

## Chapter 4

### Research Findings

#### 4.1 Demographic Location

According to the questionnaires, forty two out of hundred and two sample households engaged in (Kaou Yar- medicine flower in local language) poppy production. There are four types of engagements: 1) Poppy Producer (owned plantation); 2) Poppy Grower (rented plantation); 3) Employees and casual laborers; and 4) Transportation. The majority of engagement within the five different villages was of the third type. Based on secondary data of wealth ranking by village, from the village peace and development council, random sampling was carried out to select responding households.

Table 4.1 Three Strata of Wealth by Village

Wealth Ranking	Number of Households by Village					Total Households
	Kyauk Tan	Pong Chaung	Yoke	Limaw	Nan Paw Sum	
Poor	9	9	3	7	3	31
Middle	6	6	8	7	9	36
Better off	6	6	9	6	8	35
Total Households	21	21	20	20	20	102

Table 4.1 shows the distribution of the three strata of welfare rankings among the five villages. The household size (number of people dwelling in the same the house) varies from one to nine for three different classes of wealth ranking.

Household size of five is most frequent among the middle group, while the biggest household size of nine can only be found in middle and better off families.

Although Kyauk Tan and Baw Kone Village Tract are much closer to Taunggyi, the capital city of Shan State, roads are not currently in a good state of repair. The most remote village Kaung Noke/Kaung Kham is located approximately at 5000 feet above sea level. Not only are the elevation and slope, but also the red-brown soil and climate are the factors that have moved the attention of cheroot farmers to growing poppies. According to group t test, the mean value for gross annual income of poppy is 0.1190 while the non poppy is 0.3833. The below cross tabulation bar chart shows that more poor households in poppy producer group.

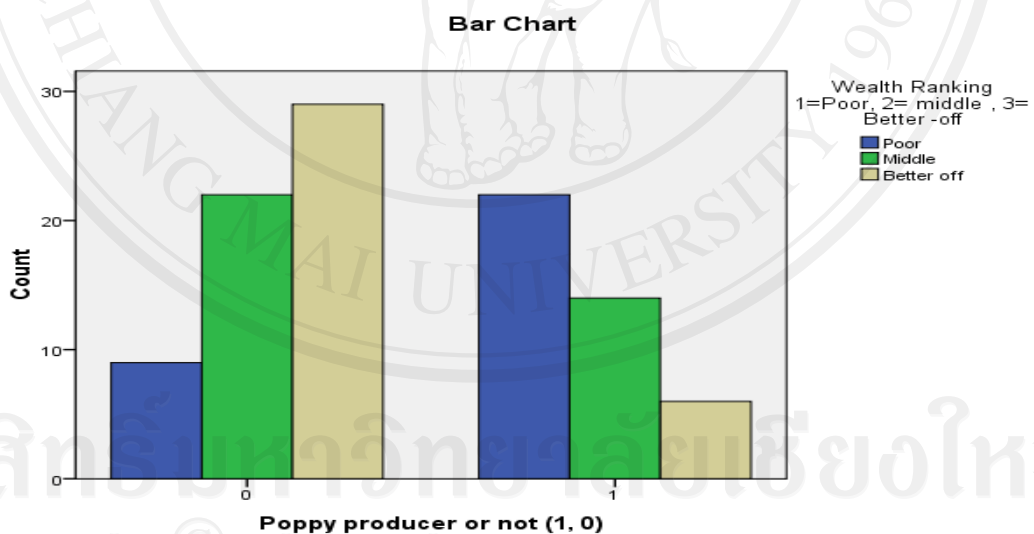


Figure 4.1 Cross Tabulation of Wealth versus Identification of Poppy Producer

However, this cross tabulation cannot yet be regarded as conclusive as this wealth ranking was carried out by local leaders in order to divide the social contributions and tax conveniently among the community. To get more detailed facts

on absolute poverty and relative poverty, further calculations will be presented later through Gini coefficient, Theil Index and the FGT Index.

#### 4.2 Access to Health Facilities and Local Habits

Figure 4.2 below shows the health infrastructure of research area. The area was covered by the Kyauk Tan Rural Health Department under the Hopong Township Hospital. Although there is access to health facilities, it was found that hardly any in-patients were been admitted during the study period.

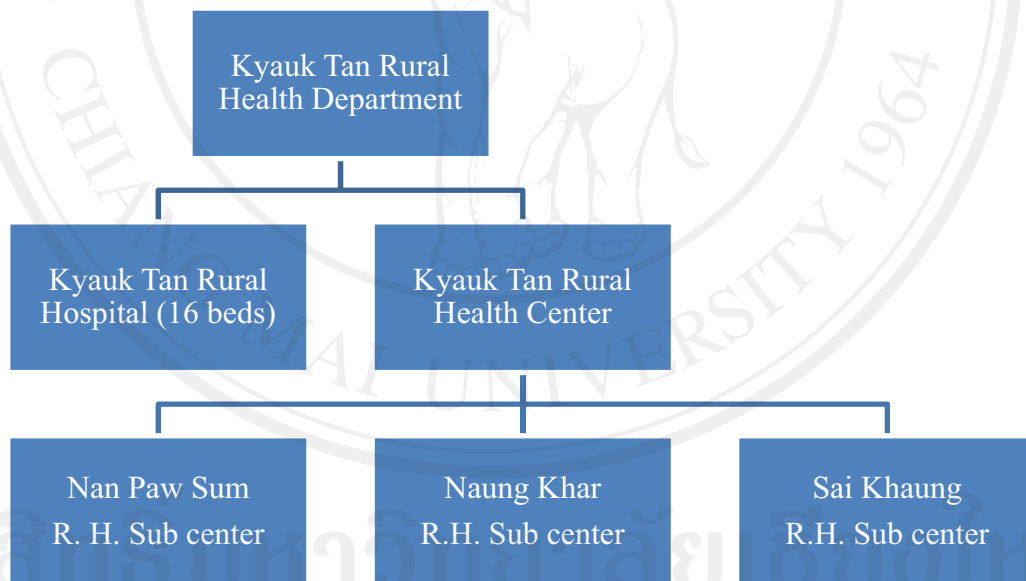


Figure 4.2 Health Facilities of Research Sites

The following graph from Kyauk Tan Rural Station Hospital shows that clinical symptom of malaria (CSM) case is the most frequent disease in that area.

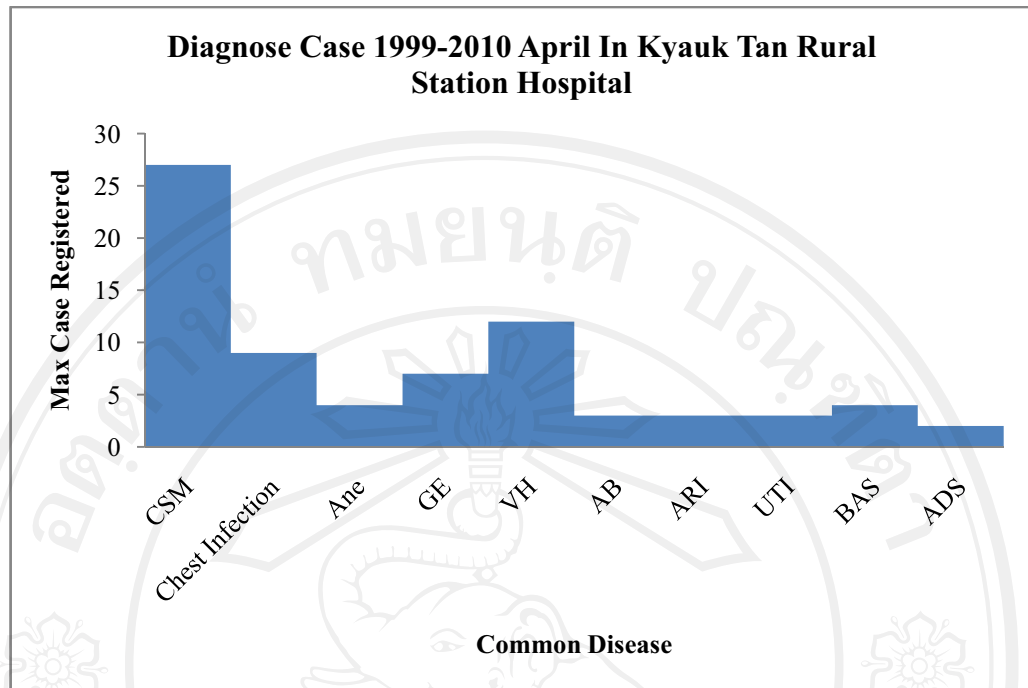


Figure 4.3 Diagnose Case from 1999 up until April 2010 Kyauk Tan RSH  
(Source- Hospital Annual Record of Kyauk Tan Rural Station Hospital).

See abbreviation on page IX for diagnosed case of commonly found disease in the figure.

The hospital practices a cost sharing system according to wealth, but the poorest are exempted from hospital fees. However, local patients with insufficient financial support avoid the hospital, and are still relying on herbal self-treatment, such as black opium as treatment for pain and diarrhoea in most of the remote villages. The transportation cost, delays in work or reduced labor forces and fear of going to hospital leads them stay at home and rely on local herbs or black opium, unless it is serious enough to be a matter of life and death. The use of opium as medicine starts the addiction and the use of relaxation purpose take away labor and the family income.

### 4.3 Government intervention

The unclear administration systems, where the local and central government compete over the same issues, causes most villagers to either temporarily or permanently migrate to other places to seek work, both legally and illegally, in other regions or abroad. The unclear administration competence means that although these villages are under the Pa Oh National Army, Myinmo District, the autonomy of the PNA (Pa Oh National Army) is in a seriously questionable position. Especially, on the east bank of Poon stream in Nar Yaing, also known as MTA (Mong Tai Army), Burmese infantry from Naung Moon and Hsisaing often trespass to collect bribes from the local farmers. During the interview; most of the villagers expressed their impression on the situation before and after the cease fire agreement between PNA and Burmese Army. Before the cease fire agreement, they were reportedly living in fear of civic war, and life was not stable as they constantly on the run and hiding. After the cease fire agreement in 1989, they expected life to become easier since with the end to civil war, forced payments and forced labor, business should go back to normal. Unfortunately, it turned out that their expectations were too optimistic.

Before the cease fire agreement, at least one male member of each household was forced to serve in the Pa Oh National Army (PNA). Those who failed to serve were fined. Besides that, a regular basis forced payments were collected through the village leaders. Sometimes, the heads of village were tortured by either PNA or Burmese Militia accusing them of serving or contacting the opposite group.

The question remains, whether the situation improved after the cease fire agreement. The statement from the local people provides a good answer. “Unlike the

regular US navy soldiers, the PNA soldiers have lived on a very low salary with no food ration support after the cease fire agreement. Surprisingly, even the educational representative of PNO only got paid four hundred kyat per months; which amounts to an annual salary far less than five dollars. Except for those who have been assigned to the business sector, the ordinary soldiers rotate among the villages and houses to rely on host families for their shelter and food. Villagers, especially the poppy growers, have to pay bribes to the Burmese infantry, as each infantry battalion commander has to take care of his subordinates' ration and funding.”

The local government assigned tasks to occupy the excess labor force. For instance, at least one member of the household has to join the group to serve as a watch guard for village security during the day. Again, failure to serve is punishable with a fine to the Village Peace and Development Council of five thousands kyats (which are nearly five dollars) per day. This certainly affects the middle and poor households, as the average daily income of wages and casual labour is only between 1000-2000 Myanmar kyats. Losing even one day's income leads to higher burdens relating to debts. Furthermore, the correlation analysis showed a positive relationship between the total payable debts and the government related expenditure, such as taxes and bribes.

In fact, fifty four out of one hundred and two households are living below the poverty line of one dollar per day. This will cause a lack of capability to meet even basic physical needs, as almost 52% of households within the poppy production group are living below the poverty line.

#### 4.4 Uncertain Land Ownership Right

As per National Law, nobody owns the land but the Government of the Union of Myanmar. In Myanmar Land lease certificate need to be in hand for ownership of land. Land lease agreements are normally issued for a period of 30 years, except for special agreements between the tenant and the government for business purpose. However, no clear land usufruct rights have been established so far in these villages yet. Besides, every village conserves the forest area, and the shifting of cultivation is hardly seen in these areas. Each village has its own firewood plantation for fuel, and people are allowed to cut firewood only in that specific area. Re-plantation is carried out by households in rotation. Local inhabitants practice customary law to assign land usufruct rights. In case of a dispute over land use, the Village Peace and Development Council will settle the conflict together with village elders and monks.

Land use right can be transferred locally. There are different types of land tenure in these areas: 1) Early settlers own the land by customary law; 2) Land use rights can be transferred through inheritance; 3) Land use rights can be purchased in cash or in kind; 4) Land can be rented in cash or in kind.

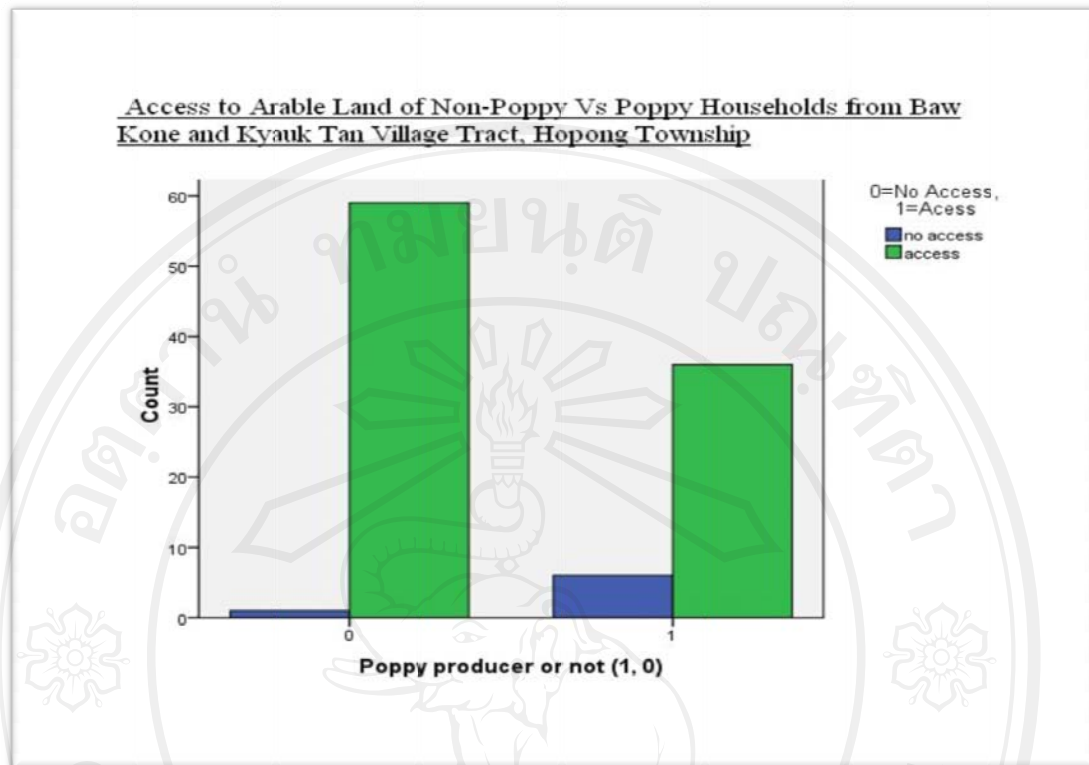


Figure 4.4 Access to Arable Land of Non-Poppy versus Poppy Households

Above bar chart resulting from the crosstabulation, shows that people involved in poppy production are found more lacking in access to arable land than non poppy growing households. Fisher's Exact Test shows there is an association between identification of poppy households and the access to arable land at 5% significance level. Pearson Correlation Coefficient shows that there is a weak negative correlation between the two variables of poppy producer or not and access to arable land. Households with lack of access to arable land work for wages as casual labors. Daily ends are met by paid labor in seasonal businesses such as cheroot production, poppy production, garlic and other such casual work. Some families rely on remittance from a family member working abroad



Table 4.2 Bivariate Correlation Result for Hypothesis One

Partial correlation matrix with respective to access to land		Poppy producer or not (1, 0)	% land to poppy production	% of labor use in poppy business activity
Owned land (hec)	Pearson Correlation	<b>-0.346<sup>**</sup></b>	-0.042	0.017
	Sig. (1-tailed)	<b>&lt;0.000</b>	0.336	0.431
	N	<b>102</b>	102	102
Rented or insecure tenure land (hec)	Pearson Correlation	<b>0.346<sup>**</sup></b>	<b>0.445<sup>**</sup></b>	<b>0.334<sup>**</sup></b>
	Sig. (1-tailed)	<b>&lt;0.000</b>	<b>&lt;0.000</b>	<b>&lt;0.000</b>
	N	<b>101</b>	<b>101</b>	<b>101</b>

Table 4.2 represents the bivariate correlation results of hypothesis one “Lack of access to *natural resources* (lack of access to arable land, lack of land ownership) is positively correlated with the decision to transfer land and labour into poppy production.” The star represents the level of significance (1%)(one tailed) . The positive correlation between rented or insecure land and the percentage of land given to poppy production shows that the higher the amount of rented land the greater chance the farmer will grow the poppies .Conversely, the negative correlation between land ownership and the identification of being a poppy producer or not shows that the higher the ownership of land the lower the likelihood the farmer will be a poppy producer. Also, there is a positive correlation between the percentage of labor use in poppy business activities on one side and other variables such as the land ownership, percentage land to poppy production and the status of being a poppy producer or not. The interpretation is that the higher the amount of rented land in

hectares the more labor is needed to take care of the business, such that the higher the percentage of land given to poppy production the higher the percentage of labor is required to hire, and thus the higher the number of people become involve in poppy business activities. Hence the hypothesis number one is failed to reject at the 1% level of significance .

#### **4.5 Different in Wages**

Working on a poppy farm earns 2US\$ to 5US\$ per day depending on labor skills and demand. But for cheroot farm wages of only 0.5 US\$ to 2US\$ are offered, depending on the season and level of completion. Then one immediate question will arise whether all casual labor shifts to poppy farm works or not. The answer is that the wage difference is not the only factor involved in their decision to shift their jobs. To work in poppy farm needs trust and a high level of social networking, as the hiring of labour for this kind of business is discrete. In addition, the demand of labor is only seasonal and there are limited in spaces, in contrast to cheroot farming. Holders of a National Identification and non-holders have different opportunities to travel around the country. Non identification holders face difficulties in traveling from their villages to another town or region. Because, the village peace and development council checks the National Identification Cards one house to another occasionally. Temporary immigrant or the visitors have to used National Idification Card to inform and register their stay in the village. Failure to inform to authority will be charge both fine and imprisonment. Again , those who (people with no National Idification Card) want to travel must pay ‘under-the table’ payments or bribe to the Village Peace and Development Council for individual travel documents.

Table 4.3 SPSS print out for regression result of Hypothesis Two

Dependent Variable : % of labor use in poppy		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.498	1.713		<b>2.042</b>	<b>0.044**</b>
	Government law enforcement	-35.708	7.509	-0.426	<b>-4.756</b>	<b>&lt;0.000***</b>
	tax/bribes	34.221	4.098	0.753	<b>8.351</b>	<b>&lt;0.000***</b>
	Total consumption per adult equivalent	-0.006	0.003	-0.145	-1.861	0.066*

Adjusted R-squared: 0.403    F-statistic: 23.506    Degrees of freedom: 97

Table 4.3 shows the regression results of the hypothesis number two “Low levels of welfare acquisition capacity, especially in terms of the basic needs spending on per capita consumption per adult equivalent is positively correlated with the decision to transfer land or labor into poppy production; but the fear of physical addiction, assault, or crime cancels those expectations in many individuals.”

The dependent variable is the transfer of land into poppy production. We have tried to explain this by three independent variables: (1) The basic need spending on per capita consumption per adult equivalent, (2) Government law enforcement and (3) Bribes and taxes.

The entire model is significant at F statistic 23.506 at the degree of freedom 97 with 1 % significance level . This means that the relationship taken as a whole has economic meaning. The adjusted R squared shows that the combination of these

independent variables significantly predict the dependent variable with 40.3 % of the variance being predicted by the independent variables. Two of the variables (law enforcement and bribes) are highly significant (at 0 .1% level or even lower), while total consumption per adult equivalent is significant at the 10% level (\*). The direction of correlation coefficient revealed to be positive for bribes and negative for law enforcement. However, the magnitude of the correlation is low and the constant term of the intercept is significant at 5% which means all variables can be predicted.

The unstandardized correlation coefficient shows that a bigger the low level of per capita consumption per adult equivalent leads to a higher percentage of contributions of labor to poppy production. This means that the downturn in subjective welfare motivates poppy land owning entrepreneurs and the casual poppy laborers to dedicate their labor supply to poppy production instead. In addition, the corruption encourages the farmer to grow poppies by means of paying bribes to the authorities. However, the coefficient of government intervention (by means of law enforcement) variable shows that the fear of physical assault, crime and imprisonment cancel those expectations. We can therefore accept the second hypothesis.

#### **4.6 Difference in return**

From the production point of view there are many incentives, such as the return from one viss which has equivalent to one point five kilograms of cheroot is on average between US\$1.2 and US\$4 in 2009 while the opium prices were US\$ 700 and US\$750 per one point five kilograms of old stock, US\$ 300 and US\$400 per one point five kilograms for newly produced raw opium. Both commodities are very durable

and the cheroot can be sold legally while the opium can not. That is one of the reason that the opium price is very high in comparison to cheroot. From production and marketing cost point of view, the average cheroot cost is US\$1.6 per viss(1.5kg), while poppies cost less than one dollar. Semi-finished goods of cheroot leaves have to be packed into a bamboo basket and it needs a high labor force for each process, while poppy needs very little handling. For packaging the poppy either banana leaves or just the poppy leaves themselves can be used, which saves packaging cost. In terms of transportation and storage the cheroot needs more space as it is bulky although it is light in terms of weight, while opium can easily be carried by individual mediator or trafficker as it is very compact and can be transported in many subversive ways. Thus, in general the net return of poppy is higher than that of cheroot. However, the Law Enforcement of Drug in Myanmar restrain these motivations.

Table 4.4 SPSS printout for the regression result of Hypothesis Three

% of labor use in poppy business activity	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
tax/bribes	31.076	4.011	0.700	<b>7.748</b>	<b>&lt;0.000**</b> *
Government intervention	-34.774	7.351	-0.407	<b>-4.731</b>	<b>&lt;0.000**</b> *
Ease	2.137	0.813	0.207	<b>2.629</b>	<b>0.010</b>

Adjusted R-squared: 0.456    F-statistic: 29.178    Degrees of freedom: 98

Table 4.4 shows the regression results of the hypothesis number three, “Price advantages and compatibility for transportation of poppy is positively correlated with

the motivation to shift land and or labor to poppy production, while the climate and law enforcement may cancel these influences.”

Stepwise method is used to chose the best model. The F statistics 29.178 at a degree of freedom 98 shows that the combination of these independent variables significantly predicts the dependent variable at 1% significance level. The Adjusted R squared shows that 45.6 % of the variance can be predicted by the independent variables. The direction of correlation coefficient is revealed to be positive for the independent variables such as tax/bribes and ease(easy to plant) and negative for government intervention( law enforcement). However, the magnitude of the correlation is low. Since t statistics test the unique contribution of each independent variables, a significant t value indicates that the regression coefficient is significantly different from zero.

The unstandardized coefficient shows that a higher government intervention in law enforcement can reduce the further production of poppy. However, easyness to plant and bribe payments to grow poppy show a positive correlation with the percentage of labor working in the poppy production. However, the hypothesis three is failed to be accepted , due to the fact that price advantage variable (money and market price), compactable to transport and the climate (Drought/flood) variable are not significant and excluded from the model.

#### **4.7 Socio-economic Status of Households**

The average debt–asset ratio of research area yields 2.69, which means majority of their assets are financed by debts.

Table 4.5 SPSS printout for regression result of Hypothesis Four

Dependent Variable : % of labor use in poppy		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
(Constant)		0.629	1.077		0.584	0.560
Government intervention(Law enforcement)		-18.336	7.430	-0.219	<b>-2.468</b>	<b>0.015**</b>
Problem of have to pay tax/bribes		17.473	4.728	0.385	<b>3.695</b>	<b>&lt;0.000***</b>
debt to asset ratio		-0.014	0.082	-0.012	-0.169	0.866
Poppy Income (USD)		0.004	0.001	0.479	<b>5.244</b>	<b>&lt;0.000***</b>
net worth		-2.206E-5	0.000	-0.014	-0.199	0.842

Adjusted R-squared: 0.514    F-statistic: 22.153    Degrees of freedom: 95

Table 4.5 shows the regression results for the hypothesis number four; “The expectation of improving economic standing (income,debt-asset ratio and network) are postively correlated with the decision to transfer labor into poppy production; while the fear of economic menaces (extortion, bribes, fines, arrest or blackmail) effectively cancels those expectations out.”

The F statistics 22.153, at the degree of freedom 95 shows that the combination of these independent variables significantly predict the dependent variable at 1% significance level. The adjusted R squared indicates that 51 % of the variance can be predicted by the independent variables. The direction of correlation coefficient revealed to be positive for independent variables such as bribes, poppy

income (USD) and negative for law enforcement , debt to asset ratio and net worth. However, the magnitude of the correlation is low except for the variable number two and four “bribe payment” and “Poppy amount of Income“, which have fair correlation .The constant term of the intercept is not significant which means some of the variables can not be predicted. The unstandardized coefficient shows that the higher government intervention in law enforcement can reduce the further production of poppy. The debt-asset ratio also shows a negative correlation with the dependent variable which means the lower the debt-assets ratio the higher the percentage of people working in poppy farming. Since the average debt–assets ratio shows that ownership of the assets is mostly financed through debts there should be a positive correlation between decision to work in farm and the debt-assets ratio.

Bribe payment to grow poppies, the amount of income from poppies and the net worth show a positive correlation with the percentage of labor working in the poppy production. In fact, the failure of government intervention and community cooperation leads to a positive correlation with the tax/bribe variable. A higher bribe payment means a greater amount of poppies are grown and more labor used in the poppy production. However, the t-statistics value of independent variables net worth and debt to asset ratio indicates that the regression coefficient is not significantly different from zero. Thus, the hypothesis number four is also rejected.

#### **4.8 Social Standing**

“Household assets are believed to reflect the socio-economic status and the economic security of the household members” (Decha Karnjanangkura-1996, p78).



To see whether it is also reflect in this research, especially setting decision rules for hypothesis five, a bivariate correlation analysis was done and resulted in the following;

Table 4.6 Bivariate Correlation result of Hypothesis Five

		Composit score of scio-economic status	Highest level of education attained by anyone in the household (0 .....9)	% professional work (teacher, public servant, retired and student )	spending on social and religion contribution	spending on durable assets
% land to poppy production (entrepreneurs)	Pearson Correlation	0.016	-0.090	0.039	<b>0.167*</b>	<b>0.296**</b>
	Sig. (1-tailed)	0.435	0.183	0.349	<b>0.047</b>	<b>0.001</b>
	N	102	102	102	<b>102</b>	<b>102</b>
% of labor use in poppy business activity (laborers)	Pearson Correlation	0.022	-0.139	-0.071	0.071	0.131
	Sig. (1-tailed)	0.415	0.082	0.240	0.239	0.095
	N	102	102	102	102	102
Poppy producer or not (1, 0)	Pearson Correlation	<b>0.220*</b>	-0.105	-0.046	<b>0.208*</b>	<b>0.394**</b>
	Sig. (1-tailed)	<b>0.013</b>	.147	0.322	<b>0.018</b>	<b>&lt;0.000</b>
	N	<b>102</b>	102	102	<b>102</b>	<b>102</b>

Table 4.6 shows that, the bivariate correlation result of hypothesis number five , “The expectation of improving *social standing* (prestige, self esteem and an envy-free mental state through higher levels of perishable and durable consumption)

is positively correlated with the decision to transfer land and labor into poppy production”.

For the purposes of testing this hypothesis, professional occupation will be used as a proxy for prestige; education level will be used as proxy for self-esteem. Composite score of socioeconomic status is captured in a Likert scale: 1. Certainly 2. Quite equally treated equally; 3. May be; 4. Not that equally; 5. Not at all. It should be noted that the decision to devote land to poppy is made by the subgroup of poppy entrepreneurs (line 1 of the table), while the decision to devote labour is made by those without arable land who depend only on their labour (line 2 of the table).

Two stars in the table represent 10% significance level while one star represents 5% significance level for one tailed normal distribution. There is positive significant correlation between the percentage of land given to poppy production versus other variables such as spending on social and religious contribution, spending on durable assets. However, there is no significant correlation between the percentage of labor in the poppy business activity versus variables such as spending on social and religious contribution, spending on durable assets. This shows the statement for hypothesis is only true for the entrepreneur, but not for the labor who are working on the poppy farms. Since the entrepreneur use their income from poppies in a way to cover up their illegal business by contributing to social and religious activities and also spending on durable assets, in order not to be looked down by the community. The laborers working on the poppy farms are struggling in their daily to make ends meet and can not afford to spend on durable assets, nor can they make high spendings for social and religious puposes as the entrepreneurs do. Their motivation is related to

the lower level of existential needs but not the growth level. Hence the hypothesis five is rejected for labourers but not rejected for entrepreneurs.

#### **4.9 Morality and Decision of Illegal Business**

There are conflicts in the belief of merit and the fair business (Samarsiva) among many people. Some believe that Samarsiva means doing business in a humble and fair manner. Some believe that doing merit can lessen the sin, suffering and investment for the future in this and the next life. Some people believe that Samarsiva only exists if and only if, one's stomach is full. Which means that if someone's basic needs are fulfilled, that person may act in a humble way. In Myanmar engaging in the poppy business is illegal and it is also believed that it is against the teaching of Buddha . This morally related question was asked and yielded the following regression results for the hypothesis number six "The fear of spritual decline (acting contrary to Buddhist principles, spritual growth and other self-acutalization) is a major deterrent to switching to poppy production; while the use of charity and other good works may offset that fear."

Table 4.7 Bivariate correlation result of Hypothesis Six

		6.9 spending on social and religion contribution	5.4.4. Monastery visit/months	5.4.5.No of meditations (days/ nnum)
% land to poppy production	Pearson Correlation	<b>0.167*</b>	-0.021	-0.129
	Sig. (1-tailed)	<b>0.047</b>	0.418	0.099
	N	<b>102</b>	102	102
% of labor use in poppy business activity	Pearson Correlation	0.071	-0.020	-0.092
	Sig. (1-tailed)	0.239	0.422	0.179
	N	102	102	102
Poppy producer or not (1, 0)	Pearson Correlation	<b>0.208*</b>	-0.093	<b>-0.281**</b>
	Sig. (1-tailed)	<b>0.018</b>	0.176	<b>0.002</b>
	N	<b>102</b>	102	<b>102</b>

Table 4.7 indicates that the number of meditation days and number of monastery visit is negatively correlated with identification of in poppy variable (poppy producer or not ). This means that the more meditation and realization of the good and the bad the lower the motivation to go into illicit business like poppy production. A higher income rank from poppy leads to a higher spending on religious and social events like doing merit or donation to compensate for sin and also expectation to get some return on donation for own profits. Consecutively, the false religious belief in the compensating effect of merit-making in the temple leads to more self-centered morality. This was identified by the significant positive correlation between the percentage of land devoted to poppy production by entrepreneurs and the spending on social and religious contribution. Therefore, the hypothesis number six is accepted

for the entrepreneurs but rejected for the labourers as it is not statistically significant at any of the three levels.

#### 4.10 Inequality of Income in Terms of Consumption per Adult Equivalent

Table 4.8 Gini Index by Village

Village	Gini Poppy Households	Gini Non poppy growing households
Nan Paw Sum	0.24	0.43
Kyauk Tan	0.27	0.26
Limaw	0.33	0.21
Yoke	0.37	0.35
Pong Chaung	0.47	0.31

To find the inequality in income for the two targeted groups Gini coefficients were calculated. The fear of income tax and other forced payment limits the availability of the reliable income data, thus Consumption per Adult Equivalent was used for the Gini Coefficient calculation. And the calculation was based on the price from 2009 only and one thousand Myanmar kyat was equivalent constantly to 1 US\$.

Among the five villages only the non poppy growing households of Nan Paw Sum village, have a higher Gini coefficient while, in the remaining four villages the Gini coefficient is higher in poppy growing households. This means that in general, poppy growing households of the four villages have more inequality in their income than the non poppy growing households.

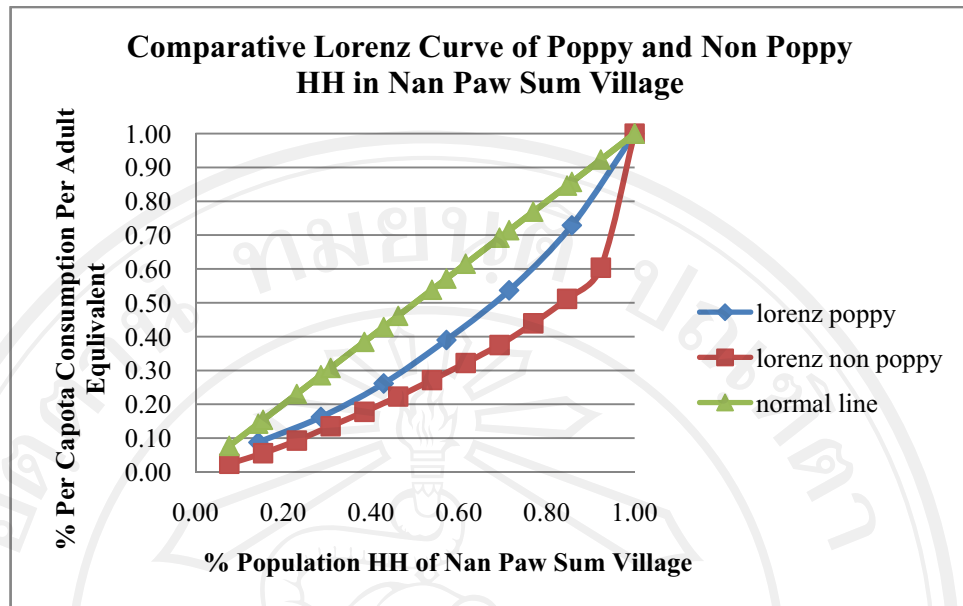


Figure 4.5 Lorenz Curves of Poppy and Non Poppy Growing Households in Nan Paw Sum Village

Figure 4.5 shows the inequality comparison between poppy growing households and non poppy growing households. The green line represents perfect equality, The blue line is the Lorenz curve for poppy growing households, while the red line stands for the non poppy growing households of Nan Paw Sum Village, Hong Pong Township, Myanmar. Non poppy growing households from Nan Paw Sum village have higher inequality than the poppy households. Since the Gini coefficient of different sets of people cannot be averaged to obtain all the people in the sets, this may be due to an anomalous result as there was one specific wealthy household with annual income of US\$ 2'972 widening the gap between the perfect equality line and the Lorenz curve of the non poppy growing households, resulting in a Gini coefficient of 0.43. To compensate the disadvantage of the Gini measure, the decomposable Theil index was calculated. The Theil index can be written as a combination of weighted

average inequality within subgroup and inequality among those subgroups. The results were ranked as followed;

Table 4.9 Decomposable Theil Index by Village

Village	T1	T2	Theil Index
Nan Paw Sum	0.09	0.43	0.34
Pong Chaung	0.38	0.17	0.28
Yoke	0.24	0.24	0.24
Limaw	0.17	0.08	0.14
Kyauk Tan	0.12	0.11	0.12

In the table 4.9, T1 represents the Theil index for poppy growing households, T2 represents Theil index for non poppy growing households and the last column represents the total Theil index. According to the latter, again Nan Paw Sum has the highest index. In terms of within subgroups as poppy households it shows that Pong Chaung village has the highest Theil index, followed by Yoke, Limaw, Kyauk Tan and Nan Paw Sum as the lowest. On the other hand, among the non poppy growing households, it can be seen that Nan Paw Sum has the highest level of inequality followed by Yoke, Pong Chaung, Kyauk Tan and Limaw.

However the Theil index alone cannot tell us much about the population therefore we intended to study further details of percentage, the depth of poverty and degree of severity. Therefore, Foster-Greer-Thorebeck (FGT) index was calculated for each village and revealed as below;

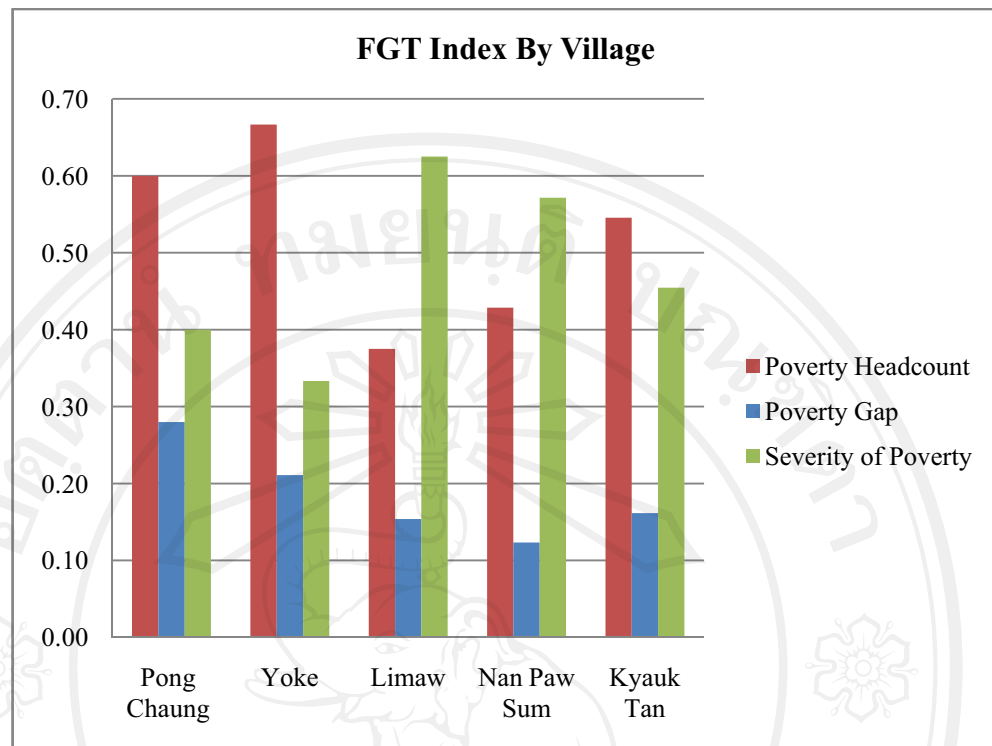


Figure 4.6 FGT Index of poppy household by village

Figure 4.2 depicted that Yoke has the highest poverty headcount with 67% of the village living below the poverty line (less than one dollar per day). This was followed by Pong Chaung at 60%, Kyauk Tan at 55% , Nan Paw Sum at 43% and Limaw at 38%. There is negative correlation between Poverty Headcount and severity. Hence, Limaw has the highest and Yoke has the lowest severity of poverty among the villages, in the reverse order. However, in terms of poverty gap Pongchaung has a wider gap than the rest of villages followed by Yoke, Kyauk Tan , Limaw and Nan Paw Sum. By comparing the FGT for different exponents  $\alpha=1,2,3,4$  of poppy and non poppy growing households by villages the outcome were revealed in the following figures;



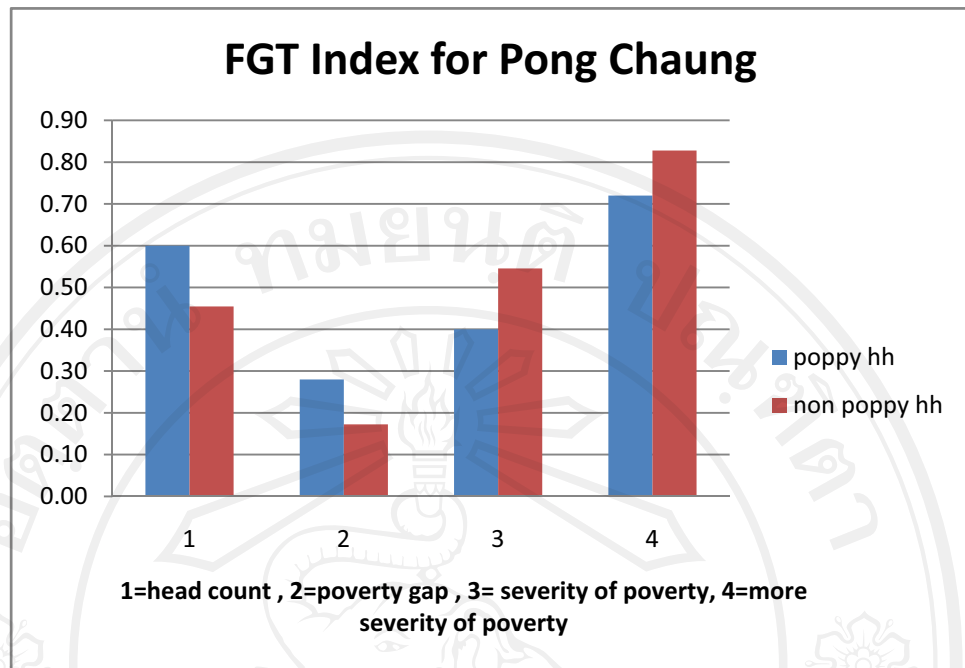


Figure 4.7 Comparison FGT Index for Pong Chaung Village

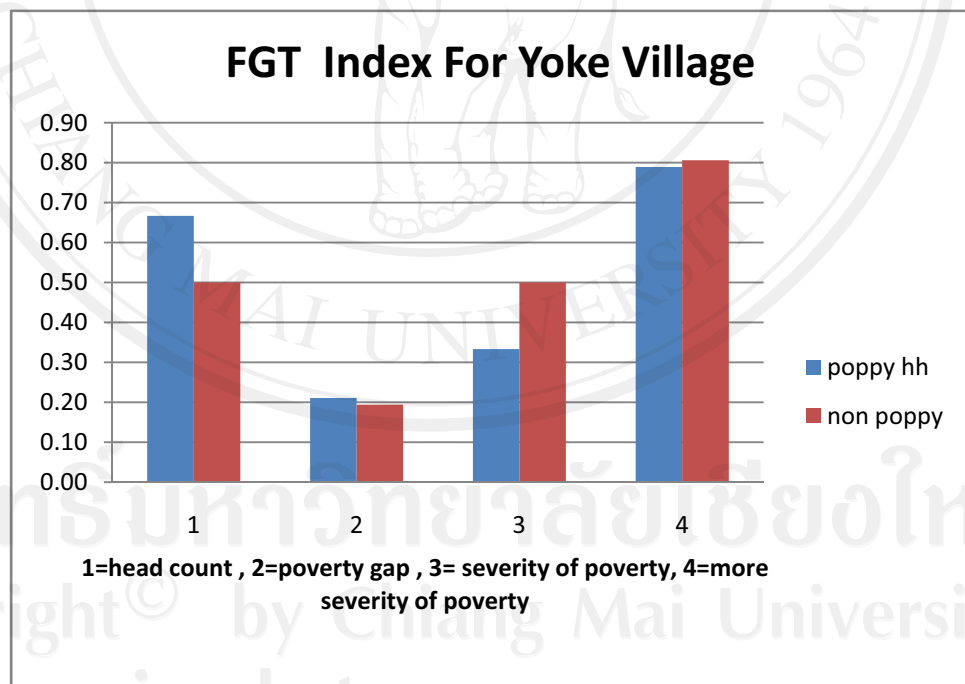


Figure 4.8 Comparison FGT Index for Yoke Village

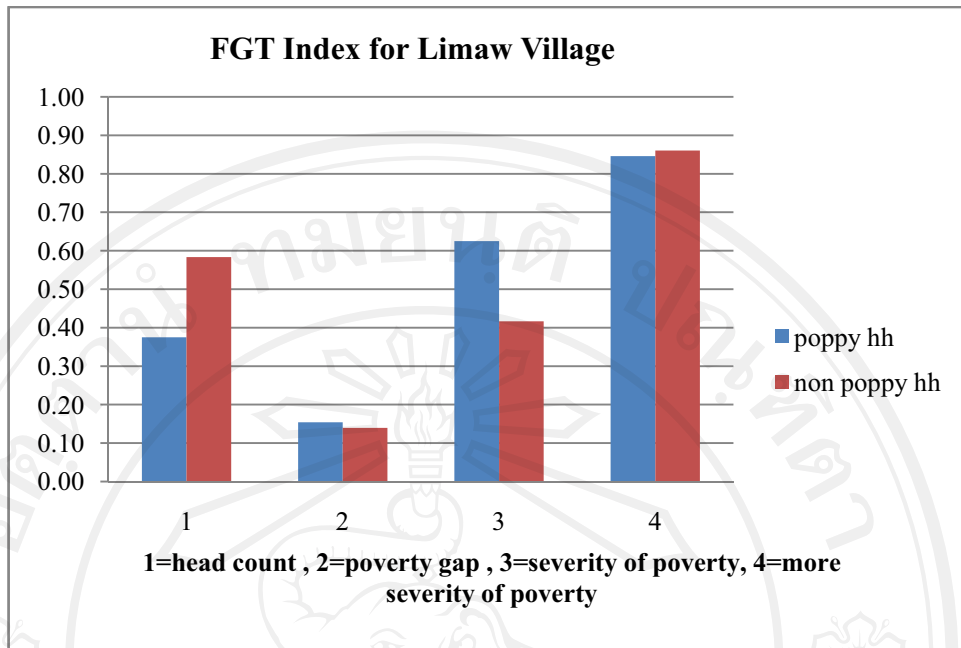


Figure 4.9 Comparison FGT Index for Limaw Village

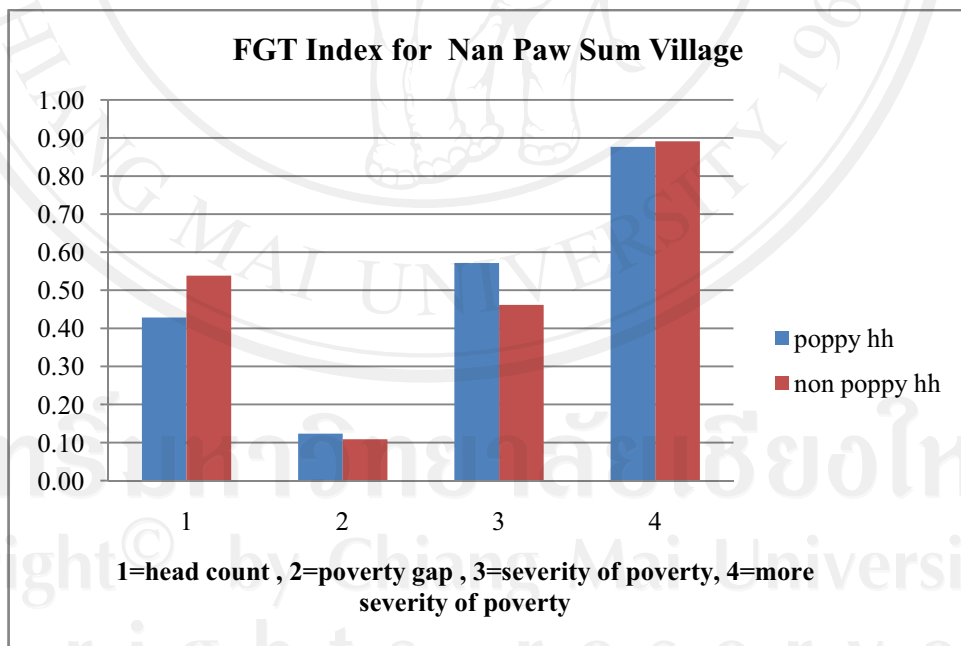


Figure 4.10 Comparison FGT Index for Nan Paw Sum Village

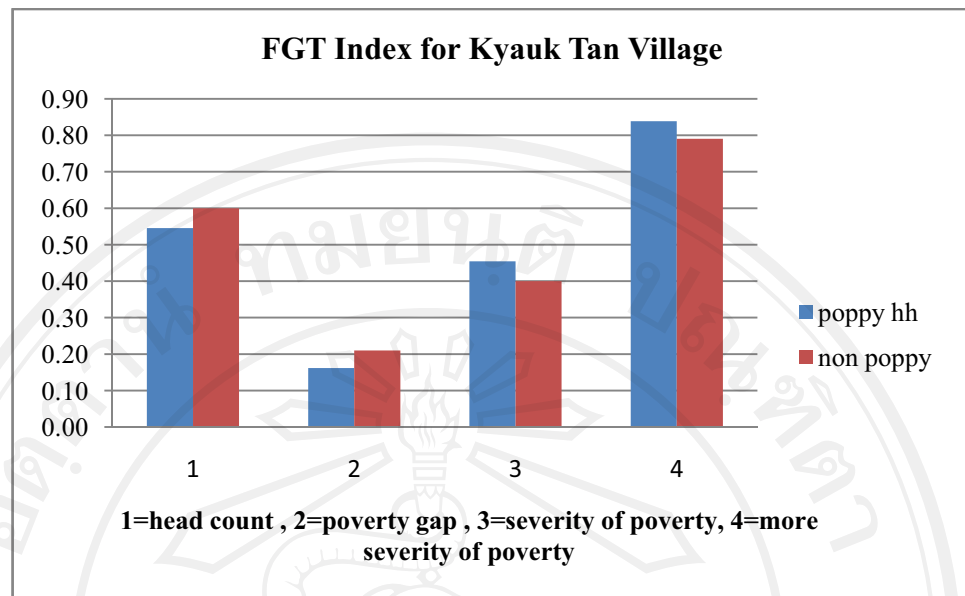


Figure 4.11 Comparison FGT Index for Kyauk Tan Village

The above figures comparing FGT index for poppy and non poppy growing households show the poverty headcount, poverty gap, and degree of severity of poverty among the villages. The poppy households had a higher severity of poverty than the non poppy growing households in Kyauk Tan, Nan Paw Sum and Limaw villages while the other two villages were lower. This implies that the poorest households from these three villages are involved in the poppy production business.

The poppy households from the other two villages are also on the margin of severe poverty. Hence, people involved in the poppy production are likely to be affected by the poverty in general. But poverty alone could not explain the motivation for the shift to cultivation of poppies. When people are in the depth of poverty and less satisfied, they tend to act self-centered in terms of welfare and goals. With a lack of capability to fulfill one's basic needs, alternative income is the way to fill the gap. To identify another factor a bivariate correlation matrix was employed and it revealed that there is positive correlation between number of income earners and the percentage of labor

working in poppy farming activities. This indicates that the higher the severity of poverty the higher the likelihood that people will go into the poppy business as an income earner to fulfill their needs. Apart from that, test of means between poppy and non poppy for different wealth rankings showed that non poppy growing households having larger mean of wealth ranking than the poppy growing households. Which means the wealth difference between the poppy and non poppy growing households as of hitherto still have a wider gap. In the reality the physical addiction to opium causes the family income to go down and the poverty of the poppy sub group to still have a wide gap compared to non poppy growing farmers. The addiction starts for poppy grower and the wage laborer in the time of harvesting. Harvesting in the poppy farm cause the laborer muscle pain. To relieve the muscle pain and tiredness they took opium serum and put it on the cigar for smoking. Some tricky opium producer try to cook the opium plant and flower to mix fluid with the opium serum and sometime opium serum is mixed with local laxative medicine to gain more weight of semi-finished goods. Once raw opium has been transformed into semi-finished goods the opium broker or dealer hire local poor person to test the opium quality. This cause another addiction by hiring agent to test the semi-finished opium. The employee change another agent once the former agent is physically too addicted. In this way many poor become addicted and less productive in their works, which cause not only the loss of labor but also the income. Laborer involve in the poppy business become poorer and sink deep down in the poverty. Thus hypothesis seven "As a whole, the move by several farmers into poppy production has improved the equality of income", was rejected .

#### 4.11 Composition of Tangible Living Standard and Intangible Life Satisfaction

Different people have different needs and life satisfactions. People seek greener pastures for the sake of the satisfaction in their life. Some face success and some face failure. It is important, how their satisfactory is judged, whether tangible living standard alone, or intangible life satisfaction, or both. To reveal this, hypotheses eight and nine were set as below. The following table shows the regression analysis result for hypothesis eight, “As a whole, the move by several farmers into poppy production has improved their tangible living standards.”

Table 4.10 SPSS printout for regression result of Hypothesis Eight

Dependent Variables: Composite score of satisfactory well-being	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	26.973	1.000		<b>26.975</b>	<b>&lt;.000***</b>
Highest level of education attained by anyone in the household (0 .....9)	-0.826	0.238	-0.289	<b>-3.465</b>	<b>0.001***</b>
Poppy producer or not (1, 0)	3.037	0.743	0.357	<b>4.090</b>	<b>&lt;0.000***</b>
Total consumption per adult equivalent	0.002	0.001	0.149	<b>1.799</b>	<b>0.075*</b>
Owned land (hec)	-0.210	0.099	-0.190	<b>-2.125</b>	<b>0.036**</b>

Adjusted R-squared: 0.327 F-statistic: 13.244 Degrees of freedom: 97

Table 4.10 shows regression result of Hypothesis Eight, “As a whole, the move by several farmers into poppy production has improved tangible *living standards*.”

From the model summary and Anova result F statistics 13.244, at a degree of freedom 97 shows that the combination of these independent variables significantly predict the dependent variable at 1 % level of significance. The adjusted R squared denotes that 32.7 % of the variance can be predicted by the independent variables. The direction of correlation coefficients reveal positive for independent variables such as poppy producer or not and total consumption per adult equivalent and negative for own land(hec) and highest education obtained by anyone in the household . The constant term of the intercept is significant, which means all independent variables together can predict the dependent variable.

The independent variables such as the highest level of education obtained by anyone in the family and the poppy producer or not, show highly significant related at 0. 1% or better, while consumption per adult equivalent and own-land (hec) shows the level of significance at 10% and 5%, respectively. Un-standardized coefficient shows there is negative correlation between education level of households and the dependent variable (composite score of satisfactory well-being). The higher the education levels the lower the composite satisfactory score of well-being. Since the composition scores were ranked in an inverse order such that the lesser the score the greater the improvement in self actualization and satisfaction of well-being.

Positive correlation between the identification of being a poppy producer or not versus the composite score of satisfactory well-being and per capita consumption per adult equivalent showed that the lower the consumption the lower the satisfactory in terms of existential needs. Consequently, the greater the dissatisfaction with the tangible living standards, the higher the possibility of people going into poppy business. In addition, the negative correlation between the owned land (hec) and

dependent variable shows that the lower the ownership of land the greater the dissatisfaction in terms of tangible living assets. Furthermore, the mean value of composite scores 25.65 represents the level of little satisfaction. Therefore, hypothesis eight is failed to accept.

The judgement of intangible life satisfaction is supposed to correlate with the person self-actualization and self-transcendence level (such that a poet writes a poem, a religious personnel does religion emphasized activities and so on). A person being able to become what he or she wants to actually be. In this regard, questions concerning their life satisfaction and their self-judgement on social discrimination were asked and the composite score of optimism was used as dependent variable to test hypothesis nine, "As a whole, the move by several farmers into poppy production has improved their intangible life satisfaction." This resulted in the following the regression analysis result for hypothesis number nine.

Table 4.11 SPSS printout for regression result of Hypothesis Nine

Dependent Variable : Composite Score of optimism	Unstandardized		Standardize	T	Sig.
	Coefficients		d		
	B	Std. Error	Beta		
(Constant)	2.654	0.414		<b>6.403</b>	<b>&lt;0.000***</b>
Composit score of scio-economicstatus	0.044	0.018	0.234	<b>2.537</b>	<b>0.013**</b>
Poppy producer or not (1, 0)	-0.367	0.127	-0.275	<b>-2.887</b>	<b>0.005**</b>
Total land per adult- male equivalent	0.162	0.053	0.302	<b>3.074</b>	<b>0.003***</b>
Kyauk_tan	0.725	0.239	0.351	<b>3.031</b>	<b>0.003**</b>
Yoke	-0.368	0.193	-0.174	<b>-1.904</b>	<b>0.060*</b>
Nan_paw_soon	-0.530	0.199	-.251	<b>-2.670</b>	<b>0.009**</b>
Highest level of education attained by anyone in the household (0 .....9)	-0.154	0.053	-.344	<b>-2.910</b>	<b>0.005**</b>

Adjusted R-squared: 0.206    F-statistic: 4.736    Degrees of freedom: 94

F statistics 4.736 at the degree of freedom 94 derived from ANOVA shows that the combination of these independent variables significantly predict the dependent variable. The adjusted R squared derived from the model summary, indicates that 20.6 % of the variance can be predicted by the independent variables.



And the constant term of intercept is significant which means all independent variables can predicted dependent variable.

The negative sign of the un-standardized coefficient between the dependent variable of the composite score of optimism versus the independent variables such as the identification of involvement in poppy production and highest education obtained in the family can be interpreted as follows: The higher the education obtain in the family the greater the education cost incurred by the family and the lesser in labor supply for the family which negatively impacts family optimism on intangible life satisfaction, consequently the greater the possibility of people going into poppy business to fill the loss of labour share in the family. This can be seen in the case of Yoke and Nan Paw Sum villages. However, in the case of Kyauk Tan village the highest education level found in the poppy households group is the master level. And the positive correlation means that the higher the optimism the higher the education to be provided for the family member, which provides a good motive for people to avoid the poppy business.

Geographically, Kyauk Tan can almost be nominated as urban area. However, this still has to be confirmed by the central government ministry of home affairs. People in this area have a better awareness of law enforcement and better access to all facilities such as education, communications, health care and so on. The composite score of socioeconomic status and land per adult equivalent were employed as a proxy variable, and it revealed a positive correlation with the dependent variable (composite score of optimism). This means that the sampling households from research areas assume that if they had land that they were not treated unequally in terms of socio-economic terms in the community, which positively affects their optimism. The mean

value (3.14) for the composite score shows that sampled households have a neutral level of optimism concerning their life satisfaction.

With regard to the latter result, hypothesis number nine is failed to be accepted or rejected. However, the test of means resulted that non poppy growing households have higher degrees of optimism than poppy households at the significant level of 0.01. Since the majority of poppy growers, the third categories wage labourers, have lack of access to ownership of arable land, their life satisfaction has not improved even after the engagement in poppy business. Therefore, the hypothesis number nine is rejected.

After the 1988 political unrest in Myanmar, schools were closed all around the country for almost one academic year and many young adolescent had free time to entering the mine business and poppy farms to earn money. Apart from that, the ability to make money in an easy way and to be able to spend it on whatever they want, tainted the minds of adolescent and dragged them from classroom into those businesses. The PNO (Pa Oh National Organization) try to promote and encourage the education sector by setting carrot and stick program. The aim was to encourage every school age child to have schooling, at least to a primary education level. The central government teachers were provided accommodation and extra pay incentives by the village education committees. For outstanding students, rewards were granted at the end of every academic year. Parents failing to send their children to school, or student drop out the school without acceptable reason were fined between 100,000 kyats and 500,000 kyats per student which is equivalent to 100 US\$ to 500 US\$. This program has been successful in some places Kyauk Tan, Nam Hu , Hti Baung and etc. Among the five villages, Kyauk Tan village has more students educated to a higher level.

Some are even studying at the University and Institute for Master Degree. However, for the rest of the villages, the success of this program is limited.

During an interview, the headmistress of Kyauk Tan High School revealed that students went to Nar Yaing for holiday earnings and some even sneak out for high season of poppy harvesting. She stated that some students even just paid the fine to drop out the school. She commented that the carrot and stick program of education is successful in general despite the fact that those who graduated from high school with financial constraints are not included in this program. She personally felt that it was a pity, to not let those students in the village continue their further education. Nowadays, even for graduated students in Myanmar, it is difficult to find a job, and the chances of getting a job for student who have only graduated high school is rare. It takes a long time to get a job and often the pay hardly covers living expenses. Moreover, the ruby mine business in Mongshu (Southern Shan State) and jade mine in Hpar Khant (Kachin State) are not doing as well as previously and the chances for finding work there is limited compared to in the boom periods. Hence, many adolescents move their route to the poppy business and work in the cheroot business during the poppy off season.

From gender point of view men and women are the still not treated equally even though women are capable of doing the same task as the men. Mostly the household head title still goes to the husband in the family, unless there is no married man remaining in the family, and then the title goes to the widow or the eldest woman. Traditionally, women still regard their husband as gods and their son as their masters and given priority and listen to them for all their decision. Mostly Pa Oh parent give the bigger share of inheritance to the youngest child. They devoted their

love to the eldest and youngest children and sometime even spoiled them with their love. As parents they can bear the needs deficiencies themselves but cannot bear to see their children suffering. Parents want to give everything to their children. When there is a deficiency in the needs of the family there is a danger of ethical problems. According to informal interviews, the temporary migrant workers in the poppy farms are mostly male because women with better education choose to work in higher prestige jobs such as teachers, nurses, midwives, local business or sales rather than the in illegal jobs.

#### **4.12 Processing and Workload**

Compared to the cheroot production process the poppy farms have simple and short processing procedure, which results in a lighter workload. For example, the cheroot production needs a lot of labor in every steps of long and complicated production process such as cleaning the plot, plowing, planting the cheroot stem for nursery, cleaning the grass, applying both bio fertilizer and chemical, spraying pesticide, cutting unnecessary stems and leaves to get better quality cheroot, picking the cheroot, peeling the fiber from the leave before drying in the pan, selecting the correct size and quality of leaf for storage, and then packing leaves for distribution and so on until it is sold. For some tasks like plowing, packaging, uploading and unloading the cheroot leaves for transportation, strength is need and these tasks are done by the men in the family. For the past decades, in the research areas, Pa Oh people used to practice the custom of loan labor. For instance, borrowing the labor supply from neighboring farms, by mutual loaning among one farm to another's, in every process of the cheroot production. The social relations among the community

are strong and there is little or no problem of labor input in the cheroot business. Normally the business in the study ethnic group is kingship, but starting from 21<sup>st</sup> century the pattern of business has changed and the young generation began to seek jobs other than family business. Therefore the labor loan system has gradually disappeared in the region. To see whether this fact motivates the poppy farmers to be temporary immigrants or not hypothesis number ten “Given the lighter workload of poppy production compared to cheroot production, most of the poppy growing households are temporary immigrants” was tested and yielded the following result.

Table 4.12 SPSS printout for regression result of Hypothesis Ten

Dependent Variable % of immigrant labor from HH	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	0.169	0.043		<b>3.961</b>	<b>&lt;0.000***</b>
Poppy producer or not (1, 0)	-0.308	0.046	0.509	<b>6.683</b>	<b>&lt;0.000***</b>
debt to asset ratio	0.004	0.002	0.173	<b>2.263</b>	<b>0.026**</b>
Total land (acres)	-0.022	0.006	-0.273	<b>-3.582</b>	<b>0.001***</b>

Adjusted R-squared: 0.449    F-statistic: 28.48    Degrees of freedom: 98

Table 4.12 shows that the model is significant at F statistics 28.48 with the degree of freedom 98. Adjusted R squared shows that 44.9 % of variance can be predicted by the independent variables. The significance of the constant term means that all variables can be predicted.

The Pearson's correlation shows that there is positive correlation between the percentage of immigrant labor from the households and the independent variables, such as being a poppy producer or not (the identification of involvement in poppy) and the debt to asset ratio. The interpretation is that the higher the debts of households the more member from the households will migrate to work on the poppy farms. The negative correlation between total land (hectare) and the percentage of immigrant labour from households means that the less the access to arable land the more likely the people will migrate to work in other places in order to earn their living. Unlike cheroot farming, the nature of poppy farms work is seasonal and people migrate more during the harvesting season. Additionally, the test of means showed that there are more migrants in poppy growing households at 5% level of significance.

Therefore the hypothesis number ten is accepted.