survive in an unstable environment.

Piaseu and Mitchell broaden the scope of analysis to address the issue of food security in urban areas. They look at different characteristics of households such as household size, average number of adults and children, and also characteristics of food providers such as mean age, marital status. They then look at how these characteristics relate to their perspective on food insecurity and how they affect general health and well-being. However, owing to its small size, the sample may not be representative of the whole urban population in Thailand. Households in the slum areas of Bangkok are also more likely to represent the households at the highest risk. A more representative sample is needed to develop a national policy on food security.

Research From Other Countries

Evidence from other countries such as the United States (Kinsey, 1994; Olson, 1997; and McDowell, 1997) and Myanmar (Kyaw, 2009) finds that there is a significant relationship between household food security and household socioeconomic and demographic characteristics, such as, annual income, household size, education, whether the household is headed by a single parent, employment status, presence of savings, and home ownership. Specifically, with regard to the issue of gender and food security, FAO has documented a strong inter-relationship (FAO, 1996). Women's contributions to the household play an important role in food security both in terms of production and nutrition. Furthermore, Davis (1982), Meade (1996), and McDowell (1997) find that income and food prices are major determinants of household food expenditures and that per capita income explains differences in the share of income spent on food.

In the case of the United States, reports documenting that some Americans do not get enough food have existed for decades. Using data from the Third National Health and Nutrition Examination Survey (NHANES III), Alaimo (1998) finds that the prevalence of food access is

highly correlated with several social and demographic characteristics. According to the NHANES III data, between 1988 to 1994, approximately 9 to 12 million Americans lived in families that reported sometimes or often not getting enough to eat. The overall prevalence of food insufficiency was highest among Mexican Americans and lowest among non-Hispanic White Americans. In the low-income group, the prevalence of food insufficiency for children and adults 20 through 49 years of age ranged from 15 to 16.6 percent, while 5.9 percent of low-income adults aged 60 years and older lived in a family reporting food insufficiency. Food insufficiency, however, did not differ significantly by region of the country. In addition, a larger percentage of food-insecure individuals lived in households headed by a single female with children. Food-insecure individuals also usually lived in larger families than food-secure individuals. Household heads of food-insecure families were less likely than heads of food-secure households to be high school graduates. In addition, a smaller percentage of food-insecure individuals than food-secure individuals were covered by health insurance.

Although the economy of Myanmar is very different from that of Thailand, some research on food security there is worth mentioning. Myanmar is self-sufficient in food and rice production at the national level. A study (Kyaw, 2009) of Myanmar's rice deficit region presents the characteristics and determinants of food insecurity status in rural farm and non-farm rural households. This study identifies several potential determinants of food security including human capital, food production, household income, asset ownership, and income diversification (farm and non-farm income). To identify food-poor households, the study uses the national food poverty line along with some other indicators such as food share in the household budget, percentage of food expenditure in the total household income, and nutrition security indicators of access to safe drinking water, sanitation, and number of child deaths. It finds that landless and

small farm households constitute 74 percent of all food insecure households. The regression model indicates that land assets, consumption of oil, fish, and meats, and using improved sanitation significantly affect food expenditure. The study also finds that household size and the receipt of irrigation water significantly influence food expenditure.

Current studies in Thailand have not yet been able to demonstrate the overall effect of different household socioeconomic characteristics on food security. Many social dimensions, such as age, gender, and education, have not been examined thoroughly. The purpose of this thesis is to study what effect different social, economic and demographic characteristics have on the ability of households to access food in Thailand. As this thesis demonstrates, enhancing food security is not only about increasing available food supplies at the national level but also about improving food access for individual households.

IV. A CONCEPTUAL FRAMEWORK: MAJOR DETERMINANTS OF FOOD SECURITY

As noted earlier, food security at the household level is a function of many factors that empower individuals to access nutritionally adequate and safe food in appropriate ways. These include a host of socioeconomic, demographic and community-related variables. It is important to recognize that economic security is an essential precursor to permanent food security. Furthermore, economic security is itself a complex outcome related to steady, adequate income, family stability, affordable expenditures and access to a social safety net in times of need. In formulating policy directed at maintaining and enhancing domestic food security, it is therefore critical to consider economic security as a prerequisite of this condition (Iram, 2004).

Global and national food availability stand at the most macro level of the food security equation. Global food availability is determined by total world food production in relation to the world's population. In any given year, national food availability is determined by a country's own food production, its stocks of food, and its net imports of food, including food aid (Smith, 1999). Studies show that ownership of land is crucial to the food security of rural households, and that the landless tend to be the poorest in rural society. The percentage of the population below the poverty line in rural areas is typically around twice that found in urban centers. Despite the fact that most food is produced in the countryside, those in towns and cities have the greatest access to it. This may seem counter-intuitive, but it graphically illustrates the difference between food availability and food access (Gill, 2003).

In fact, it has been found that food security is only weakly linked to national food availability. Most food-insecure regions of the world have a surplus daily per capita dietary energy balance (DEB), ranging from 270 to 840 kilocalories. Only Sub-Saharan Africa has a per

capita DEB deficit that indicates a major food availability problem. Worldwide, in a study of 57 highly food-insecure developing countries, it was found that the majority of malnourished children live in countries that have a food surplus, and a majority of these countries fall into the high poverty category (Iram, 2004).

While it is not deniable that food availability is an element to food security, however, more importantly is food accessibility of household and individual. As discussed, the access that a household has to food depends on many factors. Some of the most important factors are presented below.

Income

The theoretical association between income and household food expenditures has a long and well established history. Traditional economic theory posits the so-called Engel curve, which is a functional linkage between household food expenditure and income of the household in a given time period. Assuming prices, tastes and preferences and the number of consumers are constant, the Engel curve shows how purchases of food commodities change when money income changes. This relationship is based on Engel's law, which states that the lower the family money income the greater the percentage of that income spent for food. The decline in the percent of income spent on food as incomes rise is rooted in the fact that even though food is a necessity, its consumption is limited by the size of the human stomach. Human beings simply cannot continue to increase their food consumption in proportion to the increase in their income. The theory is based on the theory of the consumer in which consumers seek to maximize their utility from the services of goods purchased in the market place, in a single period, subject to a money income constraint (Davis, 1982).

Along with cash income, one must also consider a household's full income which also includes the value of goods produced and services provided that do not enter the market, as well as in-kind transfers of goods and services. Thus, access to food may be gained through a household's own production or gathering, its purchase in the market with cash income, and/or receipts through in-kind transfers.

Household size

There is considerable evidence of a strong negative correlation between household size and income per person in developing countries. It is often found that people living in larger and generally younger households are typically poorer. Engel curve seeks to explain this by illustrating that across household of different size, the increase in household size will increase household's food share and decrease income of household. Since increase in food share is an increase in a proportion of income, a higher food share indicates lower well-being of households. Evidences show that among households with the same demographic composition, those with higher food shares are generally those with lower level of income (Deaton, 1998).

However, the existence of size economies in household consumption cautions against concluding that larger families tend to be poorer. Angus Deaton and Christina Paxson (1998) demonstrate that with per capita resources held constant, individual food consumption should rise with household size. The result appears not only in Thailand but in several other countries (the United States, Great Britain, France, Taiwan, Pakistan, and South Africa). Large households are better off at the same level of per capita resources since they have the option of decomposing themselves into smaller units (Deaton, 1998). Certain goods such as water taps, cooking utensils, and housing, allow possibilities for sharing such that the cost per person of a given standard of

living is lower when individuals live together than when they live apart. Nevertheless, unlike rich countries, such economies of scale are a minor issue for poor countries since most of their expenditures are allocated to rival goods such as food (Lanjouw, 1994).

Gender

In recent years there has been increased recognition of the crucial importance of women's contribution to food security. Many studies show that although there is a wide diversity in household production patterns, women in all developing regions play a predominant role in household food security through their involvement in agricultural and food production. According to FAO (1996), women account for approximately 50 percent of overall regional food production, with considerable variation from country to country. For example, women comprise 47 percent of the agricultural labor force in the Philippines and over 60 percent in Thailand. The report also shows that the direct responsibility for household food production falls largely on women. The improvement of household food security and nutritional levels are therefore closely related to women's ability to earn income and their roles in household expenditure decisions.

In many societies, women supply most of the labor needed to produce food crops and often control the use or sale of food produce grown on plots they manage. However, women’s capacity to produce food is reduced by an unequal distribution of assets, such as land, water, and labor. Women are less likely to own land and usually gain only the rights to use the land which is often mediated through a male relative (World Bank, 2009).

In addition to their crucial roles in food production, women also contribute to food security in other significant ways. For example, women are responsible for supplying their families with food and care. They often have special knowledge of the value and diverse use of

plants for nutrition, health, and income. They also perform the overwhelming majority of the work in food processing in developing countries. This processing reduces food losses, contribute to diversity of diet, and supplies important vitamins and minerals to the individuals in the household. Moreover, development planners have discovered that the increase of household income through the employment of men in cash does not necessarily increase household income available for the purchase of food. On the other hand, when women have direct control over income, they tend to spend it on the well-being of the family, particularly on improving the nutritional security of the more vulnerable members (FAO, 1996).

Education

The general education level of the homemaker has been found to have a substantial impact on food expenditures. Multiple channels have been identified through which an educated person is more likely to be food-secure. As Mukudi (2003) claims, education has a key role in accessing public information, especially concerning health, nutrition, and hygiene. Acquiring knowledge about how to avoid and face illnesses is essential since people with diseases require more calories to be food secure. Education also helps people know that they need to have an adequate and diversified diet in order to build a stronger immune system and avoid morbidity and mortality, and that they must follow good hygienic practices to prevent diseases like diarrhea. Mass Media, such as radios, are wide spread in African countries, even among poor people living in rural areas; therefore, people with only a minimum level of education can properly access and understand food related information.

This argument can also be extended to the nutritional outcomes of the children. Children of less educated parents and those of parents with no education, consistently score poorly on

nutritional status indices. Moreover, there is an important gender aspect to ensuring long-term food security; girls who attend school and obtain at least the basic skills can teach proper health, nutrition and hygienic practices to their children once they become mothers. This implies that female education should play a central part in any program aimed at improving nutritional status.

V. EMPIRICAL MODEL, ESTIMATION METHODS AND DATA

Empirical Model and Methods

In order to investigate the effect of various socioeconomic and demographic characteristics on household food security in Thailand, a probit multiple regression model, using maximum likelihood estimation (MLE) methods, is employed. The model serves to explain how different factors or characteristics affect the probability or likelihood of a household being food-poor. The model is estimated using cross-sectional data at the household level. The model is shown below:

Food Poverty = β0 + β1 Household size + β2 Male Household Head + β3 Male Members in Household + β4 Age of Household Head + β5 Income Earning Members + β6 Total Household Income + β7 Primary Education + β8 Membership of Health Program + β9 Household Agricultural Land + β10 Household Total Assets + β11 Urban + u

Three model specifications are used. One with all regions of the country included, another with only the northern regions included, and the final one with all the other regions included. The northern regions, comprising the North and Northeast, are the poorest parts of the country. The results are expected to be different in the different areas of the country. Policy makers should find this additional perspective on regions useful.

Below is a summary of the key variables used in this analysis. The rationale for their inclusion is based on the literature review and the conceptual framework presented in Sections III and IV.

Dependent variable

Food Poverty: it is a dummy variable with a value of 1 if the household is below the food poverty line[3] and a value of 0 if it is above that threshold. Thus, it may be interpreted as the probability of households having consumption expenditures on food less than the household food poverty line.

Independent variables

Household size: As household size increases, household members may supply less agricultural labor because work is divided among more people, though this depends on the distribution of work within the household. Yet the opposite may also be true. As household size increases, household members may have to supply more agricultural labor to generate income to care for more people.

Male Household Head: This is a dummy variable with a value of 1 if the household is headed by a male and a 0 if it is headed by a female. Households headed by a female may have a higher risk of food insecurity. Thus, a negative sign is expected.

Male Members in Household: Even though women play an important role in food production and food consumption in the household, they are often discriminated against and do

[3] In Thailand, the individual food poverty line was estimated at 779 baht (US$22.58)/person/month in 2007. The food poverty line of 779 baht is calculated from the cost of a food basket obtaining recommended calorie requirements for an individual household. Per capita household calorie requirement is defined by aggregating required calories per day of each household member with respect to their age and sex. This household calorie requirement is converted into money metric terms, e.g. amount of calories that can be bought with one baht. Data required for calculating the poverty line, especially the food baskets, the spatial price indices, and the calories cost obtained per baht were constructed using 1992 consumption patterns and commodities' prices as the base year. Updating for other years is done using food price indices (Jitsuchon, 2004).

not earn as much as men. A higher proportion of males in the household may lead to more access to food and, therefore, reduce the risk of food insecurity.

Age of Household Head: Age of household head is divided into five categories: (1) 11-24 years, (2) 25-34 years, (3) 35-44 years, (4) 45-54 years, and (5) 55-99 years old. Each category is treated as a dummy variable. Heads of household who are not at the working age are expected to provide less labor. Thus, the relationship with the dependent variable is expected to have a negative sign for all the categories except (1) and (5).

Income Earning Members: The proportion of income earning household members indicates the level of dependency in the household. Households that have few members earning income will have a larger burden in distributing their income to support other members. A negative relationship with the dependent variable is expected.

Total Household Income: This variable is measured by average monthly household income per person. It is an important variable in determining a household's purchasing power for food. The data include cash or money income as well as income in-kind from rental, unpaid goods and services, and unpaid food and beverages. The sign for the relationship is expected to be negative.

Primary Education: Primary education is a dummy variable that equals one if a person has at least finished primary school and zero otherwise. With a large proportion of members in the household attaining at least a primary education one might expect the household to have greater ability to access food as well as spend more on nutritious food.

*Membership of Health Program**:*** This variable is the proportion of members in the household participating in any type of health coverage program. If more members of the household have health coverage, the household is less likely to have health problems and can spend more on food. Respondents were asked whether they have any health coverage program.

Household Agricultural Land: As household landholding increases, it is expected that households can produce more, earn more income and buy more food.

Household Total Assets: Ownership of assets has been posited as one attribute that makes it more likely for families who experience negative income shocks to withstand those shocks and stave off food insecurity. These assets include: houses and buildings, vehicles, and financial assets.

Urban: This variable is an indicator variable that is equal to 1 if households are located in urban areas. It is used as a proxy to measure the ability of households to access the market. People in the city are likely to have better access to markets. In addition, distance from the city can be an obstacle for the poor to enter labor markets, earn income, and buy food.

All of the variables and their definitions are presented in Table 2.

Table 2: Definition of Variables Used in the Analysis

Variables	Description
Dependent Variable Food Poverty	A dummy variable reflecting a household's monthly expenditure on food and beverage divided by number of members in household. A value of 1 is assigned if the result of this calculation is below 779 baht/person/month

Table 2: Definition of Variables Used in the Analysis (continued)

Variables	Descriptions
Independent Variables	
Household size	Number of members of family in household
Male Household Head	A dummy variable reflecting the gender of household head where the value of 1 is assigned if head of household is male.
Male Members in Household	Proportion of male members of household
Age of Household Head	A categorical variable for age of household head divided into five categories: (1) 11-24 years; (2) 25-34 years; (3) 35-44 years; (4) 45-54 years; and (5) 55-99 years
Income Earning Members	Proportion of income earning household members
Total Household Income	Average total monthly income of household
Primary Education	Proportion of members of the household attaining at least a primary level of education
Membership of Health Program	Proportion of members of the household having any type of health coverage program
Household Agricultural Land	Area of land used by a household in agriculture measured in rai (1 rai= 0.395 acre)
Household Total Assets	Total assets of the household including housing, land/buildings for business, vehicles, and financial assets
Urban	A dummy variable where the value of 1 is assigned if the household is in an urban area.

Source: 2006 Household Socio-Economic Survey

Description of the Data Set

The data used to estimate the model is from Thailand's 2006 Household Socio-Economic Survey from the National Statistical Office (NSO), Ministry of Information and Communication Technology. The NSO first conducted the Household Socio-Economic Survey in 1957 and repeatedly organized the survey every five years after that until 1987. Due to rapid economic expansion and the social change, between 1987 and 2004 the survey was conducted every two years, and from 2006 onward NSO will carry out the survey every year. The 2006 survey is the eighteenth round of this kind. Since 2006, the survey has been carried out every year. The most recent survey is the 2009 survey, however, the 2006 survey is used in this analysis due to various difficulties in accessing the more recent datasets.

Two types of questionnaires are used. The first type covers household members and expenditures and is used to collect data every year. It includes data on household membership, housing characteristics, expenditures on goods and services, and expenditure on food, beverages and tobacco. The second covers household income and the data are collected every two years. This questionnaire contains information on various sources of income, household assets and debt, and remittances.

The 2006 survey collected information on sample households in all the provinces during January to December 2006. It covered all private, non-institutional households residing permanently in municipal areas, sanitary districts, and villages of all regions. However, it excluded that part of the population living in transient hotels and rooming houses, hostels, boarding schools, temples, military barracks, prisons, welfare institutes, hospitals and other such institutions. NSO used a stratified two-stage sampling design for the survey. Provinces were

considered to be constituted strata. Altogether, there were 76 strata; each stratum was divided into two parts according to the type of local administration, namely, municipal areas, and non-municipal areas. The primary sampling units were blocks for municipal areas and villages for non-municipal areas. The secondary sampling units were private households.

Limitations

Even though the data collected in the Household Socio-Economic Survey can be used to measure food security at the household level, the intra-household distribution of food is not accounted for. If food is not distributed according to need within the household, some family members living in households classified as food-secure may not be receiving adequate food. Similarly, some people may by living in households classified as food-insecure who are nevertheless meeting their food requirement. In order to investigate this issue more fully, further research on dietary intake or food consumption is necessary to acquire a more comprehensive perspective on food security at the individual level.

VI. EMPIRICAL RESULTS

Descriptive Statistics

In this study, the total sample size is 44,872. Within the sample, about 26 percent of households (11,805 households) are in the agricultural sector. Over 50 percent (51.33 percent) of the households are in the Northern regions of Thailand, 28 percent in the Central, 14 percent in the South, and another 6 percent are in Bangkok. Household sizes of the sample range from 1 to 18 members per household. About 13 percent of households report that they do not have any male members in the household. On the other hand, more than 65 percent of the sample had male head of household. The age range of household heads in the sample were from 11 to 99 years old where 3 percent reported an age of 11-24, 12 percent reported an age of 25-34, 23 percent reported an age of 35-44 and another 35 percent reported an age of 55-99. Over 20 percent of the households reported that no family members had attained at least primary education. However, more than 90 percent of households reported that all members of the household had some kind of health care coverage. Less than 2 percent of the households reported that no household member was living without any health care coverage.

Based on a food poverty line of 779 baht/person/month, about 15 percent of the sample households reported that they were under the food poverty line. Average monthly household per capita income had a very wide range. The minimum income was 1 baht/person/month, while the maximum was 2,111,600 baht/person/month. The mean income of the sample was 7,100 baht/person/month. The value of total household assets also varied. It ranged from 1 baht to 123,500,000 baht.

Regression Results

The results from the probit regression for the whole country are presented in Table 3 below.

Table 3: Probit Regression: All Thailand—the Determinants of Household Food Poverty

Variables	Coefficient	Marginal Effects
	All Thailand	
Household Size	0.227***	0.0600***
	(0.00993)	(0.00273)
Male Household Head	0.100***	0.0259***
	(0.0349)	(0.00874)
Male Members in Household	-0.155**	-0.0411**
	(0.0774)	(0.0205)
age11_24	0.582**	0.190**
	(0.233)	(0.0879)
age25_34	0.132**	0.0366**
	(0.0616)	(0.0180)
age45_54	0.0135	0.00356
	(0.0393)	(0.0104)
age55_99	0.146***	0.0390***
	(0.0372)	(0.0101)
Income Earning Members	-0.462***	-0.122***
	(0.0662)	(0.0175)
Total Household Income	-0.0144***	-0.00380***
	(0.000667)	(0.000153)
Primary Education	-0.491***	-0.130***
	(0.0578)	(0.0153)
Health Coverage	0.0883	0.0233
	(0.166)	(0.0439)
Household Agricultural Land	0.00456***	0.00120***
	(0.00107)	(0.000283)
Household Total Assets	-0.00165***	-0.000436***
	(0.000199)	(5.24e-05)
Urban	-0.0692**	-0.0181**
	(0.0289)	(0.00749)
Constant	-0.865***	
	(0.176)	
Observations	11805	11805
log likelihood	14	14
chi2	2276	2276

Standard errors in parentheses

*** Significant at 1%, ** Significant at 5%, * Significant at 10%

For all Thailand, the results show that most of the independent variables are statistically significant. Their statistical significance suggests that socioeconomic characteristics play an important role in determining the probability of a household living in food poverty. Household size, male head of household, income earning members, total household income, education, household agricultural land, and household total assets are all highly statistically significant predictors of food poverty at the one percent level. The proportion of male members in the households and whether households are in urban areas are statistically significant at the five percent level. In addition, the results show that the proportion of members in the households participating in any kind of health coverage program is not statistically significant.

The signs on most of the coefficients are negative, indicate that the probability of being food-poor decreases if households have these characteristics. Positive signs indicate that food poverty increases. Those variables with negative signs include number of male members in a household, proportion of members who earn, total household income, number of members attaining at least primary education, value of household total assets, and location in urban area. On the other hand, household size and male head of household are statistically significant but have positive sign indicating that larger households with more family members are more likely to be food-insecure and households with a male head are more likely to be food-poor compared to those households headed by a female.

An interpretation of some of the coefficient values also yields some interesting insight. We begin this analysis with a look at the effect of household size on the probability of a household being food-insecure. As already noted this positive relationship is highly statistically significant. When all other independent variables are at their mean, each additional member in

the household above the mean value of household size raises the probability of the household facing food poverty by 6.59 percentage points. In addition, if the head of household is male, the probability of food poverty is 2.59 percentage points higher than with a female head of household.

A comparison of other age groups to the reference group, age 35-44, indicates that other age groups have a higher probability of being food-insecure[4]. Those households with heads of household age 11-24, are 19 percentage points more likely to be food-insecure. Households with heads of household age 55-99 are about 3.9 percentage points more likely to live in food poverty. However, there is no statistically significant difference between households with heads of household age 45-54 and the reference group.

Another highly statistically significant determinant of food poverty is the number of members in the households that attain at least primary education. For each percentage point increase above the mean value of the proportion of family members with primary education, the probability of households living in food poverty decreases by 0.129 percentage points.

Income is another statistically significant and negative predictor of food poverty. Two independent variables are related to income: proportion of income earning members and average total monthly income per capita of the household. It is estimated that for each one percentage point increase in the proportion of income earning members in the household, the probability of food poverty decreases by 0.121 percentage points. Second, a thousand baht increase in average

[4] The age range 35-44 is used as the reference group because this is the group that has the highest capacity to work and, thus, the greatest capacity to provide food for the household.

monthly income per person is associated with a 3.8 percentage point decrease in the probability of food poverty.

Controlling for other household characteristics, size of household agricultural land is unexpectedly positively associated with the probability of food insecurity. This variable is included to control for the effect of food availability on food poverty. For each additional rai (about 0.395 acre) of agricultural land, the probability of food insecurity is estimated to increase by 0.12 percentage points. One explanation for this result may be that even though additional agricultural land can lead to larger food production which should be turned into income by the household, often, this does not happen, especially when food prices increase dramatically, and the quantity demanded decreases disproportionately. The problem is made more severe if producers are also exploited by middlemen. As result, the majority of food producers usually consume what they produce and have difficulty gaining access to other types of food, since they do not earn sufficient income.

Health care coverage poses equally troubling questions. It is not statistically significant with a positive sign. One possible explanation may be that there is very little variation of health care coverage in the sample. About 90 percent of the sample report that they are covered by a health care program. However, the results change when we run two models for the Northern region and other regions as discussed below.

Table 4 presents the probit regression results for the Northern regions and other regions in Thailand.

Table 4: Probit Regression: Regional Analysis—the Determinants of Household Food Poverty

Variables	Coefficient		Marginal Effect	
	Northern Regions	Other Regions	Northern Regions	Other Regions
Household Size	0.243***	0.220***	0.0797***	0.0326***
	(0.0120)	(0.0192)	(0.00398)	(0.00313)
Male Household Head	0.0843**	0.0870	0.0272**	0.0125
	(0.0407)	(0.0725)	(0.0129)	(0.0101)
Male Members in Household	-0.125	-0.325*	-0.0411	-0.0481*
	(0.0887)	(0.170)	(0.0291)	(0.0252)
age11_24	0.665**	0.590	0.250**	0.127
	(0.286)	(0.441)	(0.114)	(0.125)
age25_34	0.190***	-0.0592	0.0655**	-0.00845
	(0.0709)	(0.143)	(0.0254)	(0.0196)
age45_54	-0.000604	0.0560	-0.000198	0.00843
	(0.0447)	(0.0884)	(0.0146)	(0.0135)
age55_99	0.164***	0.172**	0.0544***	0.0259**
	(0.0427)	(0.0813)	(0.0143)	(0.0125)
Income Earning Members	-0.413***	-0.309**	-0.135***	-0.0457**
	(0.0770)	(0.137)	(0.0252)	(0.0203)
Total Household Income	-0.0178***	-0.00493***	-0.00584***	-0.000729***
	(0.000955)	(0.000898)	(0.000292)	(0.000117)
Primary Education	-0.496***	-0.475***	-0.163***	-0.0703***
	(0.0664)	(0.126)	(0.0217)	(0.0188)
Health Coverage	-0.220	0.419	-0.0723	0.0620
	(0.208)	(0.332)	(0.0681)	(0.0491)
Household Agricultural Land	0.00418***	-0.000571	0.00137***	-0.0000845
	(0.00135)	(0.00206)	(0.000442)	(0.000305)
Household Total Assets	-0.00129***	-0.000781***	-0.000423***	-0.000116***
	(0.000295)	(0.000255)	(9.68e-05)	(3.76e-05)
Urban	-0.143***	-0.0565	-0.0465***	-0.00821
	(0.0326)	(0.0699)	(0.0105)	(0.00997)
Constant	-0.432**	-1.861***		
	(0.218)	(0.358)		
Observations	8311	3494	8311	3494
Log Likelihood	14	14	14	14
chi2	1706	328.8	1706	328.8

Standard errors in parentheses

*** Significant at 1%, ** Significant at 5%, * Significant at 10%

The regional analysis does yield some significantly different results. Whereas most of the independent variables are highly statistically significant at the one percent level in the all-Thailand case, only half of the independent variables in the case of the *Other Regions* are statistically significant at this level. However, with the exception of health care coverage in the *Northern Regions* model and the size of agricultural land in the other regions model, the signs of the coefficients are the same.

For the *Northern Regions*, household size, proportion of income earning members in the household, average monthly income, education of household members, the size of agricultural land, total household assets, and location in urban areas are still highly statistically significant at the one percent significance level. However, even though the relationship between health care coverage and food poverty is still not statistically significant, the sign changes from positive to negative.

For the *Other Regions*, only household size, average monthly household income, primary education, and total household assets are statistically significant at the one percent significant level. Even though the coefficient on agricultural land is not statistically significant, the direction of the relationship changes from positive to negative.

A comparison of results between the *Northern* and *Other Regions* shows that changes in household socioeconomic characteristics, especially household size, income, primary education, and total assets, all have larger effects on households in the *Northern regions*. For example, adding one member to a household in the *Northern Regions*, is estimated to increase the probability of food poverty by 8.52 percentage points. On the other hand, for households in the

Other Regions, adding one member to the household is associated with only a 3.78 percentage point increase in the probability of food poverty.

Similar results are obtained when looking at the proportion of members in the household attaining at least primary education. For households in the *Northern Regions*, the probability of being food-poor decreases by 0.16 percentage points for each percentage point increase above the mean value for the proportion of family members attaining primary education, compared with a 0.07 percentage point decrease for households in the *Other Regions*.

The effect of household income on the probability of food poverty is also larger in the *Northern Regions*. Each increase of one percentage point in the proportion of income earning members is associated with a 0.135 percentage points decrease in the probability of food poverty in the *Northern Regions*, compared with only a 0.0456 percentage points decrease in the *Other Regions*. Furthermore, on average, it is estimated that, for households in the *Northern Regions*, the probability of food poverty will decrease by 5.84 percentage points for each thousand baht increase in household monthly income, compared with only a 0.73 percentage point decrease for households in the *Other Regions*.

Even though urban/rural location of households is not statistically significant for households in *Other Regions*, it is highly significant for households in the *Northern Regions*. For households in the *Northern Regions*, if a household is located in an urban area, it is 4.65 percentage points less likely to live in food poverty. In other regions, living in urban or rural areas may not affect the probability of food insecurity. In fact, in the *Northern Regions*, location is very important for food providers as well as food consumers, since some areas of the regions are really dry and unsuited to food production, and also distant from urban markets. Living far

away from the city makes it difficult to access urban markets since modern transportation systems do not cover all areas.

VII. CONCLUSIONS AND POLICY IMPLICATIONS

The major finding of this research is that particular household socioeconomic characteristics play a major role in determining the likelihood of whether or not a household will live in food poverty in Thailand. The specific findings should provide useful guidance to the government in the formulation of its policies to reduce poverty and, more specifically, food poverty throughout the country. Accomplishing these goals will require concerted efforts on many fronts, including family planning, women's empowerment and education programs. To be most effective, the government will also need to target those households most at risk of being food insecure, especially those in the *Northern Regions* of the country.

This study shows that household size and income significantly affect a household's ability to access food. While rising household income decreases the probability of food poverty, a larger household size raises that probability. These findings support the theory that as household size increases, the proportion of income spent on food also rises. Members of the larger family have more dependents to take care of. This negative effect, however, can be reduced if the proportion of income earning members in the household increases as more members are added. These results suggest that increased efforts should be made to improve family planning programs to cover not only birth control but also daycare services. Usually, in Thai society, grandparents or women of the house are responsible for taking care of the children at home. Daycare services are rare and not commonly used. However, the cost is high since at least one family member has to stay home to take care of the children instead of entering the job market. As mentioned earlier, an additional member in the family suggests that more income is needed. Nevertheless, keeping one family member at home reduces potential average household

income. The government could help to remedy this problem by developing national daycare services. At the same time, the government could run campaigns to inform the public about the advantages of daycare and to change perceptions about these services.

On the aspect of gender, it is interesting to find that female-headed households are less likely to be food-insecure compared to male-headed households. This result supports the hypothesis that women's role in the household is a crucial element contributing to food security. However, it does not necessarily mean that more women in the household can be expected to reduce food insecurity. To the contrary, this research shows that a higher proportion of male members decreases the probability of being food-poor. Also, although female heads of household tend to spend more on food, they usually have limited access to income and therefore often need to rely on male members of the family for this purpose. Empowering women by increasing their access to other assets is, therefore, a more effective means by which to reduce food insecurity in Thailand.

In addition, the results show that education is an important determinant of food security. Households with a high proportion of family members with at least primary education are less likely to live in food poverty. Having at least primary education implies that people are able to access nutrition and health-related information. With this information, they can learn how to take care of themselves and also their family members, thus, reducing the risk of household food insecurity. The inclusion of nutrition instruction in school curricula would also contribute to this goal.

The results from the regional analysis show that socioeconomic characteristics have an even larger effect on households in the *Northern Regions* of Thailand. Special attention is

therefore needed to target those households. However, it would be costly and highly inefficient for the central government to try to oversee this effort by itself. Instead, the central government would be well advised to help strengthen the capacity of its northern provincial administrations so that their efforts to reach these high-risk households and to reduce food poverty are both effective and sustainable.

Finally, while the results of this study are useful in identifying the factors that are most important in predicting which households are most at risk of food poverty, further research at the intrafamilial level is needed. Since food-security for a household does not guarantee that all members have sufficient access to food, intra-household food consumption should be further investigated to determine how individual and household characteristics affect the distribution of food within the household. Nutrient intake and food consumption of individuals are important issues that need to be investigated more in-depth. However, the Household Socioeconomic Survey is not sufficient to examine these issues since it does not include any questionnaires about health and nutrition status. On the other hand, Thailand's Health Survey, which is collected by the Ministry of Health and does include that information, lacks the socioeconomic data such as income and expenditures of households. It is, therefore, desirable to develop the dataset, which includes both socioeconomic characteristics and health status at both household and individual levels in order to attain a more comprehensive picture of food security in Thailand.

APPENDIX

Appendix 1: Asian Cereal Production (million tons)

	Wheat			Coarse grains			Rice (paddy)			Total Cereals		
	2006	2007 estim	2008 f'cast	2006	2007 estim	2008 f'cast	2006	2007 estim	2008 f'cast	2006	2007 estim	2008 f'cast
Asia	**270.8**	**286.0**	**277.2**	**253.5**	**267.2**	**269.7**	**581.4**	**600.3**	**617.8**	**1105.7**	**1153.5**	**1164.7**
Far East	**198.5**	**212.5**	**216.3**	**226.1**	**240.9**	**247.9**	**576.6**	**595.3**	**613.1**	**1001.2**	**1048.7**	**1077.3**
Bangladesh	0.7	0.7	0.9	0.5	0.5	0.5	41.0	43.4	45.0	42.3	44.6	46.4
China	104.5	109.9	112.5	156.7	163.1	173.1	183.3	187.4	194.6	444.4	460.4	480.3
India	69.4	75.8	78.4	32.5	40.5	37.7	140.0	144.6	147.0	241.9	261.0	263.1
Indonesia	0.0	0.0	0.0	11.6	12.4	12.0	54.5	57.2	60.3	66.1	69.6	72.3
Pakistan	21.3	23.3	21.8	3.8	3.7	3.7	8.2	8.3	9.8	33.3	35.3	35.3
Thailand	0.0	0.0	0.0	4.0	3.9	4.2	29.6	32.1	31.2	33.7	36.0	35.4
Viet Nam	0.0	0.0	0.0	3.8	3.6	3.7	35.8	35.9	38.6	39.7	39.5	42.3
Near East	**47.5**	**45.8**	**36.2**	**22.8**	**20.6**	**16.8**	**4.1**	**4.3**	**4.0**	**74.5**	**70.7**	**56.9**
Iran	14.5	15.0	9.5	4.7	5.1	3.0	2.6	2.8	2.6	21.8	22.9	15.1
Turkey	20.0	17.2	17.8	13.9	11.4	10.8	0.7	0.6	0.8	34.6	29.2	29.4
CIS in Asia	**24.6**	**27.5**	**24.6**	**4.6**	**5.7**	**5.1**	**0.7**	**0.7**	**0.7**	**29.9**	**33.8**	**30.4**
Kazakhstan	13.7	16.5	14.0	2.5	3.3	2.8	0.3	0.3	0.3	16.5	20.1	17.0

Note: Totals computed from unrounded data.

Source: FAO Crop Perspective and Food Situation

Appendix 2: Descriptive Statistics for Variables in the Model

Variable	Obs	Mean	Std. Dev.	Min	Max
Possibility of household living under food poverty line	44872	0.147085	0.3541946	0	1
Number of members of family in household	44872	3.261633	1.627391	1	18
Male Household Head	44872	0.6694598	0.4704129	0	1
Proportion of male members of household	44872	0.4671264	0.2576556	0	1
Age 11-24	44872	0.0297959	0.1700256	0	1
Age25-34	44872	0.123128	0.3285877	0	1
Age35-44	44872	0.2332412	0.4228992	0	1
Age45-54	44872	0.2557943	0.4363116	0	1
Age55-99	44872	0.3580406	0.4794295	0	1
Proportion of income earning household members	44872	0.2985794	0.3379971	0	1
Average monthly total income per capita (in hundreds)	44872	7144.517	17522.1	0.01	21116.23
Proportion of members attaining at least primary level of education	44872	0.5040328	0.3471325	0	1
Proportion of members in household by 30 Baht Health Coverage Program	44872	0.686651	0.4093025	0	1
Areas of land used by household in agriculture (in rai)	11805	14.70504	19.36081	1	700
Total assets of household (in ten thousands)	44872	87.06402	211.9594	0.0001	12350
Household in urban area	44872	0.6222366	0.4848334	0	1

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