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## Principal Component Analysis of Poverty in Northern Thailand

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### Abstract

The North of Thailand is among the poorest regions of the country. To a large extent the population belongs to ethnic minorities with few income sources. For this reason, this paper examines the status of rural household poverty in northern Thailand and identifies the relevant determinants.

Data were collected in nine villages in Mae Rim district, Chiang Mai province. Two groups of farm households were interviewed: a so called hill-tribe known as Hmong and a local people known as Khon Muang. The random sample consists of 200 households; 142 local northern and 58 Hmong households. Principal component analysis (PCA) is utilised to determine the important factors affecting household poverty. Furthermore, a poverty index is developed.

The PCA retained 16 out of 65 possible poverty determining variables. Six of the 16 variables relate to the human resource factor: (1) percentage of adults who can write, (2) percentage of adult completed primary school, (3) percentage of adults with non-farm occupation, (4) number of children, (5) percentage of unemployed to employed, and (6) family size. There are two variables relating to food security that were significant: (7) crop yield and (8) value of main crop yield. Four variables relating to the dwelling show a high correlation to poverty. These are the (9) housing condition, (10) quality of latrine, (11) water system, and (12) furniture. Four variables related to assets: (13) value of transportation assets, (14) farm land owned, (15) value of assets per adult equivalent, and (16) value of agricultural assets.

The explicit factors, relevant to assess poverty are the dwelling conditions, assets, human resources, and food security respectively. The factor, which can turn the poor become even poorer is the human resource factor, where e.g. the number of dependents is comprised. The poverty comparison between farm households living in the highlands and lowlands found that Hmong households, which normally live in mountainous regions, are relatively poorer than the local northern households. This finding leads to the conclusion that factor analysis is very helpful in planning well-targeted and efficient poverty alleviation policies.

**Keywords:** Northern Thailand, poverty, principal component analysis