Chapter 5

Empirical Results with Respect to Happiness and Social Capital

5.1 Introduction

In the previous chapter, we have statistically estimated and compared the levels of income, poverty, and agricultural difficulties of the slightly and heavily affected areas, and tested seven hypotheses with respect to the determinants of those levels. These are all aspects of objectively observable exogenous well-being.

However, as noted in the conceptual framework of this thesis, people's happiness may or may not depend directly upon what happens to them in the physical world. In other words, subjective well-being may differ substantially from objective well-being. Furthermore, the "set-point" hypothesis advanced by many psychologists holds that after either very favorable or very unfavorable shocks (winning the lottery, a natural disaster, a divorce, etc), people very quickly return to their long-term basal level of happiness as dictated by genetics and their underlying personality.

The purpose of the present chapter will be, therefore, to see whether or not, and to what extent, the levels and composition of happiness differ in any way between heavily-affected Bogalay and slightly-affected Pyapon 27 months after the advent of Nargis. In so doing, we shall test the remaining six hypotheses of the study:

H: 9 The subjective well-being (happiness) of the heavily affected area is not significantly different from the mildly-affected area, suggesting that human beings rebound rapidly from disasters.

H: 10 The internal weighting of the components of happiness differs significantly between the two areas.

H: 11. Around similar mean happiness levels in the two areas, there are much more severe cases unhappiness, and hence a much worse distribution of happiness, in heavily affected Bogalay than in slightly affected Pyapon.

H: 12. People living in households with female heads are significantly more likely to experience difficulty meeting their needs than people in male-headed households.

H: 13. The social capital of both types (bridging and bonding) in the Nargis heavily-affected area has increased significantly in comparison with the non-heavily affected area. This should give them higher protection from disasters in the future.

H: 14. Access to education and to health care are significantly less good in heavily-hit Bogalay than in slightly-hit Pyapon, especially since the latter is also closer to the major city Yangon.

5.2 Introduction to the Survey Instruments

Life inevitably offers a mixture of good and bad times, triumphs and defeats, periods of bliss and periods of sadness, loss, or even humiliation. With the passage of time, such experiences remain with us as memories. Such memories can play an important role in determining both our immediate and enduring happiness and sense of well being.

Two different scales to measure subjective well-being (SWB) or happiness were used together to analyze the impacts, if any, of Cyclone Nargis on the level and components of happiness in the two areas. The first scale is the well-known Lyubomirsky scale (2008), which contains the four following questions:

1. I general, I consider myself a very happy person.

2. Compared to most of my peers, I consider myself happier.

3. Some people are generally very happy. They enjoy life regardless of what is going on, getting the most out of everything. To what extent does this characterization describe you?

4. Some people are generally not very happy. Although they are not depressed, they never seem as happy as they might be. To what extent does this characterization describe you?

The second scale in this research is called the Chiang Mai (University) scale, because it was developed by the researcher under the guidance of her professors at Chiang Mai University's Faculty of Economics. It includes 28 questions taken or adapted from various sources, including the author's own field experience and the Oxford Happiness Survey (Hills, P., & Argyle, M, 2002). The complete list of these questions was presented in Chapter 3.

5.3 Chiang Mai Happiness Scale and Lyubomirsky Happiness Scale

As a first step towards understanding happiness levels in the two Nargis-affected areas, we sought to measure and compare the internal weightings among the five sub dimensions of happiness in Bogalay and Pyapon. To do so, we used SPSS 17 to measure and test the significance of the correlations between the Lyubomirsky scale and the 28 question Chiang Mai happiness scale. Table 5.1 reveals that the correlation between the rank of a given household on the two scales was extremely significant (0.469, significant at the 0.000 level), showing that the two scales gave consistent ordinal measures of which individuals were happier than others. Only two of the subcomponents of happiness were not highly correlated with each other:

emotional happiness and social happiness. The former relates to the individual, the second to the group. Further research will have to be done to explore why this correlation is not significant.

However, even though the two scales correspond in overall happiness, they are built up from quite different concepts. Specifically, the Chiang Mai scale is clearly broken down into physical, mental, emotional, social and spiritual happiness. Each of these dimensions implies a dominant time horizon, which may be hypothesized to lie on the following continuum:
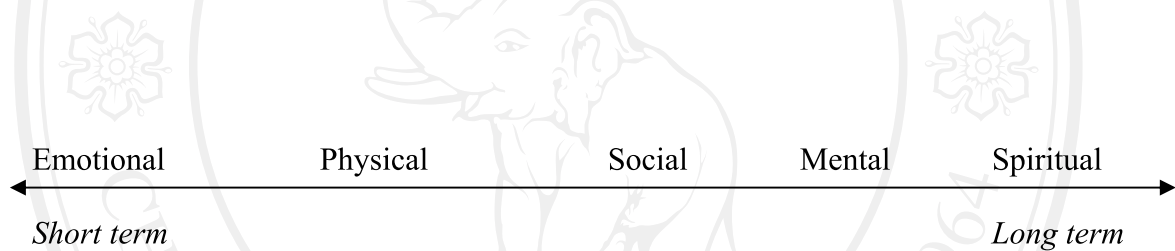
| Emotional | Physical | Social | Mental | Spiritual |

Short term   *Long term*

Figure 5.1 Continuum of the Sub-Components of Happiness by Time Horizon

Table 5.1 Correlations Among Overall Happiness and its Dimensions

		Physical average happiness and life satisfaction score	Mental average happiness and life satisfaction score	Emotional average happiness and life satisfaction score	Social average happiness and life satisfaction score	Spiritual average happiness and life satisfaction score	Rank order on CMU physical, mental, emotional, and spiritual questions	Rank order on four Lyubomirsky Subjective Happiness Scale questions
Physical average happiness and life satisfaction score	Pearson Correlation	1	0.255	0.128	0.231	0.416	0.453	0.302
	Sig. (2-tailed)		0	0.026	0	0	0	0
Mental average happiness and life satisfaction score	Pearson Correlation	0.255	1	0.153	0.282	0.422	0.504	0.282
	Sig. (2-tailed)	0		0.008	0	0	0	0
Emotional average happiness and life satisfaction score	Pearson Correlation	0.128	0.153	1	0.057	0.274	0.249	0.144
	Sig. (2-tailed)	0.026	0.008		0.324	0	0	0.013
Social average happiness and life satisfaction score	Pearson Correlation	0.231	0.282	0.057	1	0.337	0.177	0.148
Spiritual average happiness and life satisfaction score	Pearson Correlation	0.416	0.422	0.274	0.337	1	0.765	0.425
Rank order on CMU physical, mental, emotional, and spiritual questinos	Pearson Correlation	0.453	0.504	0.249	0.177	0.765	1	0.469
Rank order on four Lyubomirsky Subjective Happiness Scale questions	Pearson Correlation	0.302	0.282	0.144	0.148	0.425	0.469	1

For example, emotional happiness should be significantly correlated with the Lyubomirsky scale in the short run in that emotions are the immediate and often fleeting feelings in people's lives. At the other extreme, spiritual happiness is essentially a long- or even eternal-term dimension expected to be positively correlated with Lyubomirsky general happiness. This is because spiritual happiness is based on the satisfaction derived from inner mindfulness and mental strength regardless of, or even gained from, whatever else has happened in one's life. That strength can be a source of enormous self-realization and inner pride.

Mental happiness is also long term in nature, though presumably less so than the very long perspective of spirituality. People can heal physically and even emotionally, but memories are very hard to blot out or paper over. These memories return in dreams or at the sight of a photograph of a lost child. They can never go away truly or completely.

Juxtaposed between these emotional and mental/spiritual dimensions, the other two components of happiness (physical and social) combine both short- and long-term components in roughly equal measures, each reflected by a separate series of questions in the Chiang Mai scale.

Table 5.2 Tests of Significant Differences in Means Between the Two Areas

Happiness	Nargis affected status	Mean	Mean Difference	Std. Deviation	Coeff var.	t	Sig. (2-tailed)
Average score across physical, mental, emotional, and spiritual score	heavily	3.1425	-0.05951	0.33852	11%	-1.526	0.128
	slightly	3.202	-0.05951	0.33693	11%		
Average score on the four Lyubomirsky Subjective Happiness Scale score	heavily	3.0867	0.00833	0.44683	14%	0.152	0.879
	slightly	3.0783	0.00833	0.50011	16%		
Physical average happiness and life satisfaction score	heavily	3.1217	0.0333	0.61356	20%	0.606	0.545
	slightly	3.0783	0.04333	0.62467	20%		
Mental average happiness and life satisfaction score	heavily	3.004	-0.19867	0.45078	15%	-3.686	0.000
	slightly	3.2027	-0.19867	0.48216	15%		
Emotional average happiness and life satisfaction score	heavily	3.0307	-0.024	0.37182	12%	-0.514	0.608
	slightly	3.0547	-0.024	0.43513	14%		
Social average happiness and life satisfaction score	heavily	3.205	0.10833	0.67061	21%	1.381	0.168
	slightly	3.0967	0.10833	0.68773	22%		
Spiritual average happiness and life satisfaction score	heavily	3.2705	-0.0764	0.46914	14%	-1.397	0.163
	slightly	3.3469	-0.0764	0.47805	14%		

We are now in a position to test hypothesis 9, to the effect that "The subjective well-being (happiness) of the heavily affected area is not significantly different from the mildly-affected area, suggesting that the human beings rebound rapidly from disasters." Table 5.2 shows that the average score of heavily affected Bogalay on the Chiang Mai scale (3.14) is not significantly different from the scale of slightly affected Pyapon (3.20). The level of significance (probability of committing an error in assuming a significant difference) is 12.8%, higher than the 10% cut-off point established for this study. In terms of the Lyobomirsky scale, the score of happiness in Bogalay is actually higher than in Pyapon (3.087 vs. 3.078), but this result is very insignificant (significance = 0.879). We thus fail to reject the hypothesis of equal average happiness levels in the two townships.

The results further show that only mental happiness is significantly lower in Bogalay (3.00) than in Pyapon (3.20). This is presumably because of the residual effects of mental anguish associated with bad memories, dreams, missed loved ones, and the karmic questionings noted above. The coefficients of variation across the two samples are very similar for happiness and all its components, suggesting that the distribution of happiness overall and by category is also roughly similar.

We also note (Table 5.2) that all the components of happiness are very highly correlated with each other except for emotional and social happiness. The former is individual, while the later is collective, a reflection of social capital and human relations. Further research will have to be done to determine why this is so.

The fact that the two scales contain very different components allows us to regress the Lybormirsky scale on the five separate dimensions of the CMU scale to determine the relative importance, to people in the two distinct areas of the Irrawaddy

Delta, of <u>each</u> of the components of happiness expressed as the regression coefficient β_i. Separate regressions were run of the entire 300 person sample and of the 150 people in each of the two areas. The dependent variable for all three equations was the Lyubomirsky happiness scale, predicated to significantly increase as each dimension of short- or long-term happiness. We now turn to hypothesis 10, which states that "The internal weighting of the components of happiness differs significantly between the two areas."

Table (5.3) Lyubomirsky Happiness Scale as determined by the Five Components of the Chiang Mai Happiness Scale for the Combined Sample

Dependent Variable = Lyubomirsky Happiness Scale	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Happiness in physical terms	.177	.068	.172	2.614	.009***
Happiness in mental terms	.106	.080	.103	1.326	.186
Happiness in emotional terms	.257	.067	.242	3.810	.000***
Happiness in social terms	-.115	.088	-.114	-1.313	.190
Happiness in spiritual terms	.567	.138	.583	4.111	.000***

Adjusted R Squared=0.960   F = 1434.668

As noted, we conducted three regressions: the first of both samples taken together, and the others of Pyapon and Bogalay individually. If we ignore the two non-significant coefficients (on mental and social happiness) for the two areas combined (Table 5.3), the sum of the other three coefficients = 1.00. These would seem to be the true relative weights <u>within</u> happiness for physical, emotional and spiritual factors. We can therefore say with some confidence that spiritual happiness

is more than twice as important as emotional happiness, and that physical happiness is less than one-third as important as spiritual happiness, at least for the Irrawaddy Delta area in Myanmar. These results tend to confirm the great importance of Theravada Buddhism in that country.

It will also be noted that the sum of the regression coefficients in tables 5.5 also roughly equal 1.0, or total happiness. The regression in Table 5.3 also indicates that physical happiness is significantly and positively correlated with Lyubomirsky scale. When research was conducted in both areas of the Irrawaddy Delta, people might enjoy good physical well being as that physical well being question is based on the short term concepts. Similarly, emotional happiness is also a short-term concept that is significantly correlated with Lyubomirsky scale. When research was conducted at the Delta, the respondents had finished their work for farming at raining season, so they felt relax and went to monastery, did what they were interested in, and participated in some kinds of community work. As emotional question are based on the short term, emotional happiness are significantly correlated with the general subjective happiness scale. Similarly, spiritual happiness is positively and strongly correlated with happiness, even though, as discussed, it is a long-term concept. Perhaps because its long-term nature, it has by far the greatest impact on happiness (β_i = 0.567).

However, as noted, neither mental nor social happiness is significantly correlated with the Lyubomirsky scale. In the mental dimension, two years after Nargis, people still have an indelible memory of this tragedy. At the time of the survey, it was also the monsoon season, with very stormy weather. When the children heard the thunder and saw the lightning, they grabbed their toys and ran into the

house. To make matters worse, their parents were also facing problems of crop failure that season. This added to their mental stress and anguish. As noted, mental happiness is a long-term dimension. It is hard to forget and even harder to forgive in the very long run. Whom can't they forgive? Their own previous incarnations. People ruminate in their minds about what horrible mistakes they must have made in their previous incarnation to merit such a terrible fate. As that area is the heavily affected area, they lost everything when that happened. Some lost their families and some lost all possessions.

In terms of the social dimension, we would expect good relations with others to increase happiness. In reality, however, happiness in terms of social dimensions is non-significant in the combined and Bogalay regressions (Tables 5.3 and 5.5) and significantly negative in the case of Pyapon (Table 5.4). This surprising result can perhaps be explained by a certain level of resentment over how the aid after the cycle was distributed. Based on the selection criteria, there arose some conflict between vulnerable and community based organizations. Because most of the NGOs knew little about Pyapon and which households were truly the most vulnerable, they sought direction from the community-based organizations. But these latter were corrupt and subject to favoritism and clique-based behavior, leading to injustice and to unhappiness on the part of just about everyone.

Table 5.4 Lyubomirsky Happiness Scale as Explained by the Five Dimensions of the

of Chiang Mai Happiness Scale for slightly Affected Area, Pyapon

Dependent Variable = Lyubomirsky Happiness Scale	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Happiness in physical terms	.123	.096	.121	1.275	.204
Happiness in mental terms	.089	.115	.091	.775	.440
Happiness in emotional terms	.117	.087	.112	1.353	.178
Happiness in social terms	-.218	.111	-.216	-1.959	.052
Happiness in spiritual terms	.837	.192	.875	4.360	.000

Adjusted R Squared = 0.962   F=762.481

The regression of happiness for the separate Pyapon sample (Table 5.2) shows that spiritual happiness accounts for an astounding 84 percent of the overall score on the Lybomirsky scale. Meanwhile, physical, mental, and emotional dimensions of happiness have nothing significant to do with the Lybomirsky score, suggesting a random distribution of these elements across happy and unhappy people. It was noted during the research that there was significant social conflict within households in Pyapon, perhaps due to the high population density in the village and high dependency ratio within households. On the social level, the problems of aid distribution noted above for the general sample were so severe that the sign on social happiness is not only negative, it is significantly so.

In situations of extreme emotional, mental and physical unhappiness, the only recourse is to interiorize, to meditate, to seek solace in religion. This is the reason for the unhappy portrait of subjective well-being in Pyapon.

Table 5.5 Lyubomirsky Happiness Scale as Explained by the Five Dimensions of the of Chiang Mai Happiness Scale for Heavily-Affected Bogalay

Dependent Variable = Lyubomirsky Happiness Scale	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Happiness in physical terms	.174	.096	.168	1.811	.072
Happiness in mental terms	.103	.121	.096	.847	.398
Happiness in emotional terms	.395	.111	.366	3.569	.000
Happiness in social terms	-.031	.143	-.031	-.214	.830
Happiness in spiritual terms	.383	.209	.387	1.833	.069

Adjusted R Squared = 0.958   F = 692.625

For the separate regression on the Bogalay sample (Table 5.3), we find that physical, emotional, and spiritual dimensions are strongly correlated with happiness in the Lybomirsky sense, as predicted. However, both mental and social happiness are not significant. In Bogalay, the same problems with the distribution of relief aid occurred as in Pyapon. This explains why the sign on social happiness is negative, even though in this case its effects are negative and non-significant.

In terms of the mental dimension, it is undeniable that the people of Bogalay suffered as much physical, livelihood, environmental, and human loss as almost anywhere in the Delta region. There is thus an enormous burden of suffering from what hs happened in their lives. This is consistent with the results of the t-tests for significant differences in means, under which only mental happiness was significantly different (and less) in the heavily-affected area. The average score of physical,

mental, emotional, social and spiritual happiness of the male headed household are higher than female headed household.

Spiritual happiness is significantly correlated with Lyubomirsky scale at the cyclone heavily affected area. Notwithstanding that they are strongly affected by the cyclone, the spirit on their mind is as strong as almost everyone is Buddhist and they are prone to accept what has happened in their life.

Buddhism strongly believes in *kamma* (Pali, *karma* in Sanskrit). Kamma literally means "intentional action", and this refers to the Buddhist belief in the principle of cause and effect. In Buddhism, we believe that every intentional act will give rise to a corresponding result, in either the present life or in a future one. The result of *kamma* should thus not be seen as rewards or punishments for acts done, but simply the results or outcome of any such intentional acts. Positive actions will result in positive consequences, and negative actions will eventually result in negative consequences. So, most respondents believe that that effect was the cause of their previous life. And they have done much good and this *kamma* will likely enjoy happy life. However, we shall note that the importance of the spiritual contribution to happiness is much less in the heavily affected area (0.383) compared with the lightly affected are (0.837). This suggests that being targeted by the cycle makes people question what they did wrong in their previous life, while being spared from the cycle makes people really happy and satisfied with their previous accumulation of karma.

Spiritual happiness is long term happiness and that is strongly related to general happiness as they satisfied what they had done and believes on causes and effects. This table (5.5) reflects the overwhelming importance of individual karma in people's perceptions of happiness in the slightly affected area, Pyapon. On the one

hand, as noted above, these people take strong comfort and satisfaction from the fact that their previous good deeds (*kusula*) have saved them from the cyclone. This is why the regression coefficient on spiritual factors is higher than in any other equation. On the other hand, there was no need for people in this slightly affected area, Pyapon Township to develop bonding or bridge social capital because individual was largely able to put their lives back together again on their own. There is thus a competition between spending time building social capital and spending time meditating by oneself on the results of one's previous life. This last point, as well as entire discussion of the previous two pages leads us to accept the hypothesis ten, "The internal weighting of the sub- components of happiness differs significantly between the two areas."

5.4 Absolute Unhappiness and Relative Happiness in two Areas

The average levels of overall happiness, as well as happiness in each of the five key components, may mask significant incidence of absolute unhappiness and inequality in the distribution of happiness within a population. Table 5.6 reports the application of the Foster-Greer-Thorbecke-Schoch measures of absolute unhappiness, as well as the quintile ratio and Gini coefficients of the distribution of happiness. Results are reported for the combined sample of 298 respondents, as well as for the separate samples of 148 respondents in Pyapon and 150 respondents in Bogalay.

Table 5.6 Absolute unhappiness and the distribution of relative happiness in the two

areas

	Absolute unhappiness				Relative happiness	
	Incidence	Depth	Intensity	Urgency	Quintile ratio	Gini coeffic.
CMU SWB score						
Combined sample	35.90%	0.0008	0.0003	0.0001	1.38	0.062
Pyapon	37.20%	0.0015	0.0005	0.0002	1.39	0.063
Bogalay	34.70%	0.0015	0.0005	0.0002	1.36	0.056
Physical happiness score						
Combined sample	35.90%	0.0018	0.0012	0.001	1.76	0.119
Pyapon	37.80%	0.0036	0.0026	0.0024	1.78	0.128
Bogalay	34.00%	0.0035	0.0022	0.0016	1.74	0.125
Emotional happiness score						
Combined sample	38.60%	0.0017	0.0011	0.0009	1.65	0.108
Pyapon	39.20%	0.0034	0.0023	0.0018	1.67	0.119
Bogalay	38.00%	0.0033	0.0023	0.002	1.64	0.111
Social happiness score						
Combined sample	37.60%	0.0017	0.0012	0.0011	1.83	0.129
Pyapon	39.90%	0.0038	0.0029	0.003	1.86	0.139
Bogalay	35.30%	0.0031	0.0018	0.0013	1.8	0.134
Mental happiness score						
Combined sample	34.60%	0.0013	0.0007	0.0004	1.54	0.093
Pyapon	29.10%	0.0023	0.001	0.0006	1.5	0.099
Bogalay	40.00%	0.0029	0.0016	0.0011	1.52	0.099
Spiritual happiness score						
Combined sample	24.80%	0.0009	0.0004	0.0002	1.49	0.088
Pyapon	23.00%	0.0018	0.0007	0.0004	1.48	0.095
Bogalay	26.70%	0.0019	0.0007	0.0003	1.49	0.096

The first clear conclusion from the table is that there is extremely little difference between the two study areas for either the incidence of unhappiness or the distribution of overall happiness. The differences would probably not be significant if appropriate statistical tests were available, except in the case of the incidence, depth, intensity, and urgency of mental unhappiness in Bogalay, for the reasons stated above. This single exception does not prevent us from clearly rejecting hypothesis 11, to the effect that, "Around similar mean happiness levels in the two areas, there are much more severe cases unhappiness, and hence a much worse distribution of happiness, in heavily-affected Bogalay than in slightly-affected Pyapon."

To assess the impact of social capital formation on happiness, we ran a regression to determine overall happiness as measured by the Chiang Mai scale as a possible function of income, income squared (we expected a negative sign due to the Eastern paradox), social capital, prayer, meditation, the employment rate, number of jobs, years of schooling of the household head, the quality of the diet, the regularity of meals over the previous week, and Nargis-affected area (Table 5.7). As expected, the sign on net income per capita was positive, while the sign on net income per capita squared was negative. This signals a decreasing rate of improvement of happiness as income increases, consistent with the Easterlin paradox. Similarly, education, total jobs in the household and the employment rate tend to increase happiness. This finding supports Lane's contention that work is a source of self-realisation in and of itself; rather than a necessary burden to be taken up in order to earn enough income for consumption, the view held by traditional neoclassical economics. Furthermore, long term meditation at the temple seems to increase happiness, whereas the frequency of prayer decreases it. (This is possibly because prayer often involves a

mixture of noble and self-interested requests.) Surprisingly, however, both the regularity and the diversity of the diet seem to decrease happiness. This result merits further research beyond the scope of this dissertation.
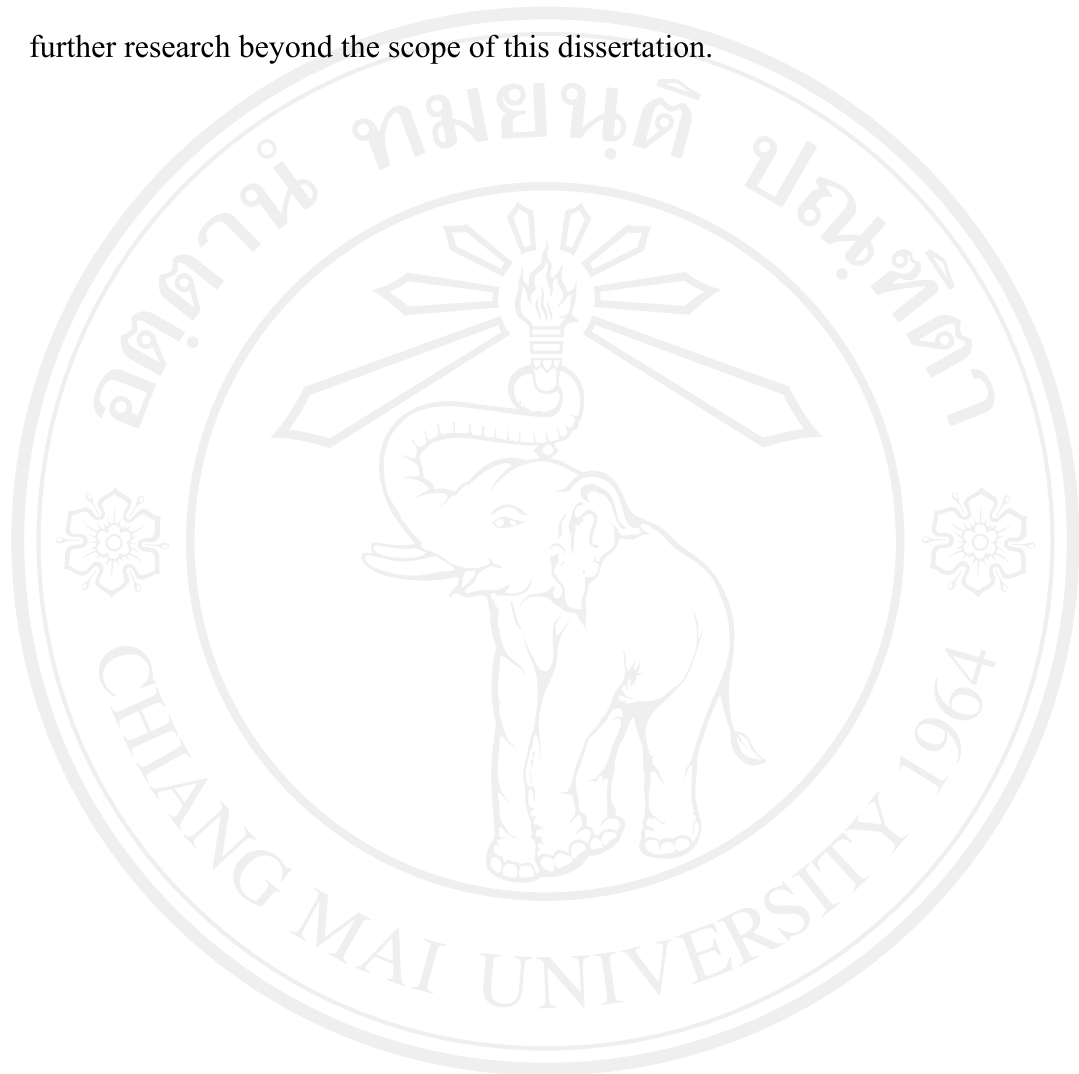
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Table 5.7 Regression of the Chiang Mai Happiness Score upon a Cmplete set of Socio-Economic Factors

Dependent Variable = Chiang Mai Happiness Score	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3.279	.162		20.281	.000
Net household income per capita	.000	.000	.358	3.126	.002
Net household income per capita squared	.000	.000	-.312	-2.785	.006
Social capital score	.011	.005	.112	2.029	.043
Number of times of praying per month after Nargis	-.003	.001	-.196	-3.614	.000
Number of times of meditation in the temple during the past year	.009	.004	.110	2.040	.042
Employment Rate	.160	.091	.097	1.758	.080
Total jobs in the household	.073	.029	.136	2.534	.012
Schooling years of household head	.034	.010	.187	3.507	.001
Food quality (highest level in food scarcity pyramid)	-.021	.012	-.103	-1.819	.070
Average daily meals per household member in previous week	-.081	.041	-.108	-1.976	.049
Nargis affected status	-.060	.041	-.084	-1.478	.140

Adjusted R-squared=0.185   F-statistic= 7.166

5.5 Social Capital of two Nargis Affected Areas

As noted in hypothesis 9, Nargis affected status has no significant effect upon happiness. But this is not the case with social capital, which has a positive impact on happiness roughly equal to meditation at the temple. In the sustainable livelihood context, social capital is taken to mean the forms of mutual social assistance upon which people draw. These include networks such as play groups, men's groups (*kar la thar* in Burmese), caste, membership in more formalized groups such as women's associations, and religious groups. These social networks can provide an informal safety net during difficult times and play a pivotal role in helping people access resources urgently needed after a disaster. One of the most significant characteristics of resilient communities is the extent to which they work together towards a common aim, a function of their social cohesion. Groups that are homogeneous in terms of class, ethnicity, livelihood or wealth are more likely to cooperate in building resilience to disaster.

Village-level interviews determined that the relations between villagers and their formal and informal leaders were particularly strong. Indeed, one would expect that there would be an increase in joy as people banded together to help each other rebuild their lives after the cyclone. This is, as we have seen, an example of "bonding." We would also expect that the villagers would be assisted by new NGOs and other organizations from outside with whom they had had little or no contact in the past. This is an example of "bridging." Where these positive conditions exist, they can offset the social unhappiness noted above from <u>how</u> aid is delivered, as noted above in our discussion of social (un)happiness.

Thus, social capital does have a positive influence on happiness. However, the specific formulation of hypothesis 12 stipulates that "The social capital of both types (bridging and bonding) in the Nargis heavily-affected area has increased significantly in comparison with the non-heavily affected area. To test the hypothesis we therefore need a t-test of comparison of means between the two areas to test the overall level of social capital and its sub-components bonding and bridging. The results are presented in Table 5.8.

The following portrait emerges of the population today: In heavily-affected Bogalay, people feel discriminated against less often.[23] They are more religious, going to temple and praying more frequently than the people in Pyapon (but not significantly more than before Nargis)[24]. They also have been living longer together in Bogalay significantly longer, and have been confronted by a more fearsome external menace. So one would logically expect their levels of social and bonding capital to be distinctly higher than in Pyapon. Table 5.8 shows the exact opposite. The people of Bogalay have significantly lower scores for overall social capital and bonding capital within the community. Bridging capital with the outside world and organizations is also less, but not significantly so. While trustworthiness is higher within the community in Bogalay, people from different backgrounds get on less well together. Presumably because of the loss of family members, people in Bogalay have fewer people to ask for help when they are ill or financially strapped, resorting to strangers or NGOs (bridging) more often than the spouse or close family members

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[23] The overwhelming reason for discrimination in both townships is the same: poverty!

[24] Indeed, there is no significant increase in temple-going, prayer, or meditation as a result of the cycle in either township.

(bonding). People in Bogalay also get together in discussion-action groups less; when they do, they are more involved in NGO-type bridging than local bonding groups.

We are thus in a position to clearly reject hypothesis 12. Although the people of heavily-affected, Bogalay trust each other more and are more active religiously, overall social and bonding capital are significantly lower. Bridging capital is also, lower, though not significantly so, because (a) people from differing backgrounds do not get along and (b) in the absence of close relatives; distant neighbors are presumably put upon to help in sickness and financial distress. Meanwhile, opportunities for compensation for the lack of social capital by building bonding capital, such as participating in local discussion-action groups, are not taken up as frequently as in Pyapon Township, the slightly affected area.

Table 5.8 Continued

Item		N				%			
People from different backgrounds get on well together (definitely agree=6, tend to agree=5, tend to disagree=4, definitely disagree=3, don't know=2, too few people in neighborhood =1, all same backgrounds =0)	heavily	40	0.76	-0.095	0.119	16%	0.019	-4.261	**0**
	slightly	61	0.86		0.095	11%			
Cause of discrimination (race=1, religion=2, gender=3, economic=4, health=5, social =6)	heavily	58	0.67	-0.011	0.031	5%	0.007	-1.102	0.273
	slightly	78	0.68		0.078	11%			
If you are ill in bed, seek BRIDGING help (3=colleague,2=voluntary or other org)	heavily	150	0.0025	0	0.03062	1225%	0.985	-0.009	0.992
	slightly	148	0.0025		0.03082	1217%			
If you are ill in bed, seek BONDING help (8=spouse,7=other family,6=relative,5=friends,4=neighbor)	heavily	150	0.7	-0.1	0.23575	34%	0.83	-3.99	**0**
	slightly	148	0.7998		0.19384	24%			
If you are in financial straits for survival, seek BRIDGING help (work colleague=4, voluntary or other org.=3, other =2)	heavily	150	0.1104	0.005	0.0675	61%	0.001	0.462	0.644
	slightly	148	0.1059		0.09813	93%			
If you are in financial straits for survival, seek BONDING help (husband/wife/partner=9, other hh member=8, relatives=7, friends=6, neighbor=5)	heavily	150	0.0741	-0.09	0.23655	319%	0	-2.867	**0.004**
	slightly	148	0.1644		0.30297	184%			
During last year, participated in a BRIDGING discussion-action group (2=NGO, 1=GONGO)	heavily	150	0.0838	-0.007	0.10093	120%	0.001	-0.538	0.591
	slightly	148	0.0907		0.12033	133%			
During last year, participated in BONDING discussion-action group (7=others, 6=religious,5= sports, 4=social, 3=self-help)	heavily	150	0.1743	-0.107	0.30647	176%	0	-2.803	**0.005**
	slightly	148	0.2809		0.3485	124%			
Sought BRIDGING help for community problems from (2=GONGO,3=NGO)	heavily	150	0.0767	0.021	0.15403	201%	0.025	1.247	0.214
	slightly	148	0.0552		0.14337	260%			

Table 5.8 Continued

Seek BONDING help for community problems from (1=local authorized org,4=selfhelp group,5=social club,6=others)	heavily	150	0.1078	-0.023	0.24739	230%	0.188	-0.797	0.426
	slightly	148	0.1306		0.24785	190%			
Increase in trips to temple per month after Nargis	heavily	150	0.36	0.306	3.10937	864%	0.018	1.179	0.24
	slightly	148	0.0541		0.6576	1217%			
Increase in prayer times per month after Nargis	heavily	150	-0.2	-0.132	2.44949	-1225%	0.21	-0.624	0.533
	slightly	148	-0.0676		0.82199	-1217%			

Strengthening social capital in the future could overcome traditional barriers and promote working together for a common cause as the basis for more resilient responses to disaster in the future.

5.6 Female Headed Household and Male Headed Household

It is equally striking from Table 5.8 that the main significant differences between the two areas are not in their means but in the variances around the means. This points to even more persistent differences within communities than between the differentially affected areas. Could these have something to do with gender? The t-test was also used to test for the difference between the households with male and female heads in terms of the likelihood to experience difficulty.

According to the results of t-tests (Table 5.9), the social capital of males is better than that of females in both types of Nargis- affected areas, since a man can spend his time in social activities after working hours. Most people use pawn shops for credit, since the interest rates from other sources are too high for them. However, social capital is very important if they want to borrow money from pawn shops. Since female headed households generally lack such social capital, the interest rates charged to female headed households are significantly higher than those charged to male headed households for food, drinks, and even health care. (The interest rate for education is also higher for female headed households, but much less so than for other categories of loan.) We therefore cannot reject hypothesis 13, to the effect that "People living in households with female heads are significantly more likely to experience difficulty meeting their needs than people in household heads with male heads."

Table 5.9 t- test between Female Headed Household and Male Headed Household

Variable	Gender of household head	N	Mean	Std. Deviation	Levene's Test for Equality of Variances		t-test for Equality of Means		
					F	Sig. Variances	t	Sig. (2-tailed) means	Mean Difference
Social capital score (the lower the better)	female	41	14.59	2.86	2.82	0.09	-3.27	0	-0.16
	male	257	14.51	3.83					
Average score across physical, mental, emotional, and spiritual score	female	41	3	0.28	2.81	0.09	-1.83	0.07	-0.2
	male	257	3.17	0.37					
Interest rate of credit for food and drink (%)	female	41	1.85	4.37	8.35	0.01	-1.79	0.09	-0.88
	male	257	0.98	2.91					
Interest rate of credit for education and training (%)	female	41	2	4.47	4.87	0.03	2.34	0.02	0.33
	male	256	1.48	3.47					
Interest rate of credit for health care and medicine (%)	female	41	2.29	4.68	4.95	0.03	2.35	0.02	0.28
	male	257	1.75	3.65					

5.7 Health Services

As for the health care situation, the vast majority of households use the village health care centers, all of which have nurses. As the research area is the Irrawaddy Delta, most nurses can reach the village health care center by boat in an average time of about 80 minutes. Almost all health care centers have the medicines required to treat minor health problems. Before Nargis, the villagers rarely had education on health, basic nutrition or hygiene. Not every village has health care center, however. Groups of up to seven villages must share a single village health care center. If the village is near a town, most households go to the private clinic or government hospital.

5.8 Access to Education

Households were asked to state the education level of all household members. Almost all household members can go to primary schools, especially if the school is in their village, but even where the government has set up no formal school. This is because village leaders and monks support the education of the village through monastic education. The average education per capita is 5.17 years for the slightly affected Pyapon, while in heavily-affected Bogalay it is 5.0. We therefore reject hypothesis fourteen, to the effect that "Access to education and to health care are significantly less good in heavily-hit Bogalay than in slightly-hit Pyapon, especially since the latter is also closer to the major city Yangon."
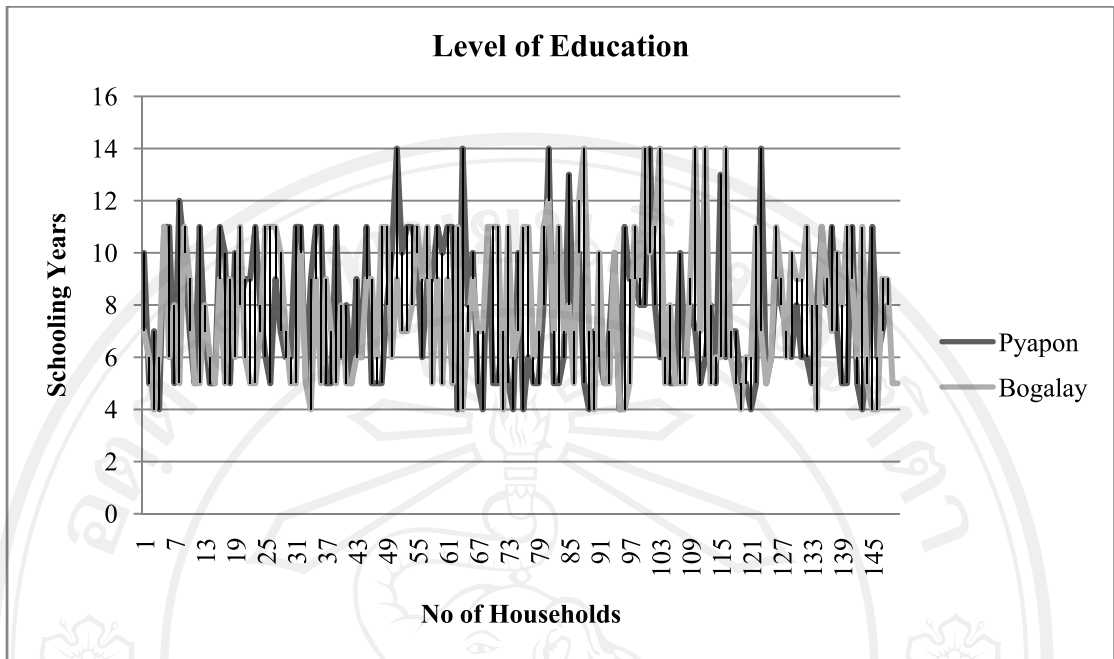
Level of Education

Figure 5.3 Highest Educational Attained of Each Household for Bogalay,
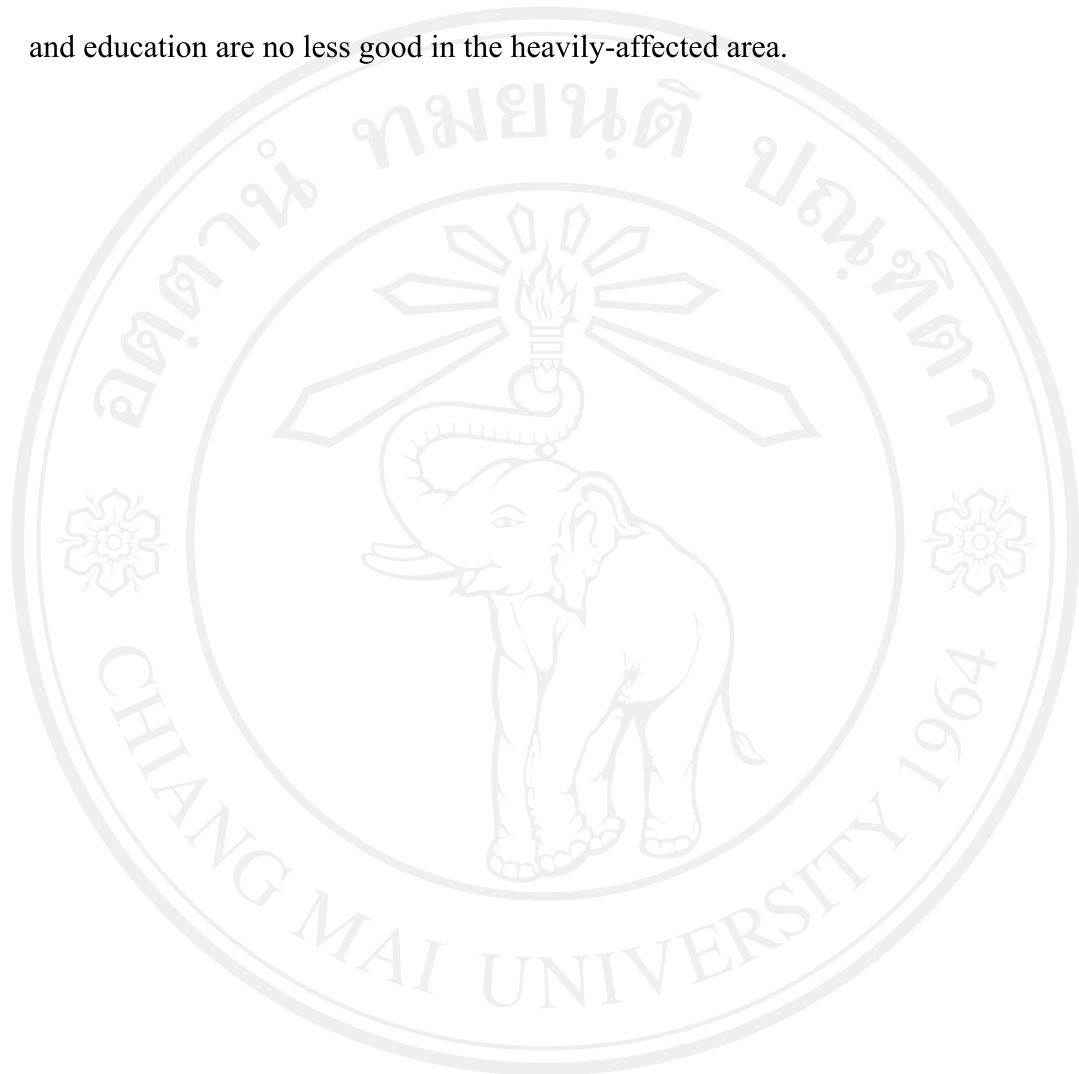
Slightly Affected Area

5.9 Summary of the Results of this Chapter

This chapter has shown that the happiness of the heavily affected area is not significantly different from the mildly-affected area, suggesting thathuman beings rebound rapidly from disasters. Nor is there a greater tendency for the depth, intensity or urgency of unhappiness to be higher in the more heavily-affected area. For both areas, spiritual happiness is more than twice as important as emotional happiness, and physical happiness is less than one-third as important as spiritual happiness.

However, the internal weighting of the sub-components of happiness differs significantly between the two areas. In the heavily affected village, a dark cloud of mental anguish lingers a full 27 months after the passage of Nargis; and overall social, bonding and bridging capital are significantly lower. People living in households with female heads are significantly more likely to experience difficulty meeting their needs

than households with male heads in large part because of their lower social capital and the resulting exorbitant interest rates they must pay. However, access to health care and education are no less good in the heavily-affected area.