รายงานวิจัยฉบับสมบูรณ์

โครงการ “Demographic Change, Perceived Vulnerabilities in Old Age and Economic Welfare in Rural Thailand”

โดย

Chantal Herberholz

Worawet Suwanrada

Nantarat Tangvitoontham

June 2011

สัญญาเลขที่ RDG5310017

รายงานวิจัยฉบับสมบูรณ์

โครงการ “การเปลี่ยนแปลงโครงสร้างประชากร ภาวะความเปราะบางของผู้สูงวัยและสวัสดิการทางเศรษฐกิจในเขตชนบทของประเทศไทย”

คณะผู้วิจัย	สังกัด
รศ.ดร. วรเวศม์ สุวรรณระดา	คณะเศรษฐศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
อ.ดร. Chantal Herberholz	คณะเศรษฐศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย
อ.ดร. นันทรัตน์ ตั้งวิทูรธรรม	คณะเศรษฐศาสตร์ มหาวิทยาลัยรังสิต

ชุดโครงการ “มิติทางเศรษฐกิจของการเปลี่ยนแปลงโครงสร้างประชากร”

สนับสนุนโดยสำนักงานกองทุนสนับสนุนการวิจัย (สกว.)
(ความเห็นในรายงานนี้เป็นของผู้วิจัย สกว. ไม่จำเป็นต้องเห็นด้วยเสมอไป)

Executive summary

This study uses cross-sectional data from a survey and seeks to explore possible linkages between demographic change, perceived vulnerabilities in old age and economic welfare in rural Thailand.

The data were collected in the fourth quarter of 2010 using stratified multistage sampling with equal probability of selection methods. In addition to information about well-being and its determinants, personal and household characteristics, comparison and comparison group, aspirations and mutual interdependence of children and parents, the survey also compiles novel data for three age groups, which entered reproductive age prior to, during and after Thailand's rapid fertility decline, about perceived vulnerabilities in old age in terms of income, consumption, health, living arrangement and assets. Subjective probabilities of (i) income in today's Baht being less than the current regional poverty line, (ii) assets worth less than 100,000 Baht in today's Baht, (iii) insufficient money to meet daily expenses, (iv) serious illness and (v) having to live alone when old are elicited. Respondents are subsequently classified into four categories, namely highly secure, relatively secure, relatively vulnerable and highly vulnerable. The first age group includes individuals who entered their reproductive age (reproductive age is generally defined to commence at the age of 15 for women and this study assumes the same age for men) during the baby boomer years (i.e. born between 1936 and 1950), the second group includes individuals who were born between 1956 and 1970, while the third group includes individuals who were born between 1976 and 1990. Due to severe floods, the survey in one southern province could not be conducted, leaving 1,360 responses (compared with a calculated sample size of 1,388) and resulting in the rural South being somewhat underrepresented. A comparison with nationally representative data from the National Statistical Office (NSO) of Thailand shows, however, that the data collected do not exhibit any serious atypical patterns, except a much lower sex ratio.

A first look at the data reveals a number of interesting findings. First, having normal blood pressure is significantly albeit weakly correlated with mental well-being (proxied by an adapted version of GHQ-12), indicating that the multi-item measure is preferable to single-item measures of well-being (namely global happiness and satisfaction with life) in accordance with the literature. Second, comparison with others matters and most respondents compare themselves with neighbours, followed by friends and people in the same household as assumed in most of the literature. Young individuals, however, tend to compare themselves with friends, followed by neighbours and people in the same household, indicating that the same comparison group should not be assumed across all age groups. Third, mutual interdependence of parents and children still prevails in rural Thailand. 71 percent of the elderly reported that their children are living on the same compound. In addition, mutual assistance is widespread.

Moreover, 76 percent of the young expect to live with their parents when they are old, although regional variations exist (North: 83 percent, Northeast: 75 percent, Central: 73 percent and South: 70 percent). However, only 72 percent of young respondents, compared with 88 percent of middle-aged respondents, expect their children to take care of them when old, which reflects higher uncertainty among the young about how their children will "turn out", which may inter alia be due to the demographic transition Thailand is experiencing and indicate the need of families to adapt. When asking the young whether they expect to have any more children, only 52 percent indicated that they want to have more children. Fourth, when asked to rank the determinants of happiness in terms of their importance across the life cycle, respondents ranked family and health as the most important determinants of happiness when old, family and financial security when middle-aged and family, financial security and work when young. The government is ranked the least important determinant of happiness over the life-cycle and across age cohorts. Fifth, descriptive statistics reveal further that respondents in the Northeast have the highest risk perceptions across the income and consumption dimensions. In addition, individuals with primary school education or lower perceive themselves as more vulnerable than others. 2.6 percent of elderly are relatively vulnerable across *all* dimensions, whereas the corresponding ratio for the middle-aged and young is 4.9 percent and 2.7 percent. 28.9 percent of old respondents, 28.6 percent of middle-aged respondents and 29.7 percent of young respondents are classified as highly vulnerable in *one* of the five dimensions. However, these results may overestimate vulnerability since our sample contains more female than male respondents, with female respondents generally perceiving themselves as more vulnerable in old age than male respondents.

Next, simple well-being functions are estimated. Well-being scores are regressed on standard objective variables, such as age, education, gender, marital status, region, work status, wealth and absolute income. Then, health, relative income, income aspirations, relative material possessions, personality and perceived future vulnerabilities are added as explanatory variables. Subsequently, objective variables are replaced by subjective reports of life domain satisfaction using a simple additive specification to describe the relationship between satisfaction in various life domains and global satisfaction. Respondents were asked about satisfaction in various areas of life, namely family, social support, work, financial security, personal health, religion and community. In addition, respondents were asked about their satisfaction with providing for old age. Several questions related to satisfaction in these life domains were asked. Factor analysis is used to identify those variables that load high on a factor to create a summated scale thereof, which is then used as replacement variable. Finally, the well-being score is regressed on family satisfaction, social support satisfaction, work satisfaction, financial security satisfaction, satisfaction with provision for old age, health

satisfaction, satisfaction with religion and satisfaction with community. The key findings from the regression analyses are threefold. First, variables such as education, marital status, region, health and wealth mostly perform as expected, but show some inconsistency across sub-sample regressions. Most important for well-being, however, appear to be two subjective variables, namely met income aspirations and having less material possessions than the comparison group. Second, perceived vulnerability in old age seems to matter for present well-being, with type and severity being of importance. Interestingly, perceived vulnerabilities in terms of income and living arrangement when old appear to matter for mental health of *young* respondents, which again reflects the demographic transition Thailand is experiencing. In line with declining fertility, young respondents perceive themselves more vulnerable in old age since they will not be able to rely on support from children to the same extent as previous generations. Third, satisfaction with family, health, financial status, religion, community as well as provision for old age seem to be the most important life domains for life satisfaction.

Given that perceived vulnerabilities in old age seem to matter for present well-being and in light of the fact that young respondents agree least with the statement that the government provides sufficient information on policy changes, one of the policy implications is that young respondents should receive adequate information about government activities related to well-being in old age to help them deal with the complexities of retirement planning in light of the demographic transition Thailand is experiencing. Along these lines, individuals were asked to name the most important type of welfare that the government should provide for elderly and most stated that (i) the non-contributory old age government allowance should be increased to 1,322 Baht on average (from currently 500 Baht), indicating that individuals in rural areas are well aware of the poverty line and (ii) more day care and multi-purpose centres should be established.

Since cross-sectional data are used in this study the results should be viewed and understood as indicative only.

Abstract

This study uses cross-sectional data from a survey and seeks to explore possible linkages between demographic change, perceived vulnerabilities in old age and economic welfare in rural Thailand. In addition to information about well-being and its determinants as well as personal and household characteristics, the survey also compiles novel data for three age groups, which entered reproductive age prior to, during and after Thailand's rapid fertility decline, about perceived vulnerabilities in old age in terms of income, consumption, health, living arrangement and assets. The main findings are (i) that two subjective variables, income aspirations and comparison of material possessions, in addition to standard objective variables are significantly correlated with subjective well-being and (ii) perceived vulnerabilities in old age seem to matter for present well-being, with type and severity being of importance. Interestingly, perceived vulnerabilities in terms of income and living arrangement when old appear to matter for mental health of *young* respondents, reflecting the demographic transition Thailand is experiencing.

Key words: well-being, subjective expectations, demographic transition

บทคัดย่อ

การศึกษานี้ใช้ข้อมูลภาคตัดขวางจากการสำรวจ ซึ่งการสำรวจนี้พยายามที่จะสำรวจเกี่ยวกับความสัมพันธ์ที่เป็นไปได้ระหว่างการเปลี่ยนแปลงโครงสร้างประชากร กับภาวะความเปราะบางและสวัสดิการทางเศรษฐกิจของผู้สูงวัยในเขตชนบทของประเทศไทย นอกจากนี้เพื่อให้ได้ข้อมูลเกี่ยวกับสภาพความเป็นอยู่ และตัวกำหนดต่างๆ ตลอดจนลักษณะของบุคคลและครัวเรือน การสำรวจนี้ได้รวบรวมข้อมูลใหม่เกี่ยวกับภาวะความเปราะบางในวัยสูงอายุทั้งในแง่ของรายได้ การบริโภค สุขภาพ การจัดสรรที่อยู่อาศัย และสินทรัพย์ โดยแบ่งประชากรเป็น 3 ช่วงอายุ ได้แก่ วัยที่ก้าวเข้าสู่วัยเจริญพันธุ์ วัยที่อยู่ระหว่างการลดลงของการเจริญพันธุ์ และวัยหลังจากการเจริญพันธุ์ลดลงแล้ว ซึ่งผลการวิจัยหลัก คือ (i) ตัวแปรด้านนามธรรม คือ ระดับรายได้ที่ต้องการ และ การเปรียบเทียบความเป็นเจ้าของในวัตถุต่างๆ ตลอดจนตัวแปรด้านรูปธรรมต่างๆ มีความสัมพันธ์อย่างมีนัยสำคัญกับสภาพความเป็นอยู่ ที่ดีของประชากร (ii) ภาวะความเปราะบางในวัยสูงอายุดูเหมือนว่าจะมีความสำคัญกับสภาพความเป็นอยู่ที่ดีใน ปัจจุบันโดยขึ้นกับความสำคัญของชนิดและและความรุนแรง และสิ่งที่น่าสนใจคือ ภาวะความเปราะบางในแง่ของ รายได้และการจัดสรรที่อยู่อาศัยเมื่อเข้าสูงวัยชรา มีความสำคัญต่อภาวะสุขภาพจิตของผู้ตอบแบบสอบถามในวัย หนุ่มสาว ซึ่งสะท้อนให้เห็นถึงการเปลี่ยนแปลงด้านประชากรที่ประเทศไทยกำลังเผชิญอยู่

Table of Contents **Page**

List of tables **Page**

List of figures

I. Introduction

The proportion of elderly is increasing around the world and dealing with population ageing will be the greatest challenge of the coming decades. Population ageing is also accelerating in Asia, in fact it is the region in the world that ages fastest, and the manifold and complex issues surrounding the experience of ageing have become of concern to policy-makers. Some of the key observations of this process are that (i) rural populations tend to be older, (ii) older women tend to outnumber older men and (iii) family support tends to decline. (Mujahid, 2007) In Thailand, the percentage of population aged 60 or over was 11.2 in 2009 and the country ranked 69th in the country ranking by percentage of population aged 60 or over, with Japan ranking 1st and Qatar 196th. (UN, 2009) Singapore ranks 18th, but all other ASEAN countries rank lower than rank 85. (UN, 2009) The high percentage of population aged 60 results from a sharp decline in fertility and improvements in life expectancy over the past decades. Traditionally, Thai families have been extended families, but at present Thai families are smaller with fewer children.

When people grow old, their exposure to various sources of risk and hence their vulnerabilities increase. Perceived insecurity and lack of economic welfare in old age in turn may negatively affect well-being.[1] Thailand has formulated numerous policies for the elderly, passed an Act on Older Persons and at present is implementing the Second National Plan for Older Persons (2002-2021). Also, in 2001, Thailand introduced a universal coverage scheme giving the non-insured population, including the elderly, access to public health care. Yet, many initiatives are facing problems. Hence, there is an urgent need to increase knowledge about the issues surrounding ageing to help policy-makers recognize and pursue needed policy changes.

A large body of literature has emerged on the determinants of well-being. Research suggests that people tend to become happier in old age (i.e. there seems to be a U-shaped relationship between happiness and age, with happiness reaching a low in the middle age), yet most people dread growing old. This U-shaped relationship is often found to hold only when controlling for other factors, suggesting that the circumstances accompanying ageing may cause a decline in happiness. (Blanchflower and Oswald, 2004, 2008; Lelkes, 2008 among others). Since family ties have been the strongest source of support for elderly Thai, especially in rural areas, the country's rapid demographic change, as evidenced in declining fertility rates, may drive an increase in exposure to various contingencies in old age. This increased exposure to risks in turn may have an impact on vulnerability and perception thereof may negatively affect well-being. Generally defined, "*vulnerability measures the resilience against a shock — the*

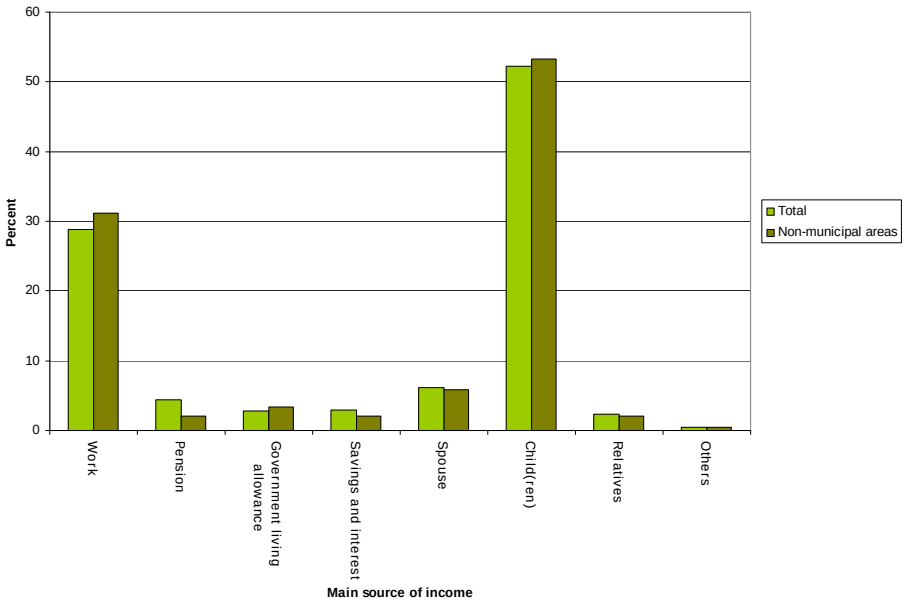
[1] See Layard (2005) for a discussion of the linkage between security and happiness.

likelihood that a shock will result in a decline in well-being". (World Bank, 2001) Vulnerability is a probabilistic concept and primarily the incremental outcome of a set of distinct risks, namely the risk of being exposed, the risk of shocks or threats materialising and the risk of lacking coping capacity across various dimensions such as income and health. (Schroeder-Butterfill, 2005)

With respect to, for example, the income dimension, Pootrakool and Sereechetpongse (2007) report that elderly Thai depend on four sources of financial support, namely own income, past savings, immediate family and transfers from the government. Neither own income, past savings nor transfers from the government are found to provide sufficient financial support in old age, while family ties (mainly children) were found to be the strongest source of support for elderly Thai. Hence, given the trend toward nuclear and bilateral family systems, demographic change may exacerbate the situation of elderly in Thailand with potential negative implications for economic welfare.

Figure 1 shows that as of 2007 the main source of income of elderly in total and in non-municipal areas is from children.

Figure 1 Main sources of elderly income (previous 12 months, 2007)



Source: Table 11 Number of the elderly by main source of income, sex, area and region, 2007 Elderly Survey, NSO, Online at http://web.nso.go.th/en/survey/age/older07.htm, Accessed on May 19, 2011.

Understanding possible linkages between perceived vulnerabilities in old age (assumed to be inter alia the result of demographic change) and economic welfare in rural Thailand is important for the development of policies as it may allow identification as well as indicate ways of avoiding and alleviating bad outcomes.

The objective of this study hence is to identify and discuss the determinants of and explore their relationship with well-being, focusing on possible linkages between

perceived vulnerabilities in old age (assumed to be inter alia the result of demographic change) and economic welfare in rural Thailand.

II. Literature Review

In light of the objective of this paper, three strands of the literature are briefly reviewed, namely (i) well-being and its measurement, (ii) determinants of well-being and (iii) perceived vulnerability and measures of subjective expectations. Regarding (i) and (ii), rather than going deeper into the literature concerned with measuring well-being, validating well-being data as well as examining the determinants of and their relationship with well-being, this paper simply outlines key concepts and refers to articles dealing with measurement, reliability and validity and reviewing the general literature in this area.

II.1 Well-being and its measurement

Well-being is a complex construct that may be viewed objectively or subjectively. While objective well-being is linked with the fulfilment of basic needs and rights or the ability to satisfy preferences (Dolan, Layard and Metcalfe, 2011), subjective well-being is based on self-reports of individuals, where individuals are asked to rate their well-being on single- or multi-item scales[2]. According to Diener (1994) subjective well-being consists of two aspects, cognition and affect. While the former is commonly assessed with life satisfaction questions, the latter is linked with happiness. Life or global satisfaction can be broken down into satisfaction with certain life domains, such as satisfaction with work, leisure or marriage. Happiness or global happiness on the other hand consists of feelings such as fear, anger or joy. Until recently self-reports of global satisfaction or global happiness were deemed entirely subjective, especially by economists, who prefer to look at revealed preferences instead. However, it is now well established that subjective well-being can be measured in a scientific way. Layard (2005) and Kahneman and Krueger (2006) among others report correlations between measures of self-reported subjective well-being and various objective physiological and medical criteria, such as for example brain waves. This study focuses on subjective well-being and uses the terms well-being and subjective well-being interchangeably.

II.2 Determinants of well-being

In the past decade, a large body of literature dealing with subjective well-being and its determinants has emerged. Dolan, Peasgood and White (2007) provide an excellent review of the literature that is concerned with the determinants of subjective well-being and classify these determinants into seven categories, namely (i) income, (ii)

[2] Single-item questions usually have the following form: Taken all together, how happy would you say you are: very happy, quite happy, not very happy, not at all happy. (World Value Survey in Frey and Stutzer, 2002) Examples of multi-item scales are the Midlife Development Inventory (MIDI) and the General Health Questionnaire (GHQ).

personal characteristics (i.e. age, gender, ethnicity and personality), (iii) socially developed characteristics (i.e. education, health, type of work and unemployment), (iv) how individuals spend their time (hours worked, commuting, caring for others, community involvement and volunteering, exercise and religious activities), (v) attitudes towards self, others and/or life (i.e. attitudes towards circumstances, trust, political persuasion, religion), (vi) relationships (i.e. marriage and intimate relationship, having children, seeing family and friends) and (vii) wider economic, social and political environment (i.e. income inequality, unemployment rates, inflation, welfare system and public insurance, degree of democracy, climate and the natural environment, safety and deprivation of the area and urbanisation). While the evidence on some variables is still contradictory, a number of relationships seem to be robust across different datasets, different countries and different methods of analysis. Robust variables are for example income, income relative to aspirations and income relative to a reference group (positive), age (negative), age squared (positive), health (positive), individual unemployment (negative), exercise (positive), religious activities (positive), attitudes towards our circumstances (positive), trust (positive), religion (positive), separation (negative) and inflation (negative). The review in Dolan, Peasgood and White (2007) expands the review in Layard (2005) and Frey and Stutzer (2002). Layard (2005) for example identified seven more narrowly defined determinants of happiness, dubbed Layard's Big 7. These are family relationships, financial situation, work, community and friends, health, personal freedom and personal values. Frey and Stutzer (2002) on the other hand classify the determinants of happiness into five categories, namely personality factors, socio-demographic factors, economic factors, contextual and situational factors and institutional factors. In addition, Frey and Stutzer (2002) provide a succinct overview of the psychological processes producing happiness, i.e. adaptation, aspiration, social comparison and coping. Adaptation refers to the fact that individuals adapt to new circumstances such as for example moderate disability (Oswald and Powdthavee, 2006) or winning the lottery (Brickman, Coates and Janoff-Bulman, 1978 in Kahneman and Krueger, 2006) and subsequently adjust their subjective level of well-being. Aspiration means that people form expectations against which they measure their situation. Stutzer (2003) for example found that income aspirations increase with higher income and that higher income aspirations reduce people's utility (proxied by a single-item global satisfaction question). People form aspirations through adaptation to previous income levels and social comparison. Ferrer-i-Carbonell (2005) among others confirms this process and finds that the income of a reference group is as important as own income, individuals are happier the more their income exceeds that of the reference group and comparisons are mostly made upwards, implying an asymmetric structure of externalities (Duesenberry, 1949). However, little is known about who the reference groups are. Lastly, people can cope with unfortunate circumstances as evidenced by

paraplegics that do not report themselves as particularly unhappy. (Brickman, Coates and Janoff-Bulman, 1978 in Kahneman and Krueger, 2006)

Closely related is the domains-of-life literature, which states that life satisfaction is determined by satisfaction in life domains, with an additive relationship being commonly assumed. While most studies focus on satisfaction in one life domain, a number of studies examine satisfaction in several or all domains of life. (van Praag et al., 2002, Rojas, 2007, among others)

A common approach to estimating happiness equations is to simply regress global happiness or life satisfaction on a set of controls. (Blanchflower and Oswald, 2002 among others) Self-reports of subjective well-being are commonly viewed by economists as ordinal, although psychologists generally assume cardinal comparability. (Ferrer-i-Carbonell and Frijters, 2002) Hence, while psychologists may estimate ordinary least squares regressions, economists mostly employ ordered response models. Much of the empirical studies that seek to identify the determinants of subjective well-being rely on cross-sectional data, especially those done in developing countries. While cross-sectional data may reveal important correlations, this is not true for causal relationships. As stated in Powdthavee (2007a) among others, the relationship between two variables obtained from a cross-sectional dataset may either mean causality, reverse causality or a spurious correlation in case both variables are correlated with an unobserved variable.

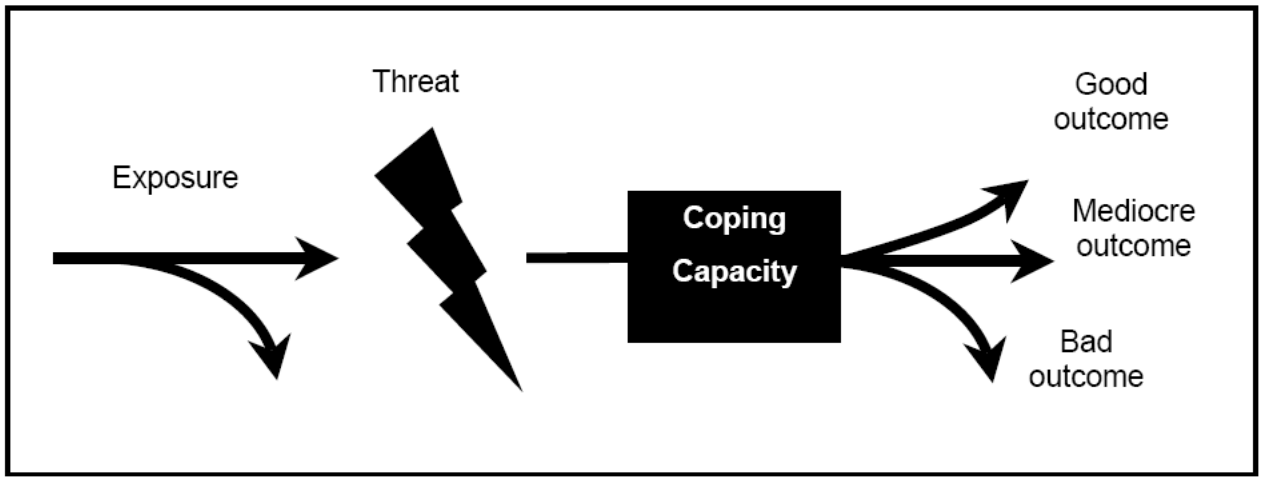
Hence, any results based on cross-sectional data must be interpreted very carefully and can only be understood as indicative.

II.3 Perceived vulnerability and measures of subjective expectations

When people grow old, their exposure to various contingencies increases. This exposure to risks has an impact on vulnerability and perception thereof may in turn affect subjective well-being. Generally defined, "*vulnerability measures the resilience against a shock — the likelihood that a shock will result in a decline in well-being*". (World Bank, 2001). Vulnerability is a probabilistic concept and as shown in Figure 2 primarily the incremental outcome of a set of distinct risks, namely the risk of being exposed, the risk of shocks or threats materialising and the risk of lacking coping capacity across various dimensions such as income and health. (Schroeder-Butterfill, 2005) There are many potential threats as summarised in Hoogeveen et al. (2004), which include natural threats (e.g. rainfall and landslides), health threats (e.g. illness and injury), social threats (crime, domestic violence), economic threats (e.g. business failure, financial crisis), political threats (riots, discrimination) and environmental threats (e.g. pollution, nuclear disaster).

Exposure to shocks or threats is directly related with poverty since poor people are typically more exposed to risk but least protected against it as highlighted in Hoogeveen et al. (2004). A shock can result in a bad outcome by pushing an individual below the poverty line and a poor individual further away from the poverty line.

Figure 2 Understanding vulnerability



Source: Schroeder-Butterfill (2005)

Vulnerability is a forward-looking concept as described above, yet backward-looking empirical methods are commonly used. These are based on data of actual realisations of say income and past events such as weather and illness, which are used to assess risk. (Townsend, 1994 among others) Most of these studies focus on natural disasters, epidemiology and famine, with few systematic applications to life-cycle-risk (e.g. aging).

Some studies, however, use a forward-looking approach by directly measuring people's perceptions of future states of the world and argue that it is p*erceived* risk and not *actual* risk that determines current behaviour, which in turn implies that understanding expectations that individuals have is important for policy-makers.

Various approaches exist to elicit subjective probabilities in developing countries as reviewed in Delavande, Gine and McKenzie (2008). Non-probabilistic methods of eliciting expectations include for example attempts to use Likert-type response scales to assess the chance that an event will occur in the future which, however, has shortcomings in terms of comparability. Another approach is to ask people directly to state probabilities, either with the help of visual aides or without, depending on the educational background of respondents. Careful design of the perceived vulnerability module is essential to avoid the heuristics that respondents use (heuristics of availability,

representativeness and anchoring), which may lead to possible biases as indicated in Kahneman et al. (1982).

A number of studies have sought to elicit subjective probabilities through surveys. For example, Dominitz and Manski (1994) elicit a cumulative distribution function for income by first asking individuals in the USA what the lowest and highest amount they could earn would be, and then use these answers to define four threshold levels. Respondents are subsequently asked about the percent chance that their income will be more or less than the threshold levels. Dominitz and Manski (1996) elicit subjective probabilities of three events one year ahead to capture economic security in the USA. These three events are (i) absence of health insurance, (ii) victimization by burglary and (iii) job loss. The authors find that expectations and realizations of health insurance coverage and of job loss match, while respondents substantially over-predict the risk of burglary. Dominitz, Manski and Hainz (2003) obtain subjective probabilities about future social security benefits in the USA and find that younger persons tend to be much less confident that social security will be there when they retire. In addition, the authors reveal uncertainty about eligibility and benefit levels. Attanasio, Meghir and Vera-Hernandez (2005) validate and analyze data on income expectations from a population of poor Colombians and find that the probability of applying to the "*Empleo en Accion*" welfare program decreases as minimum and maximum expected income increases. Also, current consumption becomes insignificant when data on income expectations are included. De Weerdt (2005) collects data on risk perceptions of various activities in Tanzania, namely cultivation of bananas, cassava, maize, beans, vanilla and sweet potatoes; running a shop and selling food on the weekly market as well as the future price of coffee. The data also provide supporting evidence that collecting perceptions on ex-ante risk is possible and relevant. Gine, Townend and Vickery (2009) elicit beliefs about the timing of the monsoon from farmers in India and assess their accuracy by comparing them to past data. Interestingly, they find substantial heterogeneity in beliefs and accuracy. Farmers that have less access to risk coping mechanisms, however, are found to have more accurate predictions. Gine and Klonner (2006) investigate why new technologies fail to be adopted in low income environments. They use data collected in India about initial expectations about individual ability and realization of individual ability to successfully operate the new technology, given that other studies only rely on ex post observed adoption decisions. The authors inter alia find that initially uncertain individual benefits may prevent a risk-averse individual to adopt a profitable new technology. Jensen (2010) looks at perceived returns to education and the demand for schooling since returns perceived by individuals affect schooling decisions. Using data from the Dominican Republic, the results show that while the measured returns to schooling are high, the returns perceived by students are extremely low. Moreover, the findings

indicate that students underestimate the returns to schooling, partially because they rely on information on the returns within their own community, which may result in a downward bias.

A number of studies analyse the impact of perceived job insecurity (measured by probability of job loss, either excluding or including its potential cost) and well-being and mostly confirm that perceived job insecurity is an important factor for well-being. (Ferrie et al., 2004 and Sverke and Hellgren, 2002 in Geishecker, 2009) Graham and Chaparro (2011) explore the impact of crime and insecurity on well-being and find that these have a negative impact on happiness and health.

As stated in Delavande, Ginie and McKenzie (2008) most of the studies that seek to elicit subjective probabilities from people in developing countries show that these "*can generally understand and answer probabilistic questions, such questions are not prohibitive in time to ask, and the expectations are useful predictors of future behavior and economic decisions*".

III. Research methodology

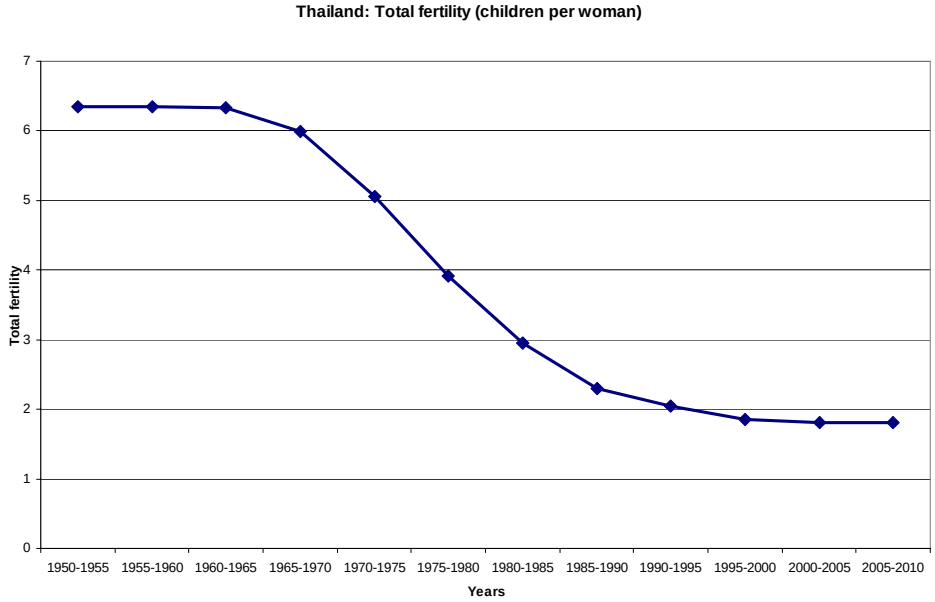
Drawing on inter alia De Weerdt (2005) and Dominitz and Manski (1996), who apply a forward-looking concept and measure people's expectations on future states of the world to capture risk perceptions, this study seeks to analyse possible linkages between *perceived* vulnerabilities in old age (assumed to be inter alia the result of demographic change) and economic welfare in rural Thailand. It relies on evidence from a survey conducted in Thailand's rural areas.

III.1 Target population and sampling design

Thai nationals living in non-municipal areas of Thailand are divided into three groups. The first group includes individuals who entered their reproductive age (reproductive age is generally defined to commence at the age of 15 for women and this study assumes the same age for men) during the baby boomer years (i.e. born between 1936 and 1950), the second group includes individuals who were born between 1956 and 1970, while the third group includes individuals who were born between 1976 and 1990 as shown in Figure 3.[3]

[3] As Blanchflower and Oswald (2004) pointed out, one problem with this approach is that the use of words may have changed over time (i.e. 'happy' no longer means exactly the same). The authors argue, however, that this concern would be more plausible over longer time spans. (See also Layard (2005), who discusses independent validations of replies to test if respondents use words in the same way.) Also, a cohort effect may be present in the sense of earlier generations simply having been born in particularly good or bad years (e.g. WWII). In Blanchflower and Oswald (2008), the authors analyse if cohort effects really matter and find that while birth-cohort influences make some difference to the results, in Blanchflower and Oswald (2004) their finding of a U-shape remains unaffected. Note further, that according to the 1996 Survey of Fertility, the average number of children per woman was 2.33 in non-municipal areas compared with 1.94 in municipal areas, and 1.82 in Bangkok.

Figure 3 Total fertility in Thailand, 1950 - 2010



Data source: Online at http://esa.un.org/unpp/index.asp?panel=2, Accessed on March 29, 2009.

This allows us to see if the relationship between perception of vulnerabilities in old age as well as mutual interdependence of parents and children and well-being differs across these three age groups. As also pointed out by Chayovan and Knodel (2008), the elderly of the future will be different from those of today through cohort succession (e.g. in terms of marital status, fertility and education) which should be taken into consideration by policymakers.

Total sample size is calculated as 1,388[4] and stratified multistage sampling design, with equal probability of selection methods, is used. In a first sampling stage, seventeen provinces from Thailand's four regions (Central, North, Northeast and South) were chosen systematically, based on geographical location. The subsequent sampling process is shown in Table 1.

Individuals who are confined to bed, mentally disturbed, exhibit signs of alcohol consumption and those who simply do not wish to participate are excluded.

Since the survey was mostly implemented on weekdays between 9.00 am and 6 pm, our sample might not be representative since it may contain proportionally more individuals not working or working at home.[5]

In each province, we selected 2 Or-Bor-Tors (district government area[6]) randomly, except in the Northeast where 4 Or-Bor-Tors were selected in each province

[4] The sample size is obtained using the following formula (Cochran, 1977): $n = g \times (t^2pq/d^2)$, where n denotes the sample size, and adding for non-response. t equals 1.96 (rounded to 2) for the 95% confidence level, d, the acceptable error, 0.05, p, the estimated proportion of the attribute that is present in the population, is assumed 0.5, q is (1-p) and g denotes the design effect, assumed to be equal to 3.

randomly to account for the larger land size of the region. Subsequently, 2 villages in each Or-Bor-Tor were selected systematically, while participants in each village were selected accidentally in proportion to population size of the region.

The province Petchaboon (as well as two Or-Bor-Tors in Petchaboon, namely Bueng Krachap in Amphur Vichienburi and Na Sang in Amphur Lom Kao) was selected purposively for the pilot.[7]

Table 1 Sampling design

Region	Province (selected systematically)	Number of Or-Bor-Tor (selected randomly)	Sample size per Or-Bor-Tor (selected systematically)	Total
Central	Lopburi	2	30	300 (Old: 24, Middle age: 111, young: 165)
	Phetchburi	2	30	
	Samut Sakorn	2	30	
	Rayong	2	30	
	Trad	2	30	
North	Lamphun	2	39	312 (Old: 53, Middle age: 120, young: 139)
	Pichit	2	39	
	Sukhothai	2	39	
	Nan	2	39	
Northeast	Sakhon Nakorn	4	36	576 (Old: 82, Middle age: 206, young: 288)
	Nakorn Ratchassima	4	36	
	Nong Bualampoo	4	36	
	Sisaket	4	36	
South	Krabi	2	25	200 (Old: 32, Middle age: 64, young: 104)
	Songkla	2	25	
	Trang	2	25	
	Pattalung	2	25	
Pilot	*Petchaboon*	*2*	*24*	*48*

III.2 Questionnaires

The questionnaire[8] seeks to collect information about well-being, personal factors, household characteristics, comparison and comparison group, aspirations, Layard's Big 7 factors affecting happiness[9] (Layard, 2005), with focus on mutual interdependence of

[5] Representativeness of the survey is, however, assessed by comparing key socio-economic characteristics with those compiled by the National Statistical Office of Thailand

[6] Three Or-Bor-Tors had changed their status to Thesaban Tambon (lowest township level) during the past year which had not been announced on their websites yet, whereas one Thesaban was mistakenly included due to a recent name change, which was also not announced on their website. Hence, 136 observations were taken in Thesaban areas. To control for possible bias, these observations are dropped from the sample as robustness check. The main findings (results not shown, but available upon request), however, remain unchanged.

[7] The pilot was conducted from October 1 to 3, 2010 and revealed that respondents perceived the questions as very challenging and that assistance was always needed. The questionnaires were subsequently revised and the setup changed from a self-administered to a hybrid form. Information was thus collected through a combination of face-to-face interviews and self-administered questions. Blood pressure readings were taken by trained students from the Faculty of Sports Science, Chulalongkorn University.

[8] The authors are grateful to Somprawin Manprasert, Chanettee Milintangul and Natthavudh Powdthavee for comments on the questionnaires.

[9] Layard's Big 7 factors affecting happiness are family relationships, financial situation, work, community and friends, health, personal freedom and personal values. While Layard's Big 7 factors cover most components of Thailand's Green and Happiness Indicator (GHI) for happiness-led development (health, warm and loving family, empowerment of communities, economic strength and equity, surroundings and ecological system and democratic system with good governance) (NESDB, 2550), adjustments are made where necessary to adapt factors to a Thai context.

parents and children[10], as well as perceived vulnerabilities in old age, and contains approximately 80 questions. Regarding perceived vulnerabilities in old age, we look at income, consumption, health, living arrangement and asset dimensions and focus on perceived outcomes. Questions seek to capture the perceived likelihood that a negative event in one of the 5 afore-mentioned dimensions will occur in future. In addition, several ancillary questions are asked. For example, with respect to the income dimension, we ask questions about expected future sources of income as well as interviewees' preference for securing income in old age.[11] At the end of the questionnaire, respondents are subsequently asked to rank eight determinants of happiness, namely family ties, social support, work, financial security, personal health, religion and community (analogous Ho and Tan, 2008) when young, middle-aged and in old age, which gives insights into what the most important contributors to happiness are and how these change over the life-cycle. A different questionnaire is used for each age cohort, which only differs with respect to questions dealing with mutual interdependence of children and parents as well as perceived vulnerability.

III.3 Data analysis

The data thus collected are analyzed in three steps.

First, descriptive statistics are examined. Survey estimates are compared with the latest survey data compiled by the National Statistical Office of Thailand (NSO) to check representativeness. Subsequently, differences between groups or associations in the sample are identified and analyzed.

Second, the perceived vulnerability data are used to classify respondents as highly vulnerable, relatively vulnerable, relatively secure or highly secure. The vulnerability module differs across elderly, middle-aged and young respondents due to the different time horizon involved. Whereas, elderly are asked about the perceived likelihood that the five events (income, assets, consumption, health, living arrangement) will occur in the next 12 months, middle-aged and young respondents are asked about the subjective probability of these events occurring at age 70, i.e. when they are old. Subjective probabilities of (i) income (in today's Baht to avoid distortion through inflation expectations) being less than current regional poverty line[12], (ii) assets worth less than 100,000 Baht in today's Baht[13], (iii) insufficient money to meet daily expenses,

[10] Co-residence with adult children may be the result of parents' need for assistance or the threat of disinheritance, however, co-residence with elderly parents may also reflect a strategy for family well-being since elderly parents may for example provide reciprocal services.

[11] Chiu and Ho (2006), for example, estimate elderly housing demand and point out the importance of taking housing aspirations and preferences of elderly persons into account especially for the purpose of deriving policy implications.

[12] Data obtained from "*2008 Poverty line, National Statistical Office, Office Of The Prime Minister*", received by email from services@nso.go.th.

[13] Elderly are asked to assess the chance that they will have to sell most of their assets (i.e. property and financial assets) during the next 12 months. The threshold of 100,000 Baht used for middle-aged and young respondents is an average based on 2007 regional NSO data. (NSO, Household Socio-economic Survey 2007,

(iv) serious illness and (v) having to live alone are elicited. Although the design of thresholds should be tailored (based on point estimate of lowest/highest amount analogous Delavande and Rohwedder (2008)) to (i) ensure that thresholds cover a range that is relevant for respondent and (ii) reduce anchoring effects, classification of respondents in above categories would then, however, not be straightforward. Besides, the afore-mentioned study report high non-response. Hence, we use standard thresholds and classify respondents drawing on Dominitz and Manski (1996) as follows:

1. **Highly secure**: respondents whose subjective probabilities of the 5 events lie at or below the 0.25 quantiles
2. **Relatively secure**: respondents whose subjective probabilities of the 5 events lie at or below corresponding medians
3. **Relatively vulnerable**: fraction of respondents whose subjective probabilities of the 5 events exceed the corresponding medians
4. **Highly vulnerable**: fraction of respondents whose subjective probabilities of the 5 events exceed the 0.75 quantiles

Subsequently, we assess if and how risk perceptions vary with respondents' characteristics.

Third, an empirical analysis is conducted. The empirical analysis contains two parts. In the first part, analogous Blanchflower and Oswald (2004) a simple well-being function is estimated as an ordered probit.[14] Well-being scores are regressed on standard objective variables, such as age, education, gender, marital status, region, work status, wealth and absolute income. Then, health, relative income, income aspirations, relative material possessions, personality and perceived future vulnerabilities are added as explanatory variables. In the second part, objective variables are subsequently replaced by subjective reports of life domain satisfaction using a simple additive specification to describe the relationship between satisfaction in various life domains and global satisfaction (analogous Rojas, 2007, among others). Respondents were asked about satisfaction in various areas of life, namely family, social support, work, financial security, personal health, religion and community. In addition, respondents were asked about their satisfaction with providing for old age. Several questions related to satisfaction in these life domains are asked. Factor analysis is used to identify those variables that load high on a factor to create a summated scale thereof, which is then used as replacement variable. Reliability is measured by Cronbach's alpha. Finally, the well-being score is regressed on family satisfaction, social support

---

Table 14 Percentage of households reporting assets; house, land, building, vehicles and financial assets by value of assets and region) Middle-aged and young respondents are allocated randomly in two groups, A and B. Respondents in group A are asked about the percentage chance that their assets might be, on a scale from 0 to 100, where 0 means no chance and 100 means absolute certainty, worth more than 100,000 Baht in today's Baht, while respondents in group B are asked about the percentage chance that their assets might be worth less than 100,000 Baht in today's Baht analogous Attanasio, Meghir and Vera-Hernandez (2005). As expected, the sum of the averages of the probabilities stated by groups A and B is close to one.

satisfaction, work satisfaction, financial security satisfaction, satisfaction with provision for old age, health satisfaction, satisfaction with religion and satisfaction with community.

If global happiness or life satisfaction is used as proxy for subjective well-being, an ordinal dependent variable is assumed and the following model specified:

$SW_i^* = \alpha + X_i\beta + u_i$

where SW_i^* is a latent variable and only the different categories of an ordered categorical variable are observed and X_i a vector of control variables. This model is estimated as ordered probit. A positive estimated coefficient implies increased probability that a person will report high subjective well-being.

Although the GHQ score is also an ordered categorical variable, it has a very high number of response categories (from 0 to 77 in this study). As it has been shown that the difference between ordinal and cardinal estimation of subjective well-being is small (Ferrer-i-Carbonell and Frijters (2004), Gardner and Oswald (2005), among others), cardinality is assumed here and the model takes the following form:

$SW_i = \alpha + X_i\beta + u_i$

where SW_i denotes a cardinal measure of subjective well-being

While we are aware of the shortcomings of using cross-sectional data for this type of regression analysis, panel data are not available as yet. Most happiness studies are based on cross-sections as for example stated in Frey and Stutzer (2002), which is one of the major shortcomings in this line of research.

III.4 Data collection

Due to severe floods in the fourth quarter of 2010, the survey in the province Songkla could not be conducted, leaving a total of 1,360 observations, of which 317 are from the Central region, 331 from the North, 557 from the Northeast and 155 from the South. In total, 194 elderly, 486 middle-aged and 680 young people participated in the survey as shown in Table 2. Also due to the floods, the province Lopburi was purposively replaced by the province Sakaeo and in the province Nakorn Ratchassima three Or-Bor-Tors had to be replaced by one purposively selected (based on geographical proximity to Sakaeo province) and two randomly selected alternatives.

Recruiting young respondents in the Northeast was difficult since these were either working in the rice field or had migrated to urban areas, mostly Bangkok.

[14] In case of the GHQ score being the dependent variable OLS is used to estimate the equation.

Table 2 Actual and target number of respondents by region and age cohort

		Actual	Target	Difference
Central	Total	**317**	**300**	**17**
	Old	30	24	6
	Middle	117	111	6
	Young	170	165	5
North	Total	**331**	**312**	**19**
	Old	58	53	5
	Middle	113	120	-7
	Young	160	139	21
Northeast	Total	**557**	**576**	**-19**
	Old	82	82	0
	Middle	209	206	3
	Young	266	288	-22
South	Total	**155**	**200**	**-45**
	Old	24	32	-8
	Middle	47	64	-17
	Young	84	104	-20

IV. Selected descriptive statistics

This section discusses representativeness of the survey and selected data. The remaining data are summarized in appendix 3.

IV.1 Population cohorts

To capture demographic change, we focus on three age cohorts, cohort "old" (individuals who were born between 1936 and 1950), cohort "middle" (individuals who were born between 1956 and 1970) and cohort "young" (individuals who were born between 1976 and 1990).

Table 3 Number of children and siblings by age cohort

	Children		Siblings	
	Number	Observations	Number	Observations
Old	5.12	194	5.58	190
Middle	2.59	486	5.50	475
Young	0.94	678	3.28	632

The data in Table 3 above show, that in line with Figure 3 young respondents have less children and siblings than middle-aged, which in turn have less children and siblings than elderly. However, it is important to bear in mind that young and (some) middle-aged respondents have not reached the end of their reproductive life yet. On the other hand, however, only 52 percent of young respondents indicated that they expect

to have further children. Interestingly, 60 percent of middle-aged respondents are of the opinion that having more children is advantageous for care and support in old age. 88 percent of the middle-aged, but only 72 percent of the young expect their children to take care of them in old age. Hence, our data seem to support that the elderly of the future will be different from those of today through cohort succession (Chayovan and Knodel (2008) as envisaged.

IV.2 Representativeness of survey

This section seeks to assess the representativeness of the survey through comparison with the data provided by the National Statistical Office (NSO), the focus being on socio-economic data such as age, marital status, working status, income, expenses, and debt of the respondents in Thailand's rural area by age cohort and region.

Table 4 Age, expected retirement age, gender, marital status and education of respondents by age cohort and region

		Age cohort			Region			
	All	Old age	Middle age	Young	North	Northeast	South	Central
Age Mean	**39.84**	**66.57**	**46.53**	**27.43**	**41.07**	**40.24**	**39.86**	**37.84**
SD	14.72	4.87	4.71	4.57	15.74	14.79	14.59	13.38
Expected retirement								
Mean	**59.57**	**70.51**	**61.04**	**57.40**	**60.92**	**59.06**	**59.42**	**59.23**
SD	7.84	5.97	6.31	7.83	6.48	7.84	8.18	8.68
Gender (%)								
Female	66.47	67.01	67.49	65.59	68.28	66.97	69.68	62.15
Male	33.53	32.99	32.51	34.41	31.72	33.03	30.32	37.86
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Marital status (%)								
Single	19.46	4.12	5.56	33.68	17.22	19.03	21.29	21.45
Married	64.83	53.09	83.75	54.71	69.79	61.40	69.03	63.72
Divorced	2.28	2.06	2.88	1.91	1.21	2.51	1.29	3.47
Widowed	8.74	39.18	6.38	1.77	9.37	11.13	6.45	5.05
With partner	4.70	1.55	1.44	7.94	2.42	5.93	1.94	6.31
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Education (%)								
No formal education	4.41	12.89	5.35	1.32	5.74	2.87	4.52	5.68
Primary school	45.22	81.44	67.49	18.97	43.51	51.35	34.84	41.33
Secondary school	28.24	3.61	16.67	43.53	27.19	27.65	26.45	31.23
Vocational school	7.06	1.55	3.91	10.88	2.12	6.46	14.19	9.78
Bachelor	10.81	0.52	4.94	17.94	11.18	7.90	20.00	11.04
Master	1.84	0.00	1.03	2.94	3.32	1.98	0.00	0.95
Ph.D.	2.43	0.00	0.62	4.41	6.95	1.80	0.00	0.00
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

According to Table 4, the average age of respondents is 39.84 years, while the average age of the elderly, middle-aged, and young is 66.57 years, 46.53 years and 27.43 years, correspondingly. It also shows that the average expected retirement age of all respondents is 59.57 years, whereas the averages of expected retirement age of the elderly, middle-aged and young are 70.51 years, 61.04 years, and 57.40 years, respectively. It is noteworthy, that the expected retirement age is lower in case of the young.

It seems that a long working life is not expected by the young. When young people start working, most have relatively few responsibilities and may therefore expect to retire early. When people get older, however, they have more and more responsibilities and face more uncertainties, which may result in a higher average expected retirement age. The average expected retirement age of the elderly is 70.51 years and the maximum 80 years. The higher expected retirement age of elderly, however, may also reflect that many people are still agile when old and would like to work since work may give them a feeling of being needed. In addition, as shown in Tables 7 and 8, the young have the highest proportion of respondents in the higher income range and the young earn the highest average income per month compared to other age groups, which is most likely the result of better education.

Noticeably, there is not much difference in average age across regions in this survey. People in the Central part of Thailand are the youngest and Northern people are the oldest. The average age of the people in Northern, Northeastern, Southern and Central are 41.07 years, 40.24 years, 39.86 years and 37.84 years, correspondingly. As shown in Table 4, the expected retirement age, approximately 59 to 61 years, is not significantly different among the regions.

The proportion of female is more than male in this study. Female respondents account for 66.47% and male for 33.53%. These proportions are not much different across age groups and regions, except for the Central region. The Central part has more males compared to other regions, which account for 37.86%, while females account for 62.15%. However, the 2009 NSO[15] data report 49.58% male and 50.42% female, indicating a gender bias in this survey, which is due to the fact that the survey was mostly conducted during day-time, so most of the respondents who stay at home are women, while most of men went out for work.

For marital status, most of the respondents are married (64.83%) followed by single (19.46%), widowed (8.74%), single with partner (4.70%) and divorced (2.28%). Yet, the proportions are different across age groups. It is noteworthy that the percentage of married in old age is less than in middle age. This is in line with the 2007 NSO data[16]. However, there are more widowed among the elderly compared with the middle aged as to be expected because spouses in this cohort have already passed away. In addition, the proportions of marital status considering by region are almost the same.

The survey data show that the highest education completed by respondents in rural areas of Thailand mostly is primary school (45.22%), followed by secondary school (28.24%) and bachelor degree (10.81%). The proportion of those who do not have any

[15] Table 2 Population from registration record, by sex, region and province: 2000 – 2009, online at http://service.nso.go.th/nso/nsopublish/BaseStat/basestat.html.

[16] Number of the elderly by marital status, sex, area and region: 2007, Report On The 2007 Survey Of The elderly Persons In Thailand, National Statistical Office, online at http://service.nso.go.th/nso/nso_center/project/table/files/S-elder.y/2550/000/00_S-elderly_2550_000_000000_00400.

formal education is 4.41%. Primary school is the highest education that the elderly and middle aged completed (81.44% and 67.49%), while the young completed mostly secondary school (43.53%). For the old age group, 12.89% have no formal education. According to 2007 NSO data[17], for 73.2% of the elderly the highest education completed is primary school, followed by no formal education (17.3%). Our sample thus includes more respondents with primary school education and less without any formal education. 25.29% of the young completed higher education and the percentage of those with higher education is more than in the case of middle aged and elderly across all levels, from bachelor level up to the doctoral level. The main reason may be the expansion of compulsory education from 6 years to 9 years since 1999 (i.e. from Pratom 6 to Mattayom 3). The highest education completed by people in each region is mostly primary school, followed by secondary school and bachelor degree. Focusing on higher education, the data reveal that the North has the highest proportion of people who graduated with a bachelor degree and higher. The South has the highest proportion of people who graduated from vocational schools compared to other regions. In other words, for people in the North higher education may be more accessible than for other regions, especially the Northeast. The North, however, has the highest proportion of people who do not have a formal education (5.74%), followed by the Central (5.68%), the South (4.52%) and the Northeastern (2.87%).

Table 5 presents data about respondents' working status by age group and region.

Table 5 Working status by age cohort and region

		Age cohort			Region			
	All	Old age	Middle age	Young	North	Northeast	South	Central
Not working (%)	26.65	59.79	14.61	25.88	30.51	28.90	22.58	20.82
Working (%)	73.35	40.21	85.39	74.12	69.49	71.10	77.42	79.18
Working in agriculture sector (%)	35.83	26.80	49.79	28.38	29.91	41.83	34.84	31.86
Working in industry sector (%)	7.49	1.55	5.35	10.74	7.86	6.64	5.81	9.46
Working in other sector (%)	56.68	71.65	44.86	60.88	62.24	51.53	59.35	58.68
Working hours								
Mean	7.88	7.15	7.97	7.92	7.56	8.07	6.82	8.38
SD	2.41	2.85	2.53	2.22	2.34	2.18	2.69	2.51

The data reveal that most people are working (73.35%). 35.83% of respondents are working in the agricultural sector, 7.49% in the industrial sector, with the remainder working in other sectors such as the service sector. On average, respondents work 7.88 hours per day. Moreover, comparing age groups, the data show that the proportion of working people in the middle age group is the highest at 85.39%, followed by the young

[17] Table 5 Number of the elderly by literacy, highest level of education completed, sex, area and region: 2007, online at http://service.nso.go.th/nso/nso_center/project/table/files/S-elderly/2550/000/00_S-elderly_2550_000_000000_00500.

group (74.12%) and the old age group (40.21%). Since most of the elderly are retired or get support from their children, the percentage of working people in this age group is lower. As the middle aged carry the highest burden of earning income to support their families, while the young have just start their career, the proportion of working people in the middle aged group is the highest, followed by the young. Also, the middle age group is the age group with the highest proportion of respondents working in agricultural sector reflecting that they chose to take care of their families' farms and related businesses. Regarding the regional data, the Northeast has the highest proportion of people who are working in the agricultural sector compared to other regions. The Central region has the highest proportion of respondents working in industrial sector since the Central region is the center of Thailand's industry.

Table 6 Main sources of income by age cohort and region

		Age cohort			Region			
	All	Old age	Middle age	Young	North	Northeast	South	Central
Government allowance	3.72	26.18	0.00	0.00	6.10	4.13	3.23	0.70
Children	7.73	35.60	7.47	0.00	8.30	10.41	4.52	4.10
Credit	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Financial assets	0.07	0.00	0.00	0.15	0.30	0.00	0.00	0.00
Income on financial assets	0.15	0.52	0.00	0.15	0.30	0.00	0.65	0.00
Parent	6.32	0.00	0.00	12.63	9.20	6.82	4.52	3.40
Pensions	0.30	1.57	0.21	0.00	0.30	0.00	1.94	0.00
Relatives	0.15	0.00	0.00	0.00	0.00	0.18	0.00	0.30
Rent of property	0.37	2.09	0.00	0.30	0.60	0.36	0.65	0.00
Sale of property	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.00
Siblings	0.74	0.52	0.42	1.04	0.60	0.90	0.00	1.00
Spouse	9.66	2.09	7.68	13.22	6.10	9.87	10.32	6.40
Working	70.80	31.41	84.23	72.36	68.10	66.25	73.55	84.10
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Table 6 shows that the main source of income of respondents in rural areas is from working, which accounts for 70.80%, followed by support from spouse, children, parents and government allowance (which are 9.66%, 7.73%, 6.32%, and 3.72%, respectively). While the main source of income for the middle aged and the young is work (84.23% and 72.36%, respectively), the main source of income in old age is support from children (35.60%). Work and government allowance are also found important in old age. This implies that many elderly, whose average age in this cohort is 67 years, are still working and have to rely on themselves. According to the 2007 NSO[18] data, the main sources of income of the elderly in rural areas are support from children (53%) and work (31%). However, the 2007 NSO data do not contain information about government allowance. The analysis across age groups and regions also reveals that there are two main sources of income, namely work and support from

[18] Table 32 The elderly rate by the opinion of welfare that government should be provide for the elderly, Report On The 2007 Survey Of The elderly Persons In Thailand, online at http://service.nso.go.th/nso/nso_center/project/table/files/S-elderly/2550/000/00_S-elderly_2550_000_000 000 _03200.xls.

family members. Focusing on support from family members (i.e. parents, siblings, spouses, and children), one can see that Northeastern people rely on support from their families most, whereas Central people tend to rely on themselves most, which may be due to the fact that Central people have more opportunities to work and earn income, reflecting regional disparities.

Table 7 Income categories by age cohort and region

			Age cohort			Region							
	All	All NSO*	Old age	Middle age	Young	North	North NSO*	Northeast	Northeast NSO*	South	South NSO*	Central	Central NSO*
	%	%	%	%	%	%	%	%	%	%	%	%	%
No income	3.85	-	1.55	2.70	5.33	2.13	-	4.16	-	1.30	-	6.35	-
Less than 500 Baht	0.81	0.6	3.61	0.21	0.44	0.91	1.0	1.09	0.9	0.65	0.7	0.32	0.3
500 Baht – 1,500 Baht	7.77	11.2	31.96	4.77	2.96	9.73	13.3	11.03	20.2	1.95	8.2	2.86	5.0
1,501 Baht – 3,000 Baht	15.54	26.5	26.80	16.18	11.85	19.15	34.7	22.24	37.2	3.90	24.0	5.71	20.9
3,001 Baht – 5,000 Baht	22.87	21.8	13.40	29.46	20.89	24.01	23.9	26.76	20.3	8.44	23.1	21.91	27.4
5,001 Baht – 10,000 Baht	27.61	24.1	12.37	23.24	35.11	27.36	17.5	24.23	13.4	29.87	26.7	32.70	30.3
10,001 Baht – 15,000 Baht	9.62	8.0	4.64	11.41	9.78	9.12	5.0	5.79	4.2	23.38	8.6	10.16	8.9
15,001 Baht – 30,000 Baht	7.70	5.8	3.09	6.85	9.63	4.86	3.5	3.07	2.7	23.38	6.8	11.11	5.9
30,001 Baht – 50,000 Baht	2.44	1.4	1.03	3.11	2.37	1.82	0.9	0.72	0.8	5.20	1.4	4.76	0.9
50,001 Baht –100,000 Baht	1.33	0.4	1.55	1.66	1.04	0.61	0.2	0.54	0.2	1.30	0.3	3.49	0.3
More than 100,000 Baht	0.44	0.2	0.00	0.42	0.59	0.30	0.1	0.36	0.0	0.65	0.1	0.64	0.1
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.10	100.00	99.90	100.00	99.90	100.00	100.00

* Monthly income per capita, Table 3 Percentage of households by average monthly income and region, 2007 NSO household socio-economic survey, online at http://web.nso.go.th/en/survey/house_seco/socio.htm

Table 7 shows income categories by age groups and regions based on this study's survey data and the 2007 NSO data. Most respondents have incomes above the poverty lines. 27.61% of respondents fall into the category 5,001 Baht to 10,000 Baht per month, followed by 22.87% in the category 3,001 Baht to 5,000 baht per month, 15.54% in the 1,501 Baht to 3,000 Baht per month bracket and 9.62% in the 10,001 Baht to 15,000 Baht per month bracket. The 2007 NSO data, however, indicate that most respondents (26.5%) fall into the income category 1,501 Baht to 3,000 Baht per month, followed by 24.1% in the category 5,001 Baht to 10,000 Baht per month and 21.8% in the in the category 3,001 Baht to 5,000 baht per month. This indicates that our sample includes respondents with higher average monthly income, in total and across all regions. The analysis by age cohort reveals some interesting differences. Income from the elderly mostly ranges between 500 Baht and 1,500 Baht per month (31.96% of elderly respondents), while income for 29.46% in the middle age group ranges from 3,001 Baht to 5,000 Baht per month. However, in the young group, income ranges for 35.11% of respondents between 5,001 Baht and 10,000 Baht per month. It can also be noticed that the income range of younger people is higher than that of middle-aged and elderly. If respondents are categorized by region, it can be seen that relatively more respondents from the Northeast fall in lower income categories.

Table 8 shows wealth in the form of financial assets and property values of respondents. 53.08% of respondents had no financial assets and 32.16% did not own any property. Mostly, respondents, who do not own any property, are young (47.94%), but those who do not have any financial assets are old (57.22%). The finding that most

property belongs to old and middle aged respondents is typical for villages in the rural areas of Thailand and reflects the still prevalent extended family living arrangement.

Table 8 Average wealth range by age cohort and region

	All		Old age cohort		Middle age cohort		Young cohort	
	Financial assets	Property	Financial assets	Property	Financial assets	Property	Financial assets	Property
None	53.08	32.16	57.22	15.98	54.73	16.46	50.89	47.94
Less than 10,000 Baht	10.85	1.02	13.40	2.06	10.91	0.21	9.88	1.32
10,000 Baht - 30,000 Baht	12.98	1.61	9.28	2.06	9.67	0.82	16.52	1.91
30,001Baht - 50,000 Baht	5.79	2.63	3.61	4.12	5.35	3.09	6.64	1.91
50,001 Baht - 100,000 Baht	6.75	13.45	4.64	18.56	7.20	14.40	7.08	11.47
100,001 Baht - 500,000 Baht	7.41	26.17	7.73	29.90	8.64	33.95	6.34	19.56
500,001 Baht - 1,000,000 Baht	1.98	11.55	3.09	13.40	2.26	15.02	1.48	8.53
1,000,001 Baht - 5,000,000 Baht	1.17	11.40	1.03	13.92	1.24	16.05	1.18	7.35
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	North		Northeast		South		Central	
	Financial assets	Property	Financial assets	Property	Financial assets	Property	Financial assets	Property
None	49.09	22.96	59.07	31.96	42.86	32.90	52.05	41.64
Less than Baht 10,000	7.58	1.51	13.47	0.90	6.49	1.29	11.36	0.63
10,000 Baht - 30,000 Baht	12.12	1.51	13.29	1.44	15.58	2.58	12.30	1.26
30,001 Baht - 50,000 Baht	6.67	3.32	3.77	2.51	5.20	3.87	8.52	1.58
50,001 Baht - 100,000 Baht	9.70	16.62	5.39	17.95	7.79	5.16	5.68	6.63
100,001 Baht - 500,000 Baht	11.82	30.21	3.95	28.55	11.69	17.42	6.63	22.08
500,001 Baht - 1,000,000 Baht	1.82	11.48	0.72	10.95	6.49	18.71	2.21	9.15
1,000,001 Baht - 5,000,000 Baht	1.21	12.39	0.36	5.75	3.90	18.07	1.26	17.04
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

In this study, a standard threshold of assets (property and financial assets) of 100,000 Baht in old age is used. The data show that 88.14% of the elderly, 87.86% of the middle aged and 91% of the young have financial assets less than the asset thresholds. In case of property values, the data show that 42.78% of the elderly, 34.98% of middle age and 64.56% of the young have property valued less than the asset threshold. Therefore, in light of the standard threshold of assets, one can conclude that middle aged respondents are the wealthiest and young respondents the least wealthy of all. The regional breakdown of property data reveals that the proportion in the category "none" ranks first in the Northeast (31.96%), South (32.90%) and Central (41.64), while owning property valued between 100,001 Baht and 500,000 Baht ranks first in the Northern region (30.21%). The data further show that the highest proportion of respondents fall into the financial asset category "none".

Table 9 Income, expenditure and debt by age cohort and region

			Age cohort			Region			
		All	Old age	Middle age	Young	North	Northeast	South	Central
Average Monthly	Mean	2,135	1,409	1,732	2,630	1,915	1,697	3,743	2,348
Consumption	SD	3,001	2,111	2,789	3,270	2,672	2,145	3,658	3,867
Average Monthly	Mean	6,125	4,491	6,101	6,609	5,129	5,235	9,133	7,254
Household Consumption	SD	6,691	4,851	5,767	7,629	5,765	6,798	6,837	6,752
Average Monthly Income	Mean	13,066	4,936	13,160	15,228	7,592	8,435	26,519	15,430
	SD	39,418	10,946	41,046	42,817	9,846	25,768	28,286	30,438
Average Monthly	Mean	15,576	14,884	15,701	15,684	13,822	11,179	36,173	19,768
Household Income	SD	22,618	27,734	20,344	22,569	22,381	12,558	91,878	29,914
Debt Amount	Mean	187,370	146,579	206,370	176,726	214,889	133,446	237,232	251,737
	SD	479,605	380,778	535,370	436,556	612,600	267,448	515,108	621,132

As shown in Table 9, average monthly consumption of all age groups is 2,135 Baht per month and average monthly household consumption 6,125 Baht per month, while average monthly income of all age groups is 13,066 baht per month and average monthly household income 15,576 Baht per month on average. Additionally, the debt

amount with which respondents are burdened is 187,370 Baht on average. From 2009 NSO data[19], non – municipal households on average spend 11,622 baht per month for their consumption, while income is 16,287 Baht on average per month per household. Additionally, the NSO data[20] show that the average debt amount of non – municipal households is around 112,701 baht per households. Approximately, 106,556 Baht debt is in the formal sector and 6,146 Baht is debt in the informal sector. Consumption expenditure based on NSO data[21] is very different compared to this study's survey, the reason most likely being that the consumption categories in the NSO survey[22] are stated explicitly whereas respondents in this survey were simply asked about average monthly consumption expenditures. However, the average debt amount reported by the NSO is much lower than this study's average, because the average debt amount of all households includes indebted and not-indebted households. If considering only indebted households, the NSO data[23] show that the average debt amount is 215,548 Baht per household, which is close to this study's finding. The average income of households in rural areas presented by the NSO[24] (14,307 Baht) is only slightly lower than average income of households in this study's survey.

The data on income, expenditure and debt by age group reveals some interesting findings. The elderly have the lowest income and consumption expenses (both, expenses for households and themselves), while household income for the middle aged is highest. Regarding debt, the middle aged rank first, followed by the young and the elderly since these have to support the expenses of their households. Also, most of the respondents work in the agricultural sector and many have to seek bridge financing or borrow for investment.

Regarding consumption expenses and income by regions, the data show that people in Southern Thailand have the highest consumption expenses, at both the individual (3,743 Baht per month) and the household level (9,133 Baht per month). In addition, individuals and households in the South have the highest income (26,519 baht per month and 36,173, respectively). The Central people rank second in consumption expenses and income and the Northerners and Northeasterners are ranked third and forth. Noticeably, the more income people receive the more household consumption expenses they have in the Southern and Central parts. Also, there are more people living in the same households in the South (4.14 persons) than the Central region (3.96 persons). Therefore, they can earn and spend more. Interestingly, people in North

---

[19] บทสรุปสำหรับผู้บริหารการสำรวจภาวะเศรษฐกิจและสังคมของครัวเรือน พ.ศ. 2553, Online at http://service.nso.go.th/nso/nsopublish/service/survey/socioExec53.pdf, Executive summary.
[20] Ibid.
[21] Ibid.
[22] Ibid.
[23] Ibid.
[24] Table 1 Average monthly income per household by sources of income, region and area, 2007 Socio-economic Survey.

individually spend more on their own consumption compared to the people from the Northeast, although income is less than in the Northeast. Considering the household level, the Northern people spend less on their own consumption even so the capacity to earn income in the household is more than in the Northeast. Additionally, there are more people living in the same households in the Northeast (4.08 persons) than the North (3.72 persons).

According to Table 7, most people in the Southern and Central region have the same income ranges (between 5,001 to 10,000 Baht per month), but the average income of the Southern people (26,519 Baht per month) is more than that of Central people (15,430 Baht per month). This means that there are more Southerners who have higher income than the Central people, which makes the average income of the Southern people more than that of Central people while the income ranges are the same. Considering debt amounts, the Central people have the highest debt amounts, 251,737 Baht on average, followed by the Southerners, the Northerners and Northeasterners in the amounts of 237,232 Baht, 214,889 Baht and 133,446 Baht, respectively. As can be seen, the Central and Southern people seem to have more abilities to earn, but they also have more debt. In addition, Northeastern households have the least capacity to earn and the least debt amounts compared to other regions.

Debt amounts of the elderly amount to 146,579 Baht on average, less than in case of other age groups, and the elderly mostly feel only a little debt burdened. The average debt amount of the middle aged is the highest, 206,370 Baht on average. In line with this, the middle aged report feeling very debt burdened. The average debt amount of the young is 176,726 Baht and most young respondents only feel a little debt-burdened.

Despite their low level of absolute debt, the Northeasterns have the highest proportion of respondents feeling debt burdened, given their low average income.

The data in Table 10 show, that 4.19% of all respondents are living alone and that 95.18% are living with others. There are on average 3.97 persons in each household compared with 3.9 persons in non-municipal area's households based on 2000 NSO data[25]. 11.34% of elderly live alone, while 88.66% do not live alone. Relatively more elderly are living alone since family members migrated to urban areas or have already passed away. There are on average 3.55 persons in elderly households. 3.09% of all middle aged respondents are living alone, while 96.91% are not living alone. There

[25] Population by sex, household by type of households, changwat and area: 2000, The 2000 Population And Housing Census Whole Kingdom, National Statistical Office, Office Of The Prime Minister, online at http://service.nso.go.th/nso/nso_center/project/table/files/C-pop/2543/000/00_C-pop_2543_000_010000_00100. According to the preliminary report of the 2010 census, the average number of people in non-municipal area households is 3.3 persons per household (Population by sex, household, density area and region: 2010, The 2010 Population And Housing Census Whole Kingdom, National Statistical Office, Office Of The Prime Minister, online at http://popcensus.nso.go.th/upload/census-report-6-4-54.pdf).

are on average 3.71 persons in the households of the middle aged. 2.94% of the young live alone and around 97.06% are living with others. The average number of persons per household is 3.71.

Table 10 Living arrangement and number of people living in the households by age cohorts and region

Living Alone								Number of People Living in the Household		
		Obs.	%			Obs.	%		Mean	SD
All Age Groups				Middle Age				All Age Groups	3.97	1.73
Valid	Not Alone	1303	95.81	Valid	Not Alone	471	96.91	Old Age	3.55	1.79
	Alone	57	4.19		Alone	15	3.09	Middle Age	3.71	1.61
	Total	1360	100.00		Total	486	100.00	Young	3.71	1.61
	Missing	16			Missing	3				
	Total	1376			Total	489				
Old Age				Young						
Valid	Not Alone	172	88.66	Valid	Not Alone	660	97.06			
	Alone	22	11.34		Alone	20	2.94			
	Total	194	100.00		Total	680	100.00			

Living Alone								Number of People Living in the Household		
		Obs.	%			Obs.	%		Mean	SD
South				North				South	4.14	1.70
Valid	Not Alone	149	96.13	Valid	Not Alone	318	96.07	Northeast	4.08	1.83
	Alone	6	3.87		Alone	13	3.93	North	3.72	1.52
	Total	155	100.00		Total	331	100.00	Central	3.96	1.76
Northeast				Central						
Valid	Not Alone	535	96.05	Valid	Not Alone	301	94.95			
	Alone	22	3.95		Alone	16	5.05			
	Total	557	100.00		Total	317	100.00			

The percentage of respondents living alone for the Central part of Thailand is 5.05%, whereas it is lower (around 4%) in other regions. There are 4.14 persons in the Southern households, which is the highest number compared to other regions, followed by the Northeastern, the Central and the Northern which are 4.08, 3.96, and 4.14 persons in the households. The 2000 NSO data[26] shows that there are around 3.7 persons living in households in non-municipal areas of the Central region, 3.6 persons in the North, 4.2 in the Northeast and 4.10 persons in the South.

Based on our previous discussion, we conclude that our survey data are broadly in line with the NSO data, but note that our survey contains relatively more female respondents than male, which is important when conducting the analysis. Also, the South is somewhat underrepresented as mentioned earlier.

IV.3 Mutual interdependence of parents and children

This section presents data about parent-child relationships. Parents' and children's mutual interdependence are examined because children are the main source of support for parents as they grow old. The questionnaires include questions about caregivers, anticipated monthly income at the age of 70 of middle aged and young respondents, a comparison of the way children take care of elderly at present and in the

[26] Ibid.

past as well as the quality of the way the elderly are looked after in the village. The details are as follows.

Living arrangement

The data in Table 11 show that most respondents live in the same compound with their children or in the same village, reflecting that the extended family living arrangement is still prevalent in rural areas.

Table 11 Parent-child closeness

	Age Cohorts						Region							
	Old Age		Middle Age		Young		South		Northeast		North		Central	
	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%
Where does your nearest child live?														
Same Compound	115	71.43	337	89.63	372	96.12	97	91.51	324	85.94	211	89.79	192	93.20
Same Village	29	18.01	13	3.46	7	1.81	7	6.60	25	6.63	9	3.83	8	3.88
Same Tambon	9	5.59	6	1.60	3	0.78	1	0.94	8	2.12	6	2.55	3	1.46
Same Amphoe	5	3.11	5	1.33	0	0.00	0	0.00	3	0.80	5	2.13	2	0.97
Same Province	2	1.24	8	2.13	4	1.03	1	0.94	9	2.39	3	1.28	0	0.00
Abroad	1	0.62	7	1.86	1	0.26	0	0.00	8	2.12	1	0.43	1	0.49
Total	161	100	376	100	387	100	106	100	377	100	235	100	206	100
How often do children living in another tambon, amphoe, chanwat or abroad contact you?														
Mean	4.85		2.76		5.71		3.42		4.46		3.16		2.60	
SD	5.62		4.69		5.65		5.23		5.38		4.94		4.81	
Looking ahead, do you expected to live with your parents when they are old?														
Yes					514	75.59	59	70.24	199	74.81	132	82.5	124	72.94
No					166	24.41	25	29.76	67	25.19	28	17.5	46	27.06

Considering age groups, around 71% of elderly live together with their children in the same compound. This proportion is the least compared to other age groups, mainly because children of elderly married and live in separate houses. However, 18% of elderly reported that children still live in the same village. Knodel and Chayovan (2009) report that in 2007 59% of elderly co-resided with a child (compared with 77% in 1986). Of those living alone or only with a spouse, 33% had their child living next door and 18% stated that the nearest child lives in the same village or municipality. The young have the highest proportion of living with their children in the same compound which is 96.12% since most of the young have very young children following with the middle age which live in the same compound with their children at 89.63% of the middle age responders.

As mention above, the elderly have highest proportion of living together with their children in the same village around 18.01% followed by the middle age and the young at 3.46% and 1.81%, respectively. Around 10% of the elderly's children, 6% of the middle age's children and 3% of the young's children lives in other places such as another tambon, amphoe, chanwat or abroad. As can be seen, the children of the elderly usually live together with their parents; however, children who married may have their own house in the same village as same as the middle age. Since the married children of the elderly is more than other age groups, there are more chances that their children will separate and move to different houses but still in the same village.

However, the children living in another places will contact the responders averagely 5.7 times for the young which is the most often followed by the old age (4.85 times) and the middle age (2.76 times). Then if we consider by region, we found that children of the Northeastern responders contact their parents most often averagely 4.46 times followed by the southern, northern, and central people at the average of 3.42, 3.16, and 2.60 times.

Additionally, 75.59% of the young expect to live with their parents when they are old, which the highest proportion is in the Northern region, followed by the Northeastern, the Central, and the Southern at the percentage of 82.50%, 74.81%, 72.94% and 70.24% of the responders in the region, successively. This is the same results when we asked about the living arrangement when they are getting old. Most of the responders want to stay at home.

Intra-family support

Table 12 shows the caregiver and care-giving of the elderly. The data reveal that 71.65% of the elderly need a caregiver and 77.32% makes key decisions in care-giving of themselves.

Table 12 Care-giving and experience of care-giving in the family

	Age Cohorts						Region							
	Old Age		Middle Age		Young		South		Northeast		North		Central	
	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%
Do you need a caregiver?														
Yes	139	71.65					18	75.00	63	76.83	40.00	68.97	18	60.00
No	55	28.35					6	25.00	19	23.17	18.00	31.03	12	40.00
Who makes key decisions in care-giving?														
Self	150	77.32					18	75.00	60	73.17	48.00	82.76	24	80.00
Others	44	22.68					6	25.00	22	26.83	10.00	17.24	6	20.00
If your children are the main caregivers, would you say care-giving by children was/ is better in your parents' lifetime?														
Mean	4.24						4.27		4.43		4.11		3.92	
SD	1.36						1.28		1.43		1.21		1.47	
Have you passed on any resources to your children in the past 12 months?														
Yes	113	58.25					13	54.17	50	60.98	31	53.45	19	63.33
No	81	41.75					11	45.83	32	39.02	27	46.55	11	36.67
Did you take care of your parents or other elderly?														
Yes	39	20.1					5	20.83	21	25.61	7	12.07	6	20
No	155	79.9					19	79.17	61	74.39	51	87.93	24	80
Are you taking care of your parents or other elderly people?														
Yes	137	70.62	311	63.99	618	90.88	127	81.94	416	74.69	270	81.57	253	79.81
No	57	29.38	175	36.01	62	9.12	28	18.06	141	25.31	61	18.43	64	20.19
Did your parents take care of your grandparents or other elderly when they were old?														
Yes	98	50.52	236	48.56	466	68.53	106	68.39	293	52.6	226	68.28	175	55.21
No	96	49.48	250	51.44	214	31.47	49	31.61	264	47.4	105	31.72	142	44.8
Do you think your child/ children will take care of you when you are old?														
Yes			407	88.29	443	72.39	98	74.81	347	84.63	205	81.03	200	71.68
No			54	11.71	169	27.61	33	25.19	63	15.37	48	18.97	79	28.32
Is having fewer children advantageous for care and support in old age?														
Yes			291	59.88			30	63.83	133	63.64	71	62.83	57	48.72
No			195	40.12			17	36.17	76	36.36	42	37.17	60	51.28
Do you expect to have any (more) children?														
Yes					253	51.63	27	54.00	99	50.77	71	55.91	56	47.46
No					237	48.37	23	46.00	96	49.23	56	44.09	62	52.54

Additionally, respondents agree at the level of 4.24 that the care-giving by their children is better than the care-giving in their parents' lifetime. Besides, the care-giving they get, they also passed on resources such as money and care-giving to their grandchildren to their children in the past 12 months.

Since these questions were asked only for the elderly, then considering by regions the data show that the elderly in every region need caregivers and they are the key decision makers for the care-giving themselves. However, Northeastern people have the highest proportion for the elderly who need caregiver at the percentage of 76.83% followed by Southern, Northern and the Central people at the percentage of 75%, 69% and 60%, successively. Nonetheless, the responders themselves as key decision making in care-giving of the Northeastern responders are the least compare to other regions at 73.17% while the Southern, the Central, and the Northern at the percentage of 75%, 80% and 82.76%. The responders agree averagely more than 4.00 out of the possible seven that the care-giving by their children is better than the care-giving in their parents' lifetime except the Central which the agreeable level is 3.92. Noticeably, even the old age in Northeastern have the least for making decision on care-giving, they are most agree that the care-giving by children is better in their parents' lifetime which is 4.43 out of seven. Also, we found that the most of the old age in Northeastern passed on resources to their children in the past 12 months. It seems there are somehow related between the care-giving to the old and the supporting from the old to their children. Consequently, the old may support their children in order to get the good care-giving in return. As Christian and Durant (2006) addressed that care-giving from their children is a return to one's parents who provided care for them. However, (Checkovich and Stern, 2002) found that there are a number of factors influence decisions concerning how much care adult children provide for parents which including parent's sex, age, marital status, and level of functional disability.

Around 70.62% of the elderly take care of their parent or other elderly people, while 63.99% for the middle age and 90.88% for the young. The main reason is that they did not live together with their parents, so they did not have any chances to take care of them. They also said that the main caregivers of their parents were the children who lived in the same compound or same village as the parents which the one would be the legacy of the parents. Consequently, the young have the least percentage because most of the young still live with and still get the support from their parents. Regarding to the regions, the Southern people take care of their parent or other elderly in the highest proportion at 81.94% followed by the Northern people (81.57%), the Central people (79.81%) and the Northeastern people (74.69%).

Around 52.52% of the elderly parents take care of their parents or other elderly people when their parents were old, while 48.56% for the middle age and 68.53% for the young. According to the regions, the Southern people take care of their parent or other elderly in the highest proportion at 68.39% followed by the Northern people (68.28%), the Central people (55.21%) and the Northeastern people (52.60%). From the data, we found that the more percentage of the responders observe that their parents take care of their grandparents or other elderly people when their grandparents

were old, the more chances of them to taking care of their parents or other elderly people. For example, the Southerners have the highest proportion of observing their parents take care of their grandparents when they were old as well as the Southerners have highest proportion of taking care of their parents or other elderly people. Then the proportions are lower when the proportion of observing their parents take care of their grandparents is lower in other regions.

Like considering by regions, separated by age group also have same relation. We found that the young have highest proportion of both taking care of their parents and observing their parents that their parents take care of their grandparents when their grandparent were old followed by the old age and the middle age. Other reasons of why the young have high proportion of taking care of their parent is that they need some supports from their parents and grandparents as well as they also live in the same compound.

Indeed, the way of care-giving to the elderly in rural area of Thailand is inherited from generation to generation. The children in the family are growing awareness of taking care of elderly since they was young. Children are taught to honor their parents. The children would have been expected to look after the elderly in the family in the same manner as they observe and practice. Moreover, providing the care-giving for the families in order to maintain compassion; especially the Buddhist families. It also the culturally specific beliefs and patterns of response among Thai families as shown in Silverstein (2006), Chesla and Rungreangkulkij (2001), and Guarnaccia and Parra (1996). Nevertheless, it is striking that only 72% of young respondents, compared with 88% of middle-aged respondents, expect their children to take care of them when old, which may reflect the demographic transition Thailand is experiencing. On the other hand, this may simply reflect that the bond between young parents and children has not grown that much yet.

When asking the young whether they expect to have any more children, only 51.63% indicated that they want to have more children. This is confirmed across the regions, but more pronounced in the Central where they do not want to have more children at the percentage of 52.54%. Moreover, the study found that most of middle-aged responders think that having fewer children advantageous for care and support in old age, more than 60 percent in all regions, except the Central which they do not agree that having fewer children will have more advantage of care and support in old age at the percentage of 51.28.

Quality of care-giving

Table 13 shows the way of the children take care of their parents from the past to present in perspective of old and middle cohort. Then we consider on the opinion on the quality of care-giving between past and present. From the survey, we found that the

most of the old age respondents in rural area of Thailand think the way children took care of elderly in their parents' time was the same which account for 37.63% of all. The way children took care of the elderly in their parents' time was worse than today is on the second rank followed by slightly better than today, slightly worse than today, much worse than today, better than today, and much better than today in the percentage of 15.46, 13.92, 13.40, 9.28, 7.73 and 2.58, respectively. Additionally, it is the same in all regions that most of people think the way children took care of elderly was the same as in their parents' time. This proportion is more than 50% for the Southern followed by the Northern, Central and the Northeastern. Approximately the total of 35% of the responders in the Southern, the Northeastern and the Northern think that the way children took care of elderly in their parents' time was slightly worse, worse, and much worse than today. The people in Central mostly think that the way children took care of elderly in their parents' time was slightly worse, worse, and much worse than today which account for 46%. Also, the Northeastern people think that the way children took care of elderly in their parents' time was better than today around 32% which is the highest comparing to other regions.

Table 13 Quality of care-giving of people in rural areas of Thailand

	Age Cohorts						Region							
	Old Age		Middle Age		Young		South		Northeast		North		Central	
	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%
Would you say in your parents' time the way children took care of elderly was ...														
Much better than today	5	2.58					1	4.17	2	2.44	2	3.45	0	0.00
Better than today	15	7.73					0	0.00	10	12.20	3	5.17	2	6.67
Slightly better than today	27	13.92					2	8.33	15	18.29	7	12.07	3	10.00
The same	73	37.63					13	54.17	24	29.27	25	43.10	11	36.67
Slightly worse than today	26	13.40					1	4.17	13	15.85	10	17.24	2	6.67
Worse than today	30	15.46					4	16.67	11	13.41	8	13.79	7	23.33
Much worse than today	18	9.28					3	12.50	7	8.54	3	5.17	5	16.67
Total	194	100					24	100	82	100	58	100	30	100
Would you say elderly in this village are well looked after?														
Yes	163	84.02	436	89.71			60	84.51	256	87.97	156	91.23	127	86.39
No	31	15.98	50	10.29			11	15.49	35	12.03	15	8.77	20	13.61
Do you think the care you will receive from your own child / children would differ from that given to elderly at present?														
Yes			188	40.43			24	51.06	74	36.45	44	44.9	46	39.32
No			277	59.57			23	48.94	129	63.55	54	55.1	71	60.68

Most of people (more than 70%) think that the elderly in the village are well looked after in every age group and every region. From the results of the previous question, we can conclude that the responders think that they well look after the elderly at least as same as in their parents' time and some of them think that the elderly in the village are better looked after compare to the way children did in the past. Also, they expect that their children will take care of them when they are old because they believe that their children have taught very well and their children observe the way they are doing and treating their parents. On other words, they are quite confident that they give the good care to their parents. Then they hope their children to treat them the same way which reflect on answer of the next question. They think the care they will receive from their children will not differ from the given to elderly at present at higher proportion in Northeastern, Northern and Central at the percentage of 63.54%, 55.10%

and 60.68%, respectively. Unlike other, the result from the Southern is different. The Southerners think the care they will receive from their children will differ from the given to elderly at present at higher proportion (51.06%) than will not differ (48.93%). However, the number of responders in Southern answer "will not differ" 23 persons while answer "will differ" 24 persons which the numbers are not significantly different.

In conclusion, the results show that there still is a high interdependence between parents and children in rural areas of Thailand. Most children of respondents live in the same compound with parents. Yet, only 72 percent of young respondents, compared with 88% of middle-aged respondents, expect their children to take care of them when old. This together with the fact that only around 52% of respondents indicate that they expect to have further children may reflect the demographic transition Thailand is going through.

Table 14 Expected income in old age

	Age Cohorts						Region							
	Old Age		Middle Age		Young		South		Northeast		North		Central	
	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%
Do / Did your parents have sufficient income when they are / were old?														
Yes	82	47.13	224	53.33	430	70.15	112	81.75	240	48.1	183	63.76	201	70.77
No	92	52.87	196	46.67	183	29.85	25	18.25	259	51.9	104	36.24	83	29.23
What is your anticipated monthly income in today's baht when you are 70 years old?														
Mean			6,720		13,085		10,521		7,519		15,279		10,825	
SD			47,656		57,170		15,851		49,123		85,292		27,539	

Table 14 show the result of question asking about the perspective income in old age. Most of responders in the old age think that their parents did not have sufficient income when their parents were old at 52.87% while the middle age and the young mostly think that their parents have sufficient income when their parents are old at the percentage of 53.33% and 70.15%, respectively. However, according to the regional data we found that only the people from Northeastern think that their parents did not have sufficient income when their parents are old (51.90%) more than have sufficient income (48.10%) while other regions mostly think that their parents have sufficient income at the percentage of 81.75% for the Southerners, 70.77% for the Central people and 63.76% for the Northerners. Since the economic situation including income levels, owning financial assets and properties in the Northeastern is the lowest compare to other regions which show in Table 7, Table 8 and Table 9. Therefore, their perspective on the incomes of their parents would be lower than other regions and may not sufficient for daily expenses.

Considering on the results of questions asking about the anticipated monthly income in today's baht when the responders are 70 year old, we found that the average of the monthly income of the Northeastern people are also the lowest one which is averagely 7,519.46 Baht per month while the highest is the Northerners at the approximately 15,278.91 Baht per month followed by the Central people and Southerners at average of 10,825.19 and 10,520.66 Baht per month. Considering on

the age group, the young expected income when they are 70 year old is about 13,084.55 Baht per month while the middle age's anticipated income is 6,720.40 Baht per month. The young expected income is double higher than the middle age since they just start working and they have more chance to get the progress in their works. Most of Northeastern responders think that their parents have not sufficient income when they were old. It reflects to the amount of anticipated monthly income of themselves which averagely lower than other regions.

IV.4 Comparison group

The questionnaires also asked the responders who they normally compare themselves with. The survey wants the responders to have the viewpoint of what similar or dissimilar between their characteristics and their comparison groups. The questionnaires ask the responders to compare their socio-economic statuses such as health condition, their belonging, and their wealth. The groups determine the key characteristics that are important to the outcomes that survey wants to measure. The chosen of comparison group depends on the relationship between the responders and the chosen one. They normally compare themselves with the groups that they think they would be closer, otherwise, in the same social class and same occupation.

Table 15 Comparison group of respondents

Who do you normally compare yourself with?								
		Age Group			Region			
	All	Old Age	Middle Age	Young	North	Northeast	South	Central
People in the same household	18.95	21.65	11.60	23.20	13.81	15.36	41.44	17.68
Neighbors	42.81	55.67	58.36	29.73	46.19	47.89	22.52	41.99
Friends	27.94	20.62	19.11	35.36	28.57	26.81	25.23	30.94
Colleagues	10.31	2.06	10.92	11.71	11.43	9.94	10.81	9.39
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

The results show that the respondents mostly compare themselves with neighbors accounting for 42.81% followed by their friends (27.94%), people in the same household (18.95%) and their colleagues (10.312), respectively. Additionally, old age and middle age in the rural area mostly compare themselves with neighbors at the percentage of 55.67 and 58.36 respectively. However, the young compare themselves with friends approximately 35.36%.

Considering on region, most of people in Northeastern, Northern and Central region also compare themselves with neighbors which are 47.89%, 46.19% and 41.99%. Nevertheless, most of Southern people compare themselves with people in the same household at the percentage of 41.44%. The second rank of the comparison groups of all regions are friends which account for 28.57%, 26.81%, 25.23%, and 30.94% for Northern, Northeastern, Southern, and Central Regions, respectively.

Indeed, most of responders normally compare themselves with their neighbors since the people in rural area of Thailand mostly live in their house. Therefore, they

have interaction with their neighbors more than other groups. However, young compare themselves with friends because the young spend more times with friends and they are in the same society as well as they have the same life styles. Another reason is the young can get along well with their friends and normally share their life experiences. The results confirm the study of “How I see “Me” depends on how I see “We”” and the role of self-concepts (Carvallo et al., 2005).

IV.5 Ranking of happiness determinants

This last section is an analysis of the significance the various elements have on the questionnaire responders of different age groups. The eight elements are community, family, financial security, friends, government, health, religion and work. The questionnaire responders were asked to prioritize these elements from the most to the least significant where the most significant element would have the score of eight and the least significant element would have the score of one. The responders had to imagine how important these elements would be to them when they are young, when they are of middle age and when they are older in order that the level of significance of the various elements can be compared across the lifetime of the questionnaire responders.

The table shows that questionnaire responders in general value family the most when they are older with an average significance of 6.88 out of the possible eight, followed by health, financial security, religion, friends, community, work and government with average significances of 6.50, 5.47, 4.38, 3.89, 3.55, 3.40 and 1.91 respectively. When they are of middle age, questionnaire responders value family the most still with an average significance of 7.01 out of the possible eight, followed by financial security, work, health, friends, community, religion and government with average significances of 6.20, 5.76, 5.14, 3.79, 3.31, 3.17 and 1.62 respectively. When they are young, questionnaire responders value family the most still with an average significance of 7.03 out of the possible eight, followed by financial security, work, health, friends, community, religion and government with average significances of 6.03, 5.97, 4.72, 4.09, 3.40, 3.07 and 1.67 respectively.

It is worth noting that, regardless of the assumed age group, questionnaire responders always value family the most and government the least. Questionnaire responders in young age produce the highest average significance for family, followed by middle age and old age, as young people are beginning to build a family, become married or have young children. Additionally, it is found that the priority as suggested by questionnaire responders in middle age and young age is the same with only differing average significances. They value financial security, work and health more than the other factors. Questionnaire responders in old age value health, financial security and

religion the most as they have more pronounced health issues compared to the other age groups.

Table 16 Ranking of happiness determinants

	All						South					
	When they are old		When they are middle age		When they are young		When they are old		When they are middle age		When they are young	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Community	3.55	1.50	3.31	1.41	3.40	1.48	3.75	1.52	3.62	1.35	3.56	1.56
Family	6.88	1.55	7.01	1.50	7.03	1.51	6.68	1.67	6.95	1.55	6.87	1.65
Financial Security	5.47	1.64	6.20	1.41	6.03	1.47	5.41	1.79	5.97	1.54	5.83	1.48
Friends	3.89	1.55	3.79	1.67	4.09	1.78	4.05	1.52	3.86	1.81	4.08	1.86
Government	1.91	1.57	1.62	1.31	1.67	1.38	1.78	1.43	1.61	1.25	1.77	1.52
Health	6.50	1.60	5.14	1.56	4.72	1.59	6.72	1.44	5.15	1.66	4.77	1.65
Religious	4.38	2.02	3.16	1.63	3.07	1.60	4.14	2.04	3.11	1.76	2.97	1.63
Work	3.40	1.84	5.76	1.70	5.97	1.70	3.48	1.85	5.66	1.81	6.14	1.64
	Old Age						Northeast					
	When they are old		When they are middle age		When they are young		When they are old		When they are middle age		When they are young	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Community	3.82	1.49	3.27	1.21	3.41	1.45	3.50	1.47	3.22	1.44	3.29	1.40
Family	6.55	1.68	6.55	1.56	6.64	1.62	6.95	1.44	7.13	1.41	7.09	1.47
Financial Security	5.19	1.86	6.41	1.34	6.24	1.33	5.39	1.62	6.23	1.32	6.01	1.46
Friends	3.72	1.60	3.82	1.62	4.16	1.81	3.74	1.55	3.69	1.74	4.09	1.83
Government	1.87	1.46	1.40	0.95	1.48	1.01	1.95	1.60	1.55	1.18	1.54	1.22
Health	6.77	1.46	4.82	1.66	4.55	1.58	6.53	1.56	5.12	1.51	4.72	1.52
Religious	4.82	1.91	3.28	1.64	3.17	1.71	4.64	1.99	3.31	1.64	3.20	1.61
Work	3.26	1.93	6.42	1.64	6.35	1.65	3.27	1.82	5.76	1.62	6.06	1.59
	Middle Age						North					
	When they are old		When they are middle age		When they are young		When they are old		When they are middle age		When they are young	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Community	3.43	1.48	3.37	1.47	3.44	1.46	3.66	1.53	3.35	1.42	3.48	1.53
Family	6.98	1.44	7.09	1.49	6.84	1.60	6.83	1.77	6.86	1.70	7.00	1.57
Financial Security	5.37	1.61	6.10	1.40	6.08	1.49	5.58	1.65	6.22	1.50	6.19	1.48
Friends	3.94	1.50	3.65	1.72	4.28	1.84	3.96	1.56	3.85	1.59	3.91	1.65
Government	1.88	1.56	1.66	1.40	1.62	1.35	1.96	1.63	1.77	1.59	1.82	1.53
Health	6.56	1.56	5.32	1.53	4.43	1.54	6.40	1.64	5.18	1.57	4.67	1.67
Religious	4.55	2.02	3.29	1.63	3.15	1.61	4.23	1.93	3.10	1.61	3.04	1.61
Work	3.30	1.76	5.53	1.80	6.16	1.72	3.36	1.84	5.68	1.80	5.86	1.71
	Young						Central					
	When they are old		When they are middle age		When they are young		When they are old		When they are middle age		When they are young	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Community	3.55	1.51	3.28	1.43	3.37	1.50	3.42	1.50	3.28	1.37	3.43	1.50
Family	6.91	1.57	7.09	1.47	7.27	1.36	6.90	1.40	7.01	1.41	7.03	1.43
Financial Security	5.62	1.59	6.22	1.43	5.93	1.49	5.52	1.61	6.25	1.40	5.98	1.45
Friends	3.91	1.57	3.89	1.65	3.92	1.72	4.00	1.55	3.89	1.57	4.27	1.78
Government	1.95	1.61	1.65	1.33	1.76	1.49	1.86	1.53	1.58	1.22	1.70	1.40
Health	6.38	1.66	5.10	1.55	4.98	1.58	6.44	1.70	5.13	1.59	4.76	1.60
Religious	4.14	2.01	3.03	1.62	2.99	1.57	4.22	2.09	2.97	1.56	2.94	1.56
Work	3.51	1.86	5.74	1.59	5.73	1.66	3.63	1.87	5.91	1.68	5.86	1.89

Additionally, it is found that family remains the most valued element while government is the least valued element for nearly all questionnaire responders whether classification is made by age group or region, with the exception of older questionnaire responders who rank health first followed by family, which suggests that family remains very significant to them, particularly when they are older. Another case is of questionnaire responders from the South who, when assuming that they are older, rank health first followed by family. As noted earlier, older people have more pronounced health issues and consequently accord more importance to health. Questionnaire responders in these two cases rank government last as with other groups.

When data is reviewed by the actual age groups, it is found that all produce virtually the same priority when they are assuming young and middle age. The three

most significant elements for them are family, financial security and work. Priority changes when they are assuming old age where questionnaire responders of all actual age groups unanimously rank family, health and financial security first. As you can see, health and religion become more important when the questionnaire responders are assuming old age. Friends, society and community are given lower priority regardless of the actual age group the questionnaire responders are in or what their assumed age group is.

When data is reviewed by region, it is found that the priority is the same as when data is reviewed by age group. The first three priorities when questionnaire responders are assuming young and middle age, regardless of the region, are family, financial security and work. A minor difference is detected when questionnaire responders assume old age when they rank family, health and financial security first. Friends, society and community are given lower priority regardless of the region they are in. Health and religion are elements to which more importance is accorded when questionnaire responders assume that they are in old age as well.

Family and financial security are accorded greater importance than other elements in all cases. This is because family is crucial to oneself, because it is the source of love and bonds between the questionnaire responders and their family members. Family has always been an integral part of the Thai society. As for work, people work to generate income which in one way pays for their beloved family. Family is the most important element in daily life as they provide warmth and moral support while financial security is a guarantee for survival as it affords convenience in life and signifies the social status of the questionnaire responders.

In conclusion, family, financial security and work are the priority factors for the people who live in rural area of Thailand either considering by age groups or regions. These three factors are ranked in the first three important of the eight factors while friends, society and community are given lower important to the people lives.

IV.6 Well-being

Well-being is difficult to measure and various approaches are employed. First, respondents are asked to rate their global happiness on single- and multi-item scales. Regarding the former, respondents are asked to answer the question “Taken all things together, how happy would you say you are?” using a 7-point Likert scale. Regarding the latter, the 12-item Global Health Questionnaire (GHQ)[27], an indicator of mental well-

[27] The 12-item General Health Questionnaire (GHQ-12) was found to produce results that are comparable to those of the longer versions of the GHQ. Since we are only interested in the total score, GHQ-12 is used. (Goldberg et al., 2009) The GHQ-12 is widely used in this line of research and it is thus given preference over the 15-item Thai Mental Health Indicator (TMHI-15).

being, with 7 possible response options[28] is used. It comprises 12 mood states, half of which are positive and half of which are negative. Positive items are scored from 1 (much less than usual) to 7 (much more than usual), while negative items were scored from 1 (much more than usual) to 7 (much less than usual). A higher score hence means less mental distress and better mental health. This 12-item version of the GHQ is tested for dimensionality, reliability and validity. As discussed in Hankins (2008) dimensionality is tested using factor analysis and reliability is tested using Cronbach's alpha. Validity is tested using blood pressure readings. Systolic and diastolic blood pressure readings are also taken as bio marker in Blanchflower and Oswald (2009). Second, since happiness and satisfaction are different concepts, respondents are also asked to rate global as well as domain satisfaction on a single-item scale.

Table 17 Item-scale analysis of the GHQ-12

Item-scale analysis of the GHQ-12		
	Corrected item - total correlation	Cronbach alpha if the item is eliminated
1 Able to concentrate	0.39	0.75
2 Loss of sleep over worry	0.37	0.76
3 Playing a useful part	0.28	0.76
4 Capable of making decisions	0.46	0.74
5 Felt constantly under strain	-0.16	0.78 (rev.)
6 Couldn't overcome difficulties	0.37	0.76
7 Able to enjoy day-to-day activities	0.45	0.74
8 Able to face problems	0.45	0.74
9 Feeling unhappy and depressed	0.52	0.74
10 Losing confidence	0.48	0.74
11 Thinking of self as worthless	0.39	0.76
12 Feeling reasonably happy	0.48	0.74

Internal consistency of GHQ-12	Alpha	Standardised alpha
Entire sample	0.77	0.78
Cohort old	0.77	0.78
Cohort middle	0.77	0.78
Cohort young	0.75	0.76

rev.: reversed item

First, the 12-item version of the GHQ is tested for dimensionality, reliability and validity. Table 17 shows that all items had corrected item total correlation of more than 0.3, except items number 3 and 5. In the latter case, the correlation surprisingly turned out to be negative. Cronbach's alpha was calculated to assess internal consistency. The alpha value for the entire sample is 0.77 (0.77 for cohorts old and middle as well as 0.75 for cohort young), indicating satisfactory internal consistency. Subsequently Cronbach's alpha is recalculated if the item is eliminated. When item 5 is excluded, the alpha value is higher than the alpha of the entire sample, which also indicates that this item should be deleted to improve overall reliability. Also, the reliability test indicated

[28] While the GHQ is typically used with 3 possible answers to questions, 7 options are offered in this study to ensure consistency with the 7-point Likert scale used throughout the questionnaire. The GHQ score is thus

that scoring for item 5 had to be reversed. An inspection of the Thai version of the questionnaire subsequently revealed that this item had been translated incorrectly. Instead of asking "*Have you recently felt constantly under strain?*", people were asked the question "*Have you recently been able to remain stable under pressure or stress?*", which explains negative correlation and reversed scoring. In addition, the translation of item 3 turned out to be imprecise.

Dimensionality is tested using factor analysis. The results indicate the existence of one factor with an Eigenvalue of 2.83, which explains 0.89 percent of the variance. All other factors have an Eigenvalue of less than 1. Item 5 has the lowest factor loading, while that of item 3 is still acceptable.

Based on this analysis, item 5 is dropped from the GHQ score. We denote this adapted version GHQ-11. Its reliability coefficient is 0.7748.[29]

Table 18 Pair-wise correlations of global happiness and satisfaction, mental well-being and blood pressure

	Global happiness	Global satisfaction	GHQ-11	Normal blood pressure
Global happiness (observations)	1 (1360)			
Global satisfaction (observations)	0.1467* (1360)	1 1360		
GHQ-11 (observations)	0.1026* (1359)	0.2959* (1359)	1 (1375)	
Normal blood pressure	-0.0044 (909)	0.0087 (909)	0.0653* (902)	1 (909)

Second, pair-wise correlations between global happiness, global satisfaction as well as mental well-being are calculated to assess validity of our proxies for well-being. The results are shown in Table 18. While the correlation coefficients are quite low, especially between global happiness and global satisfaction which underlines that happiness and satisfaction are different concepts, they are all statistically significant at the 5 percent level as indicated by the star. Pair-wise correlations between global happiness, global satisfaction as well as mental well-being calculated for each cohort are somewhat higher[30], reflecting the heterogeneity of the sample. Since not all respondents

defined to lie between 0 and 84

[29] As a robustness check, item 5 was reversed and included in the GHQ score. The results obtained using this alternative dependent variable as well as data for the entire sample remained broadly unchanged (not shown but available upon request).

[30] Pair-wise correlation coefficients between global happiness, global satisfaction as well as mental well-being calculated for each cohort are given in appendix 5.

completed the questions about mental well-being, the number of observations is lower than 1,360.

Blood pressure readings were taken by trained students from the Faculty of Sports Science, Chulalongkorn University and considered objective measures of hypertension. Respondents who had just returned from work or exercise were asked to rest before blood pressure readings were taken.[31] Since age can be one cause of high blood pressure due to inter alia arteriosclerosis, age-specific blood pressure reference values are used to identify individuals with normal blood pressure although their use is debatable in practice.

Table 19 Standard and age-specific blood pressure reference values

Blood pressure reference values

Age	Systolic		Diastolic	
	Minimum	Maximum	Minimum	Maximum
20-24	108	132	75	83
25-29	109	133	76	84
30-34	110	134	77	85
40-44	112	137	79	87
45-49	115	139	80	88
50-54	116	142	81	89
60-64	121	147	83	91

Source:http://www.emedicinehealth.com/ high_blood_pressure/page3_em.htm (March 18, 2011)

Category	Systolic		Diastolic	
	Minimum	Maximum	Minimum	Maximum
Normal		119		79
Prehypertension	120	139	80	89
High blood pressure - stage I	140	159	90	99
High blood pressure - stage I	160	180	100	110
Hypertensive crisis	181		110	

Source: http://www.heart.org/HEARTORG/Conditions/HighBloodPressure/AboutHighBloodPressure/Understanding-Blood-Pressure-Readings_UCM_301764_Article.jsp (March 18, 2011)

As can be seen in Table 19, standard and age-specific blood pressure reference values are mostly consistent with the exception of reference values for those aged 50 or above. Apart from age, medications can have an impact on blood pressure. Hence, to analyse correlations between blood pressure and mental well-being, happiness and satisfaction, we discard those individuals who report having a health problem or disability, which leaves only 909 and 902 observations respectively. 65 percent of elderly, 65 percent of middle-aged and 68 percent of young could be classified as having normal blood pressure or pre-hypertension. Table 18 above shows that blood pressure is correlated with mental well-being in a statistically significant way as expected. Those respondents, who have normal blood pressure, suffer less from hypertension. Hence,

our data seem to confirm validity of the adapted version of the GHQ[32] as well as support that objective systolic and diastolic blood pressure readings can be taken as a bio marker as suggested in Blanchflower and Oswald (2009). In the empirical analysis, we will use global happiness, global satisfaction and mental distress as proxy for well-being. We use both, global happiness and global satisfaction, since our data confirm that these are different concepts. We also employ mental distress since it is correlated with objective blood pressure readings in a statistically significant way.

Third, means of all three well-being variables are calculated for the entire sample as well as for each age cohort. Table 20 shows that on average rural Thai are satisfied with their life, but relatively less happy with their life, which again underlines that happiness and satisfaction are different concepts. Also, the mean happiness score for the entire sample is 5.19, well above the neutral category of 4. Interestingly, elderly had lower global happiness, global satisfaction as well as mental health than middle-aged and young respondents, which seems to indicate that happiness and mental health declines as age increases. Middle-aged on average have the highest satisfaction-with-life score, which may reflect that they have reached the peak of their career, but also have to shoulder more responsibilities, which may affect happiness.

Table 20 Mean global happiness, global satisfaction as well as GHQ-11[33]

	Mean			
	Entire Sample	Cohort Old	Cohort Middle	Cohort Young
Global happiness	5.19	4.90	5.08	5.35
Global satisfaction	5.92	5.84	5.99	5.90
GHQ-11	49.49	47.14	48.64	50.84

The median GHQ score is 48 points and the points at the 25th and 75th percentile 44 and 54.5 respectively. On the basis of these, respondents are classified as having lower, normal or better mental health. 21.5 percent of respondents were found to have lower mental health, whereas 78.5 percent have normal or good mental health. This is slightly higher compared with 2008 NSO data[34], which show that 18.43 percent have a lower than average mental health condition, but lower compared with Mongul et al. (2007), who found that 31.9 percent of Thai people in the Northeast had poor mental health in 2003. Our data, however, also show that people in the Northeast had worse mental health than those in the South and in the Central part, while those in the North

[31] Respondents with abnormal blood pressure were subsequently advised to consult a physician.
[32] Multi-item scales are often given preference over single-item scales in the literature since random measurement errors are smaller in case of the former. (Powdthavee, 2007b)
[33] Average global happiness scores in rural areas were 5.24 (life satisfaction: 5.92, mental health: 49.34), compared with 4.69 (6.03 and 50.95) in the *thesabans*.
[34] Table 16 Average score of mental health condition of Thai people, aged 15 years and over by age group, sex, mental health condition of Thai people, aged 15 years and over by age group, sex, mental health condition, area and region, 2008 Survey on conditions of society, culture and mental health, online at http://web.nso.go.th/en/survey/cscmh/530412cscmh08.htm.

fared worse. The latter is also supported by the 2008 NSO data[35], according to which 24.66 percent of people in the North have lower than average mental health condition, compared with 23.93 percent of people in the Northeast , 23.97 percent in the Central region and 24.63 percent in the South.

IV.7 Perceived vulnerabilities in old age

This part seeks to assess how Thai people in rural areas perceive future vulnerability, i.e. vulnerability at old age, drawing on Dominitz and Manski (1996). Perceived future vulnerability is measured through responses to questions seeking to elicit subjective probabilities of five events. A twelve month time horizon is used for elderly, while the middle-aged and young are asked how they perceive risk in the distant future, i.e. at age 70. Subjective probabilities of (i) income (in today's Baht to avoid distortion through inflation expectations) being less than current regional poverty line, (ii) assets worth less than 100,000 Baht in today's Baht, (iii) insufficient money to meet daily expenses, (iv) serious illness and (v) having to live alone are elicited.[36] While the NSO collects data on the current status of Thai people, data on perceptions of people are not available.

Elicitation of subjective probabilities poses some challenges as discussed in Delavande and Rohwedder (2008) among others, yet they have been found to be good predictors of actual outcomes. Due to relatively low literacy and numeracy of elderly in rural areas, respondents belonging to the cohort old were asked to allocate up to ten candies on a plate to express the likelihood that an event will be realized as recommended in Delavande and Kohler (2009).[37] Middle-aged and young respondents were asked to express the chance of the events occurring in the future in percentage form. Responses which violate certain properties (e.g. percent chance that monthly income in today's Baht will be less than 3,000 Baht being equal to or larger than the percent chance that monthly income in today's Baht will be less than 1,500 Baht) and thus indicate that respondents might not fully understand probabilities were discarded, leaving a much smaller sample.

Table 21 below shows the distribution of the subjective probabilities elicited for all five events, with data for elderly presented in the lower panel and data for middle-aged and young presented in the upper panel. As mentioned in Delavande and Rohwedder (2008), the type of question employed in this study to elicit the probabilities of the five events occurring in the future tends to result in bunching of responses at 50 percent, but also to some extent 0 percent and 100 percent, which in turn may lead to bias. The data in Table 21 for cohorts middle and young indeed indicate bunching of

[35] Ibid.
[36] The questionnaires are given in English and Thai language in appendix 1.
[37] In addition, one question was added to teach respondents basic probability concepts (refer to questions 55a and 55b in the questionnaire for cohort old).

responses at 50 percent, but only excessively for the future event of insufficient money to cover daily expenses (27 percent of responses), serious illness (35 percent of responses) and having to live alone (28 percent of responses), which on the other hand may, however, suggest that respondents either believe that the chance is about half or they may really be uncertain as also suggested in Delavande and Rohwedder (2008). In case of income and asset dimensions, the data show bunching at the extremes of 0 and 100 percent, somewhat suggesting that the chosen standard thresholds may not be relevant for these respondents, implying that tailored thresholds as recommended in Dominitz and Manski (1997) could have been employed alternatively. Indeed, the average highest total income per month at age 70 expected by young and middle-aged respondents (1,145 observations) is 9,686 Baht, while the average lowest total income per month at age 70 expected by young and middle-aged respondents (1,146 observations) is 3,754 Baht, the latter being well above the regional poverty lines of 1,000 to 1,500 Baht per month.[38]

Table 21 Distribution of respondents subjective probabilities

Distribution of Respondents

	Middle and young					
Percent chance	Income		Assets	Consumption	Illness	Living arrangement
p = 0	368	41	172	174	81	282
p ≤ 10	608	72	227	259	148	383
10 < p ≤ 20	117	23	32	93	59	83
20 < p ≤ 30	103	19	36	102	56	75
30 < p ≤ 40	80	21	22	74	47	37
40 < p ≤ 50	94	84	116	298	380	302
p = 50	92	84	116	298	379	302
50 < p ≤ 60	24	29	22	77	91	46
60 < p ≤ 70	13	47	26	75	114	60
70 < p ≤ 80	9	56	27	58	119	53
80 < p ≤ 90	5	15	6	13	31	20
90 < p ≤ 100	40	173	31	43	44	30
p = 100	37	172	31	42	44	28

	Old				
Chance					
	Income	Assets	Consumption	Illness	Living arrangement
p = 0	43	151	41	33	84
p ≤ 1	47	154	46	37	92
1 < p ≤ 2	14	3	9	19	12
2 < p ≤ 3	11	3	16	17	7
3 < p ≤ 4	7	1	12	13	5
4 < p ≤ 5	29	18	38	47	18
p = 5	29	18	38	47	18
5 < p ≤ 6	8	1	5	10	3
6 < p ≤ 7	6	0	7	18	5
7 < p ≤ 8	21	0	13	14	4
8 < p ≤ 9	4	0	0	0	1
9 < p ≤ 10	48	3	49	20	22
p = 10	48	3	43	14	22

It is also interesting to note that on average 72 percent of respondents expect to receive income at age 70 from their children (69 percent of the young and 76 percent of the middle-aged). Only 31 percent of respondents perceive work to be a source of income at age 70, while not more than approximately 10 percent of respondents

[38] Summary statistics for perceived income in old age are given in appendix 4.

perceive relatives, assets and credit to be sources of income at age 70.[39] The data in Table 21 also show that among middle-aged and young respondents only 7 percent are certain that they will not be seriously ill at age 70, compared with 16 percent of respondents who are certain that their money will not be insufficient to cover daily expenses, that they will not have to live alone (26 percent), that their assets will not fall below 100,000 Baht (32 percent) and that their monthly income will not be less than the regional poverty line (34 percent).

Turning to the data for the cohort old in the lower panel, there is more pronounced evidence of bunching at 0, 50 and 100 percent, but most prominently in case of responses at 0 percent for the asset and living arrangement dimension, implying that these elderly are certain that they will neither have to sell their assets nor live alone in the next 12 months. 17 percent of elderly are certain that they will not be seriously ill in the next twelve months, compared with 21 percent of respondents who are certain that their money will not be insufficient to cover daily expenses, their monthly income will not be less than the regional poverty line (22 percent), they will not have to live alone (50 percent) and their assets will not fall below 100,000 Baht (83 percent).

Table 22 shows means and quantiles of the subjective probabilities of the five events occurring, with data for elderly presented in the upper part and data for middle-aged and young presented in the lower part.

The data highlight the heterogeneity of risk perceptions. The risk perceived by elderly of income falling below the regional poverty line over the next 12 months is examined first. 25 percent of respondents see a 20 chance or less of this event occurring. 50 percent of respondents perceive the chance of this event to be not more than 50 percent, while at least 75 percent of respondents perceive this chance to be 90 percent or less. The later may reflect the fact that 25 percent of respondents reported that their average monthly income over the past 12 months was less than 1,000 Baht. 25 percent of male respondents see themselves as facing a 100 percent chance of income falling below the regional poverty line over the next 12 months, while the corresponding figure for female respondents is 90 percent or more. The regional breakdown of the data shows that the mean of this event is highest in the Northeast (60 percent), followed by the North (50 percent), the South and the Central (40 percent respectively). Focusing on educational background, the data also show that it is especially the elderly with primary school or lower that face the highest risk of their income falling below the regional poverty line over the next 12 months.[40] The data consistently show that elderly in the

[39] Data not shown but available upon request.
[40] The category on higher education is omitted since there are only very few elderly who have a bachelor degree or higher.

Northeast have high risk perceptions across all dimensions, except the asset dimension. Most elderly are certain that they will not have to sell their assets over the next 12 months. Interestingly, the mean of the subjective probabilities elicited from elderly with primary school education or lower is higher for the consumption dimension and the illness dimension (the latter perhaps reflecting the linkages between education and health), but not assets and living arrangement. For these events, elderly respondents with vocational school education perceive themselves as facing a higher chance. The reason may perhaps be that elderly who completed vocational school on average had 3.3 children compared with 5.2 children on average for those elderly without formal education or with primary school education.

Table 22 Means and quantiles of the subjective probabilities of respondents

			Means and Quantiles of the Subjective Probabilities of Respondents																					
			Income				Assets (higher)				Assets (lower)				Consumption				Illness				Living arrangement			
			Mean	Quantile			Mean	Quantile			Mean	Quantile			Mean	Quantile			Mean	Quantile			Mean	Quantile		
				0.25	0.5	0.75		0.25	0.5	0.75		0.25	0.5	0.75		0.25	0.5	0.75		0.25	0.5	0.75		0.25	0.5	0.75
All - Old			5	2	5	9					1	0	0	0	5	2	5	9	4	2	5	7	3	0	1	5
(probabilities from 1 (lowest) to 10 (highest))																										
Old	Male		5	0	5	10					1	0	0	0	4	0	5	7	4	2	5	7	3	0	2	5
	Female		5	2	5	9					1	0	0	0	5	2	5	10	5	2	5	7	3	0	0	5
	Region	Central	4	0	4	8					1	0	0	0	5	1	5	8	5	2	5	7	2	0	0	5
		North	5	1	5	10					1	0	0	0	5	2	5	8	5	2	5	7	2	0	1	5
		Northeast	6	3	6	10					1	0	0	0	6	3	5	9	5	3	5	7	3	0	1	5
		South	4	0	5	7					1	0	0	0	3	0	0	5	4	0	3	5	3	0	0	10
	Education	Primary or lower	5	2	5	10					1	0	0	0	5	2	5	9	5	2	5	7	3	0	1	5
		Secondary	3	0	0	7					1	0	0	5	2	0	0	5	3	0	5	5	4	0	5	7
		Vocational	3	0	5	5					2	0	0	5	3	0	4	5	4	3	5	5	5	0	5	10
All - Middle and young			21	0	10	30	64	45	70	100	33	0	30	50	40	20	50	50	50	40	50	70	34	0	40	50
(probabilities from 0 (lowest) to 100 (highest))																										
Middle	Male		20	0	10	30	73	50	80	100	18	0	0	40	37	10	30	50	48	30	50	70	31	0	20	50
	Female		27	5	20	40	62	40	70	100	35	0	30	60	44	20	50	60	53	50	50	70	34	0	30	50
	Region	Central	25	0	18	40	64	30	70	100	27	0	10	50	39	10	50	60	51	40	50	70	37	0	40	70
		North	18	0	10	30	67	40	80	100	25	0	10	50	41	20	50	60	52	40	50	70	29	0	20	50
		Northeast	28	5	20	45	65	50	70	100	33	0	20	50	47	30	50	60	56	50	55	70	34	0	30	50
		South	22	0	10	40	70	50	80	100	27	0	20	50	25	0	5	50	36	0	50	50	26	0	5	50
	Education	Primary or lower	28	10	20	40	62	40	60	100	32	0	20	50	46	30	50	60	54	50	50	70	34	0	30	50
		Secondary	18	0	10	30	74	60	80	100	21	0	0	50	31	10	25	50	49	30	50	70	30	0	30	50
		Vocational	8	0	0	10	88	100	100	100	44	0	30	90	26	0	10	50	31	0	30	50	23	0	10	50
		Higher	13	0	0	5	77	70	90	100	15	0	0	2	27	0	8	50	45	20	50	55	32	0	20	50
Young	Male		18	0	10	30	68	50	70	100	34	0	30	50	37	20	40	50	49	40	50	70	33	5	30	50
	Female		19	0	10	30	60	40	60	100	36	0	40	50	39	20	50	50	48	40	50	60	36	10	50	50
	Region	Central	18	0	10	30	67	40	80	100	31	0	30	50	39	20	40	50	51	50	50	70	39	20	50	50
		North	19	0	10	30	57	30	60	90	39	10	50	50	40	20	50	60	49	40	50	60	34	5	40	50
		Northeast	20	0	10	40	61	50	60	90	39	10	40	50	41	30	50	50	50	40	50	70	37	10	50	50
		South	11	0	0	10	75	50	80	100	27	0	10	50	27	0	10	50	38	20	50	50	23	0	10	50
	Education	Primary or lower	24	10	15	40	56	20	60	90	39	0	40	70	44	30	50	50	51	40	50	70	35	10	50	50
		Secondary	20	0	10	30	62	50	60	100	36	0	40	50	42	20	50	50	51	43	50	70	39	10	50	50
		Vocational	14	0	10	20	64	40	75	100	31	10	30	50	34	10	30	50	49	30	50	70	34	10	30	50
		Higher	12	0	0	20	69	50	80	100	33	0	40	50	31	5	30	50	44	20	50	50	29	0	30	50

Turning to middle-aged and young respondents, the data in the first column in Table 22 show the risk perceived of income being below the regional poverty line at age 70. 25 percent of respondents see themselves as facing no chance of this event, while 50 percent of respondents perceive this risk to be no more than 10 percent. Some respondents, however, do not feel that secure. The entry for the 0.75 quantile shows that 25 percent perceive the chance of this event occurring at age 70 as at least 30 percent. The mean value of 21 percent is lower compared with that of the remaining four events. Not surprisingly, the mean of perceived risk of being seriously ill at age 70 is highest.

Among the middle-aged, women seem to perceive themselves as more vulnerable across all dimensions. The regional data again highlight that respondents in the Northeast tend to perceive themselves as more vulnerable across most events, with the exception of the risk of having to live alone at old age. Focusing on educational background, those with primary school education or less perceive themselves as more vulnerable across most dimensions than those with higher education.

Young women also see themselves facing a higher chance of the events occurring, with the exception of serious illness at age 70. The mean of the perceived risk of being seriously ill at age 70 is 48 percent compared with 49 percent in case of men. While young people in the Northeast report a higher average chance of their income falling below the regional poverty line, their assets being worth less than the regional threshold (as do young respondents in the North) and their money being insufficient to cover daily expenses at age 70, young respondents in the central region report a slightly higher chance of being seriously ill at age 70 or having to live alone at that age. Again, those respondents with primary school or lower see themselves as facing the highest chance of the events occurring, except in case of living arrangement in which case those with secondary school education feel most insecure on average.

Table 23 Concentration of vulnerability

Concentration of Vulnerability (in % of total)

	Highly secure					Relatively secure					Relatively vulnerable					Highly vulnerable				
Number of events	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Old	0.191	0.381	0.165	0.139	0.057	0.077	0.149	0.268	0.278	0.201	0.278	0.268	0.149	0.077	0.026	0.289	0.144	0.082	0.041	0.005
Middle	0.288	0.190	0.141	0.083	0.030	0.126	0.194	0.239	0.229	0.162	0.231	0.233	0.194	0.126	0.049	0.286	0.192	0.111	0.051	0.006
Young	0.296	0.198	0.134	0.070	0.024	0.104	0.208	0.246	0.273	0.142	0.268	0.246	0.208	0.102	0.027	0.297	0.158	0.081	0.021	0.003

Highly secure	Fraction of respondents whose subjective probabilities of the specified number of events all lie at or below the corresponding 0.25 quantiles
Relatively secure	Fraction of respondents whose subjective probabilities of the specified number of events all lie at or below the corresponding medians
Relatively vulnerable	Fraction of respondents whose subjective probabilities of the specified number of events all exceed the corresponding medians
Highly vulnerable	Fraction of respondents whose subjective probabilities of the specified number of events all exceed the corresponding 0.75 quantiles
Events	Income, assets, consumption, illness and living arrangement
Number of events	1 1 out of 5 events
	2 2 out of 5 events
	3 3 out of 5 events
	4 4 out of 5 events
	5 5 out of 5 events

Table 23 above presents the fraction of respondents whose subjective probabilities of the specified number of events all lie at or below the corresponding 0.25 quantiles. These respondents are classified as highly secure, while those whose subjective probabilities of the specified number of events all lie at or below the corresponding medians are classified as relatively secure. Respondents whose subjective probabilities of the specified number of events all exceed the corresponding medians or the corresponding 0.75 quantiles are classified as relatively vulnerable or highly vulnerable.

2.6 percent of elderly are relatively vulnerable across all dimensions, whereas the corresponding ratio for the middle-aged and young is 4.9 percent and 2.7 percent. 28.9 percent of old respondents, 28.6 percent of middle-aged respondents and 29.7 percent of young respondents are classified as highly vulnerable in one dimension. 5.7 percent of elderly, 3.0 percent of middle-aged and 2.4 percent of young, however, can be referred to as highly secure across all dimensions. These results show that perceived vulnerability in old age reported by middle-aged and young is mostly higher than vulnerability reported by the elderly. This result is interesting and reflects the demographic change Thailand is experiencing, given that only 72 percent of the young believe that their children will take care of them and 40 percent of the middle-aged believe that the care they will receive from your own child children would differ from that given to elderly at present as shown in Table 13. It may also reflect, people's inexperience with retirement planning in light of declining family support and increasing uncertainty.

Respondents were also asked to rank which of the 5 events worries them most (from most, 5, to least, 1) and indicate how worried they are using a seven-point scale, with 7 being very worried and 1 not at all worried. Elderly worry most about serious illness in the next 12 months (ranked 5.76 on average) and least about having to sell assets in the next 12 months (ranked 2.51 on average). The middle-age and young also worry most about serious illness at age 70 and least about having assets below the threshold of 100,000 Baht. The young turn out to worry least (3.88 on average on the seven-point scale), followed by the elderly (4.12 on average). The middle-aged seem to be worried most, with an average score of 4.16 although young and middle-aged report a similar level of satisfaction with the way they provide for well-being in old age (average score of 5.17 on a 7-point scale in case of the latter and 5.15 in case of the former).

To conclude, this section showed how the subjective probabilities for 5 events were elicited from respondents and classified analogous Dominitz and Manski (1996) for use in the following regression analysis.

V. Regression results

This section presents the results of the empirical analysis. The empirical analysis contains two parts. In the first part, a simple well-being function is estimated. In the second part, objective variables are replaced by subjective reports of life domain satisfaction using a simple additive specification to describe the relationship between satisfaction in various life domains and global satisfaction. Regressions are first run for the entire sample and subsequently for each age cohort separately.

V.1 Global well-being

V.1.1 Entire sample

Table 24 presents the results from estimating a simple well-being function. Subjective well-being scores are regressed on standard objective variables. Three alternative proxies for subjective well-being are used, namely global happiness, life satisfaction and the adjusted version of the Global Health Questionnaire, denoted GHQ-11[41]. Variable definitions are given in appendix 2. Since we are using a cross-sectional dataset, our results cannot establish causality and must be interpreted as correlations only.

Table 24 Regression results: Socio-demographic factors of subjective well-being

	Ordered probit regression				OLS regression	
	Global Happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	-0.009 ***	0.003	0.005 *	0.003	-0.058 ***	0.020
Education (Ref: Primary school or lower)						
Secondary school	-0.123	0.080	0.210 ***	0.081	0.234	0.579
Vocational school	0.190	0.129	0.220 *	0.128	2.028 **	0.911
Higher education	-0.148	0.102	0.070	0.104	1.908 **	0.774
Male (Ref.: Female)	0.025	0.065	0.030	0.068	0.346	0.484
Marital status (Ref.: Married / With partner)						
Single	0.117	0.086	0.034	0.087	1.321 **	0.671
Divorced / Widowed	0.039	0.108	-0.271 **	0.110	-0.812	0.789
Region (Ref.: Northeast)						
Central	0.012	0.072	0.065	0.079	1.410 **	0.580
North	-0.480 ***	0.082	0.006	0.075	-0.808	0.548
South	0.057	0.100	0.264 **	0.110	0.400	0.755
Working (Ref.: Not working)	-0.058	0.068	0.113	0.071	1.041 *	0.542
Wealth	0.021 **	0.009	0.037 ***	0.009	0.176 ***	0.064
Monthly income	0.000	0.000	0.000	0.000	0.000	0.000
Constant					48.800 ***	1.175
Number of obs	1330		1330		Number of obs	1321
Wald chi2(13)	73.020		54.440		F(13, 1307)	6.670
Pseudo R2	0.020		0.017		R-squared	0.067

***p≤0.01, **p≤0.05, *p≤0.10

This simple estimation reveals a couple of interesting observations. First, while absolute income enters all regressions with a positive but insignificant coefficient, the wealth variable turns out to be positive and significant in all regressions. As discussed in Dolan, Peasgood and White (2008), the relationship between subjective well-being and income is complex due to reverse causality, unobserved personality traits and the importance of relative income. Most studies, however, suggest that the relationship is positive, but that there are diminishing returns to income. In line with most of the literature, a negative and significant relationship between age and global happiness as well as mental health, but not with respect to life satisfaction, is revealed. The latter may again underline that happiness and satisfaction are different concepts. Elderly may have lower expectations and aspirations, have had time to adjust to their conditions and

[41] If ordered probit estimation is used for the GHQ regressions instead of ordinary least squares, the estimates are similar. These regression results are available upon request.

/ or have learned how to cope with negative life events as suggested in Fry and Stutzer (2002), which may be more relevant for the cognitive dimension of subjective well-being. The relationship between education and subjective well-being is ambiguous in the literature. As discussed in Frey and Stutzer (2002), education may allow people to better adapt to new situations, while on the other hand it may raise aspiration levels. In addition, education is commonly correlated with other variables, most notably income and health. Analogous Stutzer (2004), the results show that mid-level education is positively related to life satisfaction. Vocational school and higher education enters the GHQ regression with a positive and statistically significant coefficient. A large number of studies found that married people report a higher subjective well-being than those being single, divorced or widowed. (Diener and Biswas-Diener, 2000 among others) In line with the literature, we find a negative relationship between being divorced or widowed and life satisfaction. However, the association between being single and mental health is positive and statistically significant. The regional dummy variables reveal that respondents in the North [42] are less happy than the reference category, whereas respondents in the South seem to be more satisfied with life in general, while those in the Central part exhibit higher mental health. Finally, respondents who are working are found to have higher mental health than those not working, highlighting the important role work plays for personal identity.

In a second step, health, income aspirations, relative income, relative material possessions, personality and perceived future vulnerability (high vulnerability in three out of five dimensions and alternatively relative vulnerability in three out of five dimensions) are added as explanatory variables. The regression results are shown in Table 25.

The results confirm signs and significance of the age variable. Also, the positive and significant relationship between secondary schooling and life satisfaction is confirmed. In addition, secondary schooling and higher education turn out to enter with a significant and negative sign in the happiness equation. Since the base model does not control for a number of factors, this may result in the education coefficient being more strongly positive. The relationship between being divorced or widowed and life satisfaction is again negative and significant as expected. Also, the coefficient of the variable single is again positive, but not of statistical significance. The results also

[42] The dummy variable “North” may, however, capture ethnicity rather than regional disparities since the survey team learned from the local administrations that people living in Or-Bor-Tors Ban Paen and Pratupar in Lamphun province are *Tai Yawng* people and in Or-Bor-Tor Dongpaya in Nan province *Lua* people (122 observations in total), implying that ethnicity may be of importance as suggested in the literature. Indeed, happiness scores for respondents in Ban Paen were 2.83 on average, while those for respondents in Pratupar and Dongpaya were 2.85 and 3.20 respectively, i.e. well below the sample average of 5.19. A question on ethnicity, however, was not asked and hence a dummy variable to capture ethnicity is not included. The authors are grateful to a commentator for pointing out at the Economic Impact of Demographic Change Project

confirm that respondents in the North are less happy than the reference category, which again, however, may be driven by ethnicity. The coefficients of wealth and working status are positive and significant in the life satisfaction regression, but insignificant in all other regressions.

Table 25 Regression results: Socio-demographic factors of subjective well-being and further controls

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	-0.007 **	0.003	0.008 ***	0.003	-0.035 *	0.020
Education (Ref: Primary school or lower)						
Secondary school	-0.192 **	0.085	0.145 *	0.088	-0.249	0.592
Vocational school	0.094	0.131	0.133	0.137	1.177	0.897
Higher education	-0.283 ***	0.110	-0.035	0.109	0.708	0.781
Male (Ref.: Female)	0.004	0.069	-0.050	0.071	-0.035	0.495
Marital status (Ref.: Married / With partner)						
Single	0.057	0.088	-0.082	0.089	0.881	0.681
Divorced / Widowed	0.059	0.108	-0.244 **	0.112	-0.781	0.746
Region (Ref.: Northeast)						
Central	-0.005	0.076	0.005	0.084	0.964 *	0.583
North	-0.457 ***	0.084	0.038	0.080	-0.785	0.561
South	0.059	0.105	0.148	0.111	-0.352	0.737
Working (Ref.: Not working)	-0.071	0.070	0.127 *	0.074	0.766	0.544
Wealth	0.012	0.010	0.021 **	0.009	0.060	0.066
Monthly income	0.000	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	**-0.119 ***	**0.066**	**-0.129 ***	**0.068**	**-1.497 *****	**0.497**
Income aspirations	**0.091 *** **	**0.021**	**0.195 *** **	**0.022**	**0.740 *** **	**0.142**
Comparison (Ref.: More than reference group)						
Income comparison	**0.047 ***	**0.029**	**0.013**	**0.029**	**-0.146**	**0.200**
Comparison of material possessions	**-0.095 *** **	**0.029**	**-0.056 ***	**0.030**	**-0.840 *** **	**0.203**
Extraversion	**0.032 ***	**0.017**	**0.003**	**0.018**	**0.073**	**0.124**
High vulnerability (3 dimensions)	**-0.197 ***	**0.092**	**-0.235 ** **	**0.113**	**-2.086 *** **	**0.831**
Constant					50.622 ***	1.630
Number of obs	1258		1258		Number of obs	1257
Wald chi2(19)	124.570		156.230		F(19, 1237)	9.440
Pseudo R2	0.034		0.055		R-squared	0.140

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	-0.007 **	0.003	0.008 ***	0.003	-0.037 *	0.020
Education (Ref: Primary school or lower)						
Secondary school	-0.190 **	0.085	0.145	0.088	-0.229	0.593
Vocational school	0.099	0.131	0.139	0.137	1.198	0.891
Higher education	-0.277 **	0.110	-0.027	0.110	0.669	0.788
Male (Ref.: Female)	0.006	0.069	-0.048	0.071	-0.041	0.496
Marital status (Ref.: Married / With partner)						
Single	0.052	0.088	-0.087	0.090	0.847	0.678
Divorced / Widowed	0.066	0.107	-0.235 **	0.112	-0.772	0.749
Region (Ref.: Northeast)						
Central	-0.010	0.076	-0.001	0.084	0.903	0.586
North	-0.460 ***	0.084	0.034	0.080	-0.846	0.560
South	0.065	0.105	0.153	0.112	-0.371	0.739
Working (Ref.: Not working)	-0.067	0.070	0.132 *	0.074	0.814	0.546
Wealth	0.013	0.009	0.022 **	0.009	0.064	0.066
Monthly income	0.000	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	-0.134 **	0.065	-0.146 **	0.068	-1.618 ***	0.500
Income aspirations	0.094 ***	0.021	0.198 ***	0.022	0.733 ***	0.144
Comparison (Ref.: More than reference group)						
Income comparison	0.043	0.028	0.008	0.029	-0.194	0.202
Comparison of material possessions	-0.098 ***	0.029	-0.059 **	0.030	-0.857 ***	0.205
Extraversion	0.032 *	0.017	0.003	0.018	0.071	0.125
Relatively vulnerable (3 dimensions)	**0.038**	**0.077**	**0.055**	**0.086**	**-0.664**	**0.590**
Constant					50.952 ***	1.671
Number of obs	1258	1258			Number of obs	1257
Wald chi2(19)	115.450	150.620			F(19, 1237)	9.500
Pseudo R2	0.033	0.053			R-squared	0.136

***p≤0.01, **p≤0.05, *p≤0.10

workshop on June 15, 2011 that living alone might explain the lower happiness scores rather than ethnicity. However, only one of the 122 respondents in question reported living alone.

Health and income aspirations enter all regressions with the expected sign and are of statistical significance. While having less income than the comparison group does not appear to be related with subjective well-being in a statistically significant way (except with respect to happiness where the variable enters with an unexpected significant and *positive* sign; this result, however, is not confirmed when using subsamples), the coefficient on the variable that captures having less material possessions than the comparison group enters all regressions with a significant and expected negative sign. Personality, proxied by extraversion, enters only the happiness regression with a positive and significant sign. Extraversion, however, is only one dimension of personality, together with agreeableness, conscientiousness, neuroticism and openness to experience. (DeNeve and Cooper, 1998) Hence, our proxy for personality may fail to capture the whole spectrum of personality traits. Finally, the results show that those respondents that are highly vulnerable in three out of five dimensions have lower subjective well-being, while relative vulnerability turns out to be insignificant. This latter result is surprising and warrants further examination since it may be responsive to the inclusion of further variables.

In a next step, we consider the entire spectrum of vulnerability. These results are shown in Table 26. As expected, the vulnerability indicators enter all regressions with a negative and often significant sign. It is noteworthy that relative vulnerability across 5 dimensions is significant in all regressions, whereas high vulnerability across 5 dimensions is only significant in the life satisfaction regression, implying that the type of vulnerability may be of importance.

Signs and significance of control variables are mostly confirmed. As a robustness check, we replace relative and high vulnerability with relative and high security across all dimensions. These results are not shown but available upon request. As expected, the relative and high security variables enter all regressions with a positive sign, but varying statistical significance, again implying that the type of vulnerability may be important.

Since the type or dimension of vulnerability, i.e. (i) income less than the current regional poverty line, (ii) assets worth less than 100,000 Baht in today's Baht, (iii) insufficient money to meet daily expenses, (iv) serious illness and (v) having to live alone are elicited, may be of relevance, another set of regressions is run that uses the type of vulnerability as explanatory variable. These results are shown in Table 27.

As can be seen, perceived vulnerability to illness in old age matters most for happiness, whereas perceived high vulnerability in terms of assets as well as perceiving oneself as relatively vulnerable in terms of daily consumption matter most for life

satisfaction. Perceived vulnerability in terms of income, daily consumption and living arrangement are negatively and significantly related to mental health.

Table 26 Regression results: Cumulative high and relative vulnerability across all dimensions

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	-0.008 **	0.003	0.008 ***	0.003	-0.036 *	0.020
Education (Ref: Primary school or lower)						
Secondary school	-0.200 **	0.085	0.134	0.089	-0.353	0.587
Vocational school	0.084	0.132	0.121	0.137	1.062	0.893
Higher education	-0.300 ***	0.111	-0.050	0.111	0.481	0.783
Male (Ref.: Female)	0.000	0.070	-0.065	0.071	-0.146	0.493
Marital status (Ref.: Married / With partner)						
Single	0.059	0.088	-0.084	0.089	0.890	0.678
Divorced / Widowed	0.075	0.107	-0.234 **	0.112	-0.649	0.736
Region (Ref.: Northeast)						
Central	-0.006	0.076	0.008	0.084	0.965 *	0.580
North	-0.461 ***	0.084	0.030	0.080	-0.865	0.562
South	0.051	0.105	0.149	0.111	-0.413	0.728
Working (Ref.: Not working)	-0.059	0.071	0.154 **	0.075	1.009 *	0.541
Wealth	0.010	0.010	0.018 *	0.010	0.025	0.067
Monthly income	0.000	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	-0.105	0.066	-0.114	0.069	-1.319 ***	0.496
Income aspirations	0.083 ***	0.021	0.190 ***	0.023	0.640 ***	0.146
Comparison (Ref.: More than reference group)						
Income comparison	0.050 *	0.028	0.012	0.029	-0.145	0.202
Comparison of material possessions	-0.091 ***	0.028	-0.055 *	0.030	-0.790 ***	0.204
Extraversion	0.031 *	0.017	0.004	0.018	0.064	0.123
High vulnerability (1 dimension)	**-0.062**	**0.076**	**-0.179 ** **	**0.079**	**-1.953 *** **	**0.525**
High vulnerability (2 dimensions)	**-0.150**	**0.089**	**-0.012**	**0.093**	**-1.481 ** **	**0.644**
High vulnerability (3 dimensions)	**-0.281 ** **	**0.104**	**-0.321 *** **	**0.123**	**-3.326 *** **	**0.887**
High vulnerability (4 dimensions)	**-0.422 ** **	**0.160**	**-0.223**	**0.192**	**-3.683 *** **	**1.281**
High vulnerability (5 dimensions)	**-0.060**	**0.514**	**-1.045 ** **	**0.333**	**-3.452**	**3.862**
Constant					52.184 ***	1.680
Number of obs	1258		1258		Number of obs	1257
Wald chi2(23)	132.760		171.500		F(23, 1233)	8.790
Pseudo R2	0.036		0.058		R-squared	0.153

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	-0.008 ***	0.003	0.008 **	0.003	-0.046 **	0.020
Education (Ref: Primary school or lower)						
Secondary school	-0.207 **	0.085	0.134	0.089	-0.417	0.592
Vocational school	0.057	0.132	0.109	0.138	0.850	0.878
Higher education	-0.315 ***	0.112	-0.062	0.111	0.294	0.783
Male (Ref.: Female)	-0.002	0.070	-0.060	0.071	-0.199	0.492
Marital status (Ref.: Married / With partner)						
Single	0.058	0.089	-0.085	0.089	0.867	0.671
Divorced / Widowed	0.074	0.106	-0.220 **	0.113	-0.634	0.744
Region (Ref.: Northeast)						
Central	-0.015	0.076	0.006	0.084	0.970 *	0.578
North	-0.478 ***	0.084	0.028	0.080	-0.870	0.558
South	0.019	0.107	0.104	0.112	-0.817	0.738
Working (Ref.: Not working)	-0.052	0.070	0.148 *	0.074	0.960 *	0.538
Wealth	0.009	0.010	0.019 **	0.010	0.032	0.066
Monthly income	0.000	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	-0.103	0.066	-0.135 *	0.069	-1.410 ***	0.497
Income aspirations	0.082 ***	0.021	0.190 ***	0.023	0.632 ***	0.147
Comparison (Ref.: More than reference group)						
Income comparison	0.048 *	0.029	0.009	0.029	-0.162	0.203
Comparison of material possessions	-0.090 ***	0.029	-0.053 *	0.030	-0.772 ***	0.204
Extraversion	0.030 *	0.017	0.001	0.018	0.061	0.123
Relatively vulnerable (1 dimension)	**-0.097**	**0.103**	**-0.216 ** **	**0.099**	**-1.587 ** **	**0.714**
Relatively vulnerable (2 dimensions)	**-0.193 * **	**0.104**	**-0.335 *** **	**0.100**	**-2.532 *** **	**0.746**
Relatively vulnerable (3 dimensions)	**-0.152**	**0.111**	**-0.192 * **	**0.117**	**-2.785 *** **	**0.838**
Relatively vulnerable (4 dimensions)	**-0.416 *** **	**0.121**	**-0.291 ** **	**0.134**	**-2.801 *** **	**0.955**
Relatively vulnerable (5 dimensions)	**-0.426 ** **	**0.182**	**-0.386 ** **	**0.165**	**-5.989 *** **	**1.458**
Constant					53.589	1.810
Number of obs	1258		1258		Number of obs	1257
Wald chi2(23)	129.600		165.970		F(19, 1237)	9.110
Pseudo R2	0.036		0.057		R-squared	0.154

***p≤0.01, **p≤0.05, *p≤0.10

Table 27 Regression results: Type of vulnerability

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	-0.008 **	0.003	0.008 ***	0.003	-0.036 *	0.020
Education (Ref: Primary school or lower)						
Secondary school	-0.205 **	0.085	0.133	0.088	-0.367	0.586
Vocational school	0.085	0.132	0.122	0.138	0.975	0.893
Higher education	-0.303 ***	0.111	-0.057	0.110	0.428	0.782
Male (Ref.: Female)	-0.001	0.070	-0.063	0.071	-0.114	0.496
Marital status (Ref.: Married / With partner)						
Single	0.054	0.089	-0.078	0.090	0.921	0.679
Divorced / Widowed	0.073	0.108	-0.234 **	0.112	-0.630	0.741
Region (Ref.: Northeast)						
Central	-0.005	0.076	0.003	0.085	0.927	0.581
North	-0.463 ***	0.085	0.040	0.080	-0.895	0.561
South	0.045	0.105	0.139	0.112	-0.434	0.734
Working (Ref.: Not working)	-0.055	0.070	0.139 *	0.074	0.925 *	0.538
Wealth	0.010	0.010	0.017 *	0.010	0.040	0.066
Monthly income	0.000	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	-0.096	0.066	-0.124 *	0.069	-1.397 ***	0.497
Income aspirations	0.082 ***	0.021	0.189 ***	0.023	0.632 ***	0.145
Comparison (Ref.: More than reference group)						
Income comparison	0.049 *	0.028	0.011	0.029	-0.136	0.201
Comparison of material possessions	-0.091 ***	0.029	-0.056 *	0.030	-0.804 ***	0.204
Extraversion	0.031 *	0.017	0.003	0.018	0.076	0.123
High vulnerability (income)	-0.073	0.069	0.017	0.080	-1.260 **	0.512
High vulnerability (assets)	-0.113	0.070	-0.160 **	0.077	-0.478	0.556
High vulnerability (consumption)	-0.075	0.075	-0.104	0.082	-1.161 **	0.542
High vulnerability (illness)	-0.150 *	0.080	0.001	0.093	-0.213	0.605
High vulnerability (living arrangement)	-0.046	0.075	-0.117	0.083	-1.296 **	0.554
Constant					51.904 ***	1.665
Number of obs	1258		1258		Number of obs	1257
Wald chi2(23)	129.070		162.330		F(23, 1233)	8.700
Pseudo R2	0.035		0.056		R-squared	0.151

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	-0.008 ***	0.003	0.008 **	0.003	-0.041 **	0.021
Education (Ref: Primary school or lower)						
Secondary school	-0.206 **	0.085	0.144	0.088	-0.364	0.590
Vocational school	0.064	0.132	0.124	0.139	0.804	0.882
Higher education	-0.320 ***	0.112	-0.036	0.111	0.340	0.780
Male (Ref.: Female)	-0.001	0.070	-0.062	0.072	-0.177	0.498
Marital status (Ref.: Married / With partner)						
Single	0.057	0.089	-0.079	0.090	0.916	0.672
Divorced / Widowed	0.070	0.107	-0.242 **	0.112	-0.750	0.747
Region (Ref.: Northeast)						
Central	-0.015	0.076	0.037	0.080	0.900	0.579
North	-0.477 ***	0.085	-0.007	0.085	-0.928 *	0.557
South	0.011	0.106	0.132	0.112	-0.652	0.737
Working (Ref.: Not working)	-0.047	0.071	0.137 *	0.074	0.827	0.540
Wealth	0.011	0.010	0.019 **	0.010	0.028	0.067
Monthly income	0.000	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	-0.094	0.066	-0.123 *	0.070	-1.478 ***	0.500
Income aspirations	0.079 *	0.021	0.187 ***	0.023	0.606 ***	0.146
Comparison (Ref.: More than reference group)						
Income comparison	0.046	0.028	0.009	0.029	-0.136	0.201
Comparison of material possessions	-0.089 ***	0.029	-0.054 *	0.030	-0.780 ***	0.204
Extraversion	0.030 *	0.017	0.002	0.018	0.055	0.123
Relatively vulnerable (income)	-0.054	0.064	0.083	0.070	-1.180 **	0.467
Relatively vulnerable (assets)	-0.065	0.064	-0.109	0.068	-0.662	0.473
Relatively vulnerable (consumption)	-0.080	0.073	-0.174 **	0.080	-1.435 ***	0.526
Relatively vulnerable (illness)	-0.146 **	0.065	-0.017	0.073	0.027	0.483
Relatively vulnerable (living arrangement)	-0.066	0.062	-0.070	0.065	-0.838 *	0.441
Constant						
Number of obs	1258		1258		Number of obs	1257
Wald chi2(23)	125.960		163.160		F(23, 1233)	8.860
Pseudo R2	0.036		0.057		R-squared	0.153

***p≤0.01, **p≤0.05, *p≤0.10

However, not only number and type of perceived vulnerability may be related to subjective well-being, but the results may also differ by age group given that the age variable is significant in all regressions.

V.1.2 Cohort old

The regression results for this subsample are given in appendix 6. Table A6-1 shows the regression results using socio-demographic controls only. The age variable is again statistically significant but positive, which indicates that the relationship between happiness and age may indeed be U-shaped as suggested in the literature. The coefficient of the secondary school dummy variable is negative as previously when using the full sample and statistically significant at the 5 percent level. This may again be explained by the fact that higher education causes an increase in aspiration levels. Whereas the results for the full sample revealed that respondents in the North were on average less happy than respondents elsewhere, this result could not be confirmed for the cohort old, although the coefficient enters with a negative sign. Wealth again is positively and significantly related with happiness. The results further show, that marital status seems to be the only variable that matters for the life satisfaction of elderly. The coefficient of the dummy variable single enters with a negative sign, underlining the importance of personal relationships for life satisfaction. In line with this, respondents who reported being divorced or widowed turned out to have lower mental health. A positive and significant relationship was revealed between monthly income and mental health as expected. All other variables turned out to be statistically insignificant, which is quite different from the results obtained using the full sample. Table A6-2 shows the regression results from controlling for further factors, namely health, income aspirations, relative income, relative material possessions, personality and perceived future vulnerability (high vulnerability in three out of five dimensions and alternatively relative vulnerability in three out of five dimensions). In line with the results obtained from using the entire sample, met income aspirations and being extraverted are positively and significantly correlated with happiness. Neither high nor relative vulnerability across three dimensions seem to matter for the happiness of elderly, which may be due to adaptation, given that elderly have already reached the final stage of their life-cycle. Income aspirations are also positively and significantly correlated with life satisfaction and mental health. In addition, health and having less material possessions are negative and statistically significant in the mental health regression. When considering cumulative high and relative vulnerability across all dimensions, the results in Table A6-3, however, reveal that high vulnerability across 4 dimensions is negatively associated with happiness and mental health. Also, the relationship between high vulnerability across 1 dimension and mental health is negative and significant. The coefficient of high vulnerability across 2 dimensions, however, is positive albeit insignificant in all regressions, which warrants further investigation. Shifting focus to relative vulnerability, the results in the lower panel of Table A6-3 show that the coefficients enter with an expected negative sign in all regressions, but are only significant in the case of vulnerability in 4 out of 5 dimensions. This variation, again, may be caused by the type

of vulnerability, which is subsequently also examined. These results are shown in Table A6-4. When focusing on type of vulnerability, the results show that high vulnerability in the asset dimension is negatively and significantly related with global happiness and life satisfaction, whereas the coefficient of the variable that measures high vulnerability in the living arrangement dimension is negative and significant with respect to mental health. Looking at relative vulnerability, however, suggests that relative vulnerability in the illness and living arrangement dimensions matter for global happiness and mental health, whereas the coefficient of the variable that proxies relative vulnerability across the asset dimension is negative and significant in the life satisfaction regression. Surprisingly, some vulnerability indicators enter with a positive although insignificant sign, which may, to some extent, reflect an adaptation process.

V.1.3 Cohort middle

The regression results using data for the subsample comprising middle-aged respondents are given in appendix 7. Table A7-1 shows the results using socio-demographic controls only. These are mostly consistent with those obtained for the full sample. Age, higher education, living in the North and wealth all seem to matter for the happiness of middle-aged respondents. Whereas the former enter with a negative sign, the latter has an expected positive sign. Middle-aged respondents who have completed secondary or vocational school and those working appear to be more satisfied with life as a whole. The coefficient of the wealth variable also enters with a statistically significant and positive sign in the life satisfaction regression. Middle-aged respondents who have completed vocational school or higher as well as those being single seem to have higher mental health. Again, middle-aged respondents in the North appear to have lower mental health than respondents elsewhere. Table A7-2 shows the regression results controlling further for health, income aspirations, relative income, relative material possessions, personality and perceived future vulnerability in 3 out of 5 dimensions. Of these additional variables, only met income aspirations are positive and significant as expected. In addition the results confirm that having less material possessions than the comparison group reduces happiness. Table A7-3 shows the results obtained when including all cumulative proxies for high and relative vulnerability. As expected all variables except one have an expected negative sign, and most are statistically significant, suggesting that perceived vulnerability matters for well-being. When using various measures of relative vulnerability as explanatory variables, the results again indicate that the degree of vulnerability matters for well-being. The analysis by type of high and relative vulnerability (Table A7-4) shows that most variables enter with an expected negative sign, although only few are of statistical significance. Relative vulnerability in the consumption dimension seems to matter for life

satisfaction and mental health and high vulnerability in the consumption dimension is also significant in the mental health regression. In addition, relative vulnerability in terms of income is significant at the 10 percent level in the happiness regression.

V.1.4 Cohort young

The regression results using data for the cohort young are given in appendix 8. Table A8-1 shows the results using socio-demographic controls only. The results indicate that young respondents living in the North as well as those working are less happy than respondents living elsewhere and/or not working. Interestingly, the results also show that monthly income rather than wealth matters for the happiness of young, which is not surprising given that 51 percent of young do not own financial assets and 48 percent do not own property as shown in Table 8. Only two variables are significant in the life satisfaction regression, namely the regional dummy variable for the South as well as wealth. Both coefficients enter with a positive sign. In line with the results obtained from using data for the full sample, wealth, working and age are significantly related with mental health. Whereas the former enter with an expected positive sign, the latter has a negative sign in line with the U-shaped relationship between happiness and age stipulated in the literature. Young respondents who report being divorced or widowed have lower mental health as expected. Adding health, income aspirations, relative income, relative material possessions, personality and perceived future vulnerability as additional explanatory variables reveals some interesting findings as shown in Table A8-2. First, met income aspirations are positively and significantly correlated with all measures of subjective well-being. In addition, reporting a health problem and having less material possessions than the comparison group is negatively associated with life satisfaction and mental health. Finally, high vulnerability in three out of five dimensions seems to matter for life satisfaction and mental health and the relative vulnerability in three out of five dimensions enters the mental health regression with an expected negative and significant sign. Running the regressions with all cumulative proxies for relative and high vulnerability (Table A8-3) confirms the afore-mentioned results. Both high and relative vulnerability seem to matter for the well-being of the young. When focusing on the type of vulnerability, the results in Table A8-4 reveal that high and relative vulnerability in both the income and living arrangement dimension are negatively and significantly related with mental health as expected given that the future elderly will have fewer children to support them.

V.2. Domain satisfaction

In addition to analyzing the quality of “life as a whole”, the two-layer model of Ferrer-i-Carbonell and van Praag (2008), i.e. objective variables determine domain

satisfactions which in turn determine global well-being, is tested. Correlations of the eight domains of life and life satisfaction are shown in Table A9-1 in appendix 9. Life satisfaction is positively correlated with satisfaction in all domains. The highest correlation is between satisfaction with family and life satisfaction, whereas the lowest correlation is between satisfaction with social support network and life satisfaction. Correlations of domain satisfactions show that all, but one, are positive as expected. This implies that if an individual is satisfied in one domain, then s/he also tends to be satisfied in the other domains. Calculating a summated family satisfaction scale based on satisfaction with siblings, partner/spouse and children would result in discarding 677 observations (of which 375 young, 183 middle and 119 old). Hence, "enjoying time spent with family" is used as alternative proxy. The correlation between “enjoying time spent with family” and satisfaction with social support network, however, is negative, which signals that our alternative proxy may not fully capture satisfaction with family. Using a summated family satisfaction scale, nevertheless, mostly confirms the results above, with some instability across satisfaction with religion though.

Table 28 Well-being and domain satisfaction

	Ordered probit regression				OLS regression	
	Global Happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Satisfaction with						
Family	0.085 **	0.043	0.126 ***	0.041	1.044 ***	0.263
Health	0.106 ***	0.036	0.227 ***	0.042	0.949 ***	0.267
Financial status	0.144 ***	0.037	0.289 ***	0.036	1.704 ***	0.248
Work	0.007	0.041	0.058	0.045	0.273	0.297
Social support	0.006	0.018	0.027	0.019	0.020	0.127
Religion	0.047	0.041	0.156 ***	0.045	-0.251	0.298
Community	0.002	0.042	0.193 ***	0.052	0.232	0.324
Constant					31.405 ***	2.862
Number of obs	935		935		Number of obs	935
Wald chi2(7)	39.17		220.11		F(7, 927)	15.570
Pseudo R2	0.016		0.0962		R-squared	0.114

	Ordered probit regression				OLS regression	
	Global Happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Satisfaction with						
Family	0.109 **	0.044	0.107 **	0.045	0.997 ***	0.282
Health	0.096 ***	0.038	0.215 ***	0.044	0.805 ***	0.283
Financial status	0.142 ***	0.039	0.282 ***	0.039	1.638 ***	0.260
Work	-0.004	0.043	0.045	0.048	0.225	0.315
Social support	0.010	0.018	0.017	0.020	0.014	0.136
Religion	0.044	0.043	0.103 **	0.046	-0.317	0.309
Community	0.002	0.043	0.199 ***	0.055	0.205	0.341
Provision for old age	-0.006	0.031	0.149 ***	0.035	0.256	0.233
Constant					32.177 ***	3.002
Number of obs	860		860		Number of obs	860
Wald chi2(8)	32.87		193.61		F(8, 851)	11.44
Pseudo R2	0.016		0.1051		R-squared	0.1035

***p≤0.01, **p≤0.05, *p≤0.10

nb Satisfaction with provision for old age does not apply to cohort old.

V.2.1 Entire sample

First, data for all three cohorts are used to explore the relationship between life satisfaction and domain satisfaction. In addition to life satisfaction, global happiness and mental health are used as alternative proxies for the quality of life as a whole. The regression results are shown in Table 28. Whereas in the upper panel, the explanatory variables consist of satisfaction in seven commonly used life domains, satisfaction with the provision for old age is added in the lower panel.

The results show that satisfaction with family, health, financial status, religion and community are positive and significant in the life satisfaction regression. When using global happiness and mental health as dependent variable, only family, health and financial status are significant. Adding satisfaction with the provision for old age confirms these results and in addition reveals that its coefficient enters with a positive and significant sign in the life satisfaction regression reinforcing our previous results.

V.2.2 Cohort old

The results for the cohort old are shown in Table A9-2 in appendix 9. Satisfaction with family, financial status and social support network (which may reflect that elderly have the largest number of friends and are willing to support the largest number of friends if these were in need) are positively and significantly related with life satisfaction, whereas satisfaction with health seems to matter for global happiness and mental health in line with the results obtained from using the entire sample. In addition, satisfaction with financial status is again positive and significant in the mental health regression.

V.2.3 Cohort middle

The results obtained from using data for the cohort middle are shown in Table A9-3 in appendix 9 and mostly confirm the above. Satisfaction with family and health, however, turn out to be positive but insignificant in the global happiness regression. When adding satisfaction with the provision for old age as independent variable, satisfaction with family and community is not significant in the life satisfaction regression any more, perhaps reflecting that family and community members may play are role in the way respondents prepare for their old age.

V.2.4 Cohort young

Using data for the cohort young also mostly confirms the results above as shown in Table A9-4. Satisfaction with family, health and financial status seem to matter for global happiness and life satisfaction. In addition satisfaction with religion and community is positively and significantly related with life satisfaction. Satisfaction with family and satisfaction with financial status are important for mental health. Once satisfaction with the provision for old age is added, satisfaction with religion is not

significant in the life satisfaction regression any more, although all other results remain the same. This may reflect that young respondents agree least with the statement that belief in religion can help solve problems compared with the other two age cohorts.

VI. Concluding remarks and policy recommendations

This study uses cross-sectional data from a survey to explore possible linkages between demographic change, perceived vulnerabilities in old age and economic welfare in rural Thailand. In addition to information about well-being and its determinants as well as personal and household characteristics, the survey also compiles novel data for three age groups, which entered reproductive age prior to, during and after Thailand's rapid fertility decline, about perceived vulnerabilities in old age in terms of income, consumption, health, living arrangement and assets. Specifically, subjective probabilities of (i) income being less than current regional poverty line, (ii) assets worth less than 100,000 Baht in today's Baht, (iii) insufficient money to meet daily expenses, (iv) serious illness and (v) having to live alone are elicited.

The analyses reveal a number of interesting findings, which are summarized as follows:

1. Having normal blood pressure is significantly albeit weakly correlated with mental well-being, indicating that the multi-item measure is preferable to the single-item measure of well-being in accordance with the literature.

2. Most respondents compare themselves with neighbours, followed by friends and people in the same household as assumed in most of the literature. Young individuals, however, tend to compare themselves with friends, followed by neighbours and people in the same household, indicating that the same comparison group should not be assumed across all age groups.

3. Respondents ranked family and health as the most important determinants of happiness when old, family and financial security when middle-aged and family, financial security and work when young. The government is ranked the least important determinant of happiness over the life-cycle and across age cohorts as well as regions.

4. Mutual interdependence of parents and children still prevails in rural Thailand. 71 percent of elderly report that their children live on the same

compound and mutual assistance is widespread. 76 percent of the young expect to live with their parents when they are old, although regional variations exist (North: 83 percent, Northeast: 75 percent, Central: 73 percent and South: 70 percent). Also, only 72 percent of young respondents, compared with 88 percent of middle-aged respondents, expect their children to take care of them when old, reflecting the demographic transition Thailand is experiencing and the need of families to adapt. When asking the young whether they expect to have any more children, only 52 percent indicated that they want to have more children. Moreover, most of the middle-aged believe that having fewer children is advantageous for care and support in old age. Elderly respondents agree that their parents did not have sufficient income, while middle aged and the young respondents reported that their parents' income in old age is sufficient, except in the Northeast.

5. Descriptive statistics reveal that respondents in the Northeast have the highest risk perceptions across the income and consumption dimensions. In addition, individuals with primary school education or lower perceive themselves as more vulnerable than others. 2.6 percent of elderly are relatively vulnerable across all dimensions, whereas the corresponding ratio for the middle-aged and young is 4.9 percent and 2.7 percent. 28.9 percent of old respondents, 28.6 percent of middle-aged respondents and 29.7 percent of young respondents are classified as highly vulnerable in one of the five dimensions. However, these results may overestimate vulnerability since our sample contains more female than male respondents, with female respondents generally perceiving themselves as more vulnerable in old age than men.

6. Objectively measurable variables such as education, marital status, region/ethnicity, health and wealth mostly perform as expected, but show some inconsistency across sub-sample regressions. Most important for well-being, however, appear to be two subjective variables, namely met income aspirations and having less material possessions than the comparison group.

7. Perceived vulnerability in old age seems to matter for present well-being, with type and severity being of importance. Interestingly, perceived vulnerabilities in terms of income and living arrangement when old appear to matter for mental health of *young* respondents, which reflects the

demographic transition Thailand is experiencing. In line with declining fertility, young respondents perceive themselves more vulnerable in old age since they will not be able to rely on support from children to the same extent as previous generations.

8. Satisfaction with family, health, financial status, religion, community as well as provision for old age seem to be the most important life domains for life satisfaction.

Since cross-sectional data are used in this study, causal relationships, however, cannot be established and the results should thus be viewed and understood as an exploration only. An interesting exploration, though, which tentatively suggests that attempts should be made to reduce insecurity about well-being in old age, especially for young individuals. Given that young respondents agree least with the statement that the government provides sufficient information on policy changes, the government should strengthen its communication policy to ensure that citizens, and especially young citizens, receive adequate information about their future rights and obligations and have access to information about government activities related to well-being in old age. It is necessary to provide complete information to citizens about benefits in old age against the backdrop of less family support. This would help middle-aged and young people in dealing with the complexities of retirement planning in light of the demographic transition Thailand is experiencing. In addition, the government should enable and encourage voluntary long-term micro-savings for old age to decrease the dependency of older people on the government and their families.

Along these lines, individuals were asked to name the most important type of welfare that the government should provide for elderly and most stated that (i) the non-contributory old age government allowance should be increased to 1,322 Baht on average (from currently 500 Baht), indicating that individuals in rural areas are well aware of the poverty line and (ii) more day care and multi-purpose centres should be established.

Also, the findings that respondents in the Northeast have the highest risk perceptions across the income and consumption dimensions and that individuals with primary school education or lower perceive themselves as more vulnerable than others once again underline the need to strengthen access to education, especially in the Northeast.

The ranking of the determinants of happiness in old age reveals that family and health are most important when old and highlight the need for strengthening family ties and health promotion activities, especially at the community level.

However, to be able to provide more solid recommendations, this cross-sectional survey should be repeated in the future to solve the problem of causality. This would also allow us to observe upward and downward mobility as well as actual realizations (in case of the cohort old) to validate the perceived vulnerability module. The latter is particularly important to see if respondents over- or under-predict risk, which types these are and why.

References

Attanasio, O.P. (2009) Expectations and perceptions in developing countries: Their measurement and their Use. Online at http://www.aeaweb.org/assa/2009/retrieve.php? pdfid=364.

Attanaso, O., C. Meghir and M.V. Hernandez (2005) Elicitation, validation, and use of probability distributions of future income in developing countries. Online at http://eswc2005.econ.ucl.ac.uk/papers/ESWC/2005/1678/expectations1.pdf.

Blanchflower, D.G. and A.J. Oswald (2008) Is well-being U-shaped over the life cycle?, NBER Working Paper 12935. Online at http://www.nber.org/papers/w12935.

Blanchflower, D.G. and A.J. Oswald (2004) Well-being over time in Britain and the USA, Journal of Public Economics, 88: 1359-1386. Online at http://www.science direct.com.

Blanchflower, D.G. and A.J. Oswald (2009) Hypertension and happiness across the regions. Journal of Health Economics, vol. 27, no. 2, 218-233. Online at www.sciencedirect.com.

Brickman, P., D. Coates and R. Janoff-Bulman (1978) Lottery winners and accident victims: Is happiness relative? Journal of Personality and Social Psychology, vol. 36, no. 8, 917–27. Cited in Kahneman, D. and A.B. Krueger (2006) *Developments in the Measurement of Subjective Well-Being*, Journal of Economic Perspective, vol. 20, no. 1, 3–24. Online at http://www.aeaweb.org/articles/issue_detail.php?journal=JEP&volume=20&issue=1&issue_date=Winter%202006.

Carvallo, M., K. Dean, S. Gabriel, B. Tippin and J. Renaud (2005) How I see me depends on how I see we: The role of attachment style in social comparison. Personality and Social Psychology Bulletin. Online at http://psp.sagepub.com/cgi/content/abstract/31/11.

Chayovan, N. and J. Knodel (2009) Intergenerational relationships and family care and support for Thai Elderly, Ageing International, 33: 15-27, DOI 10.1007/s12126-009-9026-7.

Chayovan, N. and J. Knodel (2008) Population ageing and the well-being of older persons in Thailand, Population Studies Centre, University of Michigan, Institute for Social Research, Report 08-659.

Checkovich, T. and S. Stern (2002) Shared caregiving responsibilities of adult siblings with elderly parents. The Journal of Human Resources, vol. 37, no. 3, 441-478.

Chesla, C. and S. Rungreangkulkij (2001). Smooth a heart with water: Thai mothers care for a child with schizophrenia. Archives of Psychiatric Nursing, 15(3), 120-127.

Chiu, R.L.H. and M.H.C. Ho (2006) Estimation of elderly housing demand in an Asian city: Methodological issues and policy implications, Habitat International, 30: 965-980.

Christian, O.G. and T.J. Durant (2006) Care-giving to aging parents, Forum on Public Policy online at http://forumonpublicpolicy.com/archive07/durant.pdf.

Cochran (1977) Sampling techniques, 3rd ed., NY: Wiley & Sons.

De Neve, K.M. and H. Cooper (1998) The happy personality: A meta-analysis of 137 personality traits and subjective well-being, Psychological Bulletin, vol. 124, no. 2, 197-229. Online at www.sciencedirect.com.

De Weerdt (2005) Measuring risk perceptions: Why and how?, The World Bank. Online at http://siteresources.worldbank.org/SOCIALPROTECTION/Resources/SP-Discussion-papers /Social-Protection-General-DP/0533.pdf.

Delavande, A., X. Gine and D. McKenzie (2008) Measuring subjective expectations in developing countries: A critical review and new evidence, Journal of Development Economics. Online at http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/01/29/000158349_20090129100701/Rendered/PDF/WPS4824.pdf.

Delavande, A. and H.-P. Kohler (2009) Subjective expectations in the context of HIV/AIDS in Malawi*, vol 20, no. 31*, Demographic Research. Online at http://www.demographic-research.org/Volumes/Vol20/31/20-31.pdf.

Delavande, A. and S. Rohwedder (2008) Eliciting subjective probabilities in internet surveys. Online at http://poq.oxfordjournals.org/cgi/reprint/72/5/866.pdf.

Diener, E. (1994) Assessing subjective well-being: Progress and opportunities, Social Indicators Research, vol.31, 103-157. Online at http://www.springerlink.com/content/h85u8570k73223km/.

Diener, E. and R. Biswas-Diener (2000) Will money increase subjective well-being? A literature review and guide to needed research, Social Indicators Research Series, 2009, vol. 37, 119-154. Online at http://www.springerlink.com/content/t2362n08525vql82/.

Dolan, P., R. Layard and R. Metcalfe (2011) Measuring subjective well-being for public policy. Office for National Statistics, UK. Online at http://www.statistics.gov.uk/articles/social_trends/measuring-subjective-wellbeing-for-public-policy.pdf.

Dolan, P., T. Peasgood and M. White (2008) Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being, Journal of Economic Psychology, vol. 29, 94–122. Online at www.sciencedirect.com.

Dominitz, J. and C.F. Manski (1997) Using expectations data to study subjective income expectations. Journal of the American Statistical Associatio, vol. 92:855–67. Online at http://www.jstor.org/pss/2965550.

Dominitz, J. and C.F. Manski (1996) Perceptions of economic insecurity: Evidence from the survey of economic expectations. Online at http://ideas.repec.org/p/wop/wispod/ 1105-96.html.

Dominitz, J. and C.F. Manski (1994) Using expectations data to study subjective income expectations. Online at http://www.nber.org/papers/w4937.

Dominitz, J., Manski, C.F. and J. Hainz (2003) Will social security be there for you? How Americans perceive their benefits. Online at http://www.nber.org/papers/w9798.

Duesenberry, J.S. (1949) Income, saving and the theory of consumer behaviour, Cambridge: Harvard University Press.

Ferrer-i-Carbonell, A. and P. Frijters (2002) How important is methodology for the estimates of the determinants of happiness? Tinbergen Institute Discussion Paper TI 2002-024/3. Online at http://www.tinbergen.nl/discussionpapers/02024.pdf.

Ferrer-i-Carbonell, A. (2005) Income and well-being: An empirical analysis of the comparison income effect, Journal of Public Economics, vol. 89, 997–1019. Online at www.sciencedirect.com.

Ferrer-i-Carbonell, A. and B.M.S. van Praag (2004) Happiness quantified – A satisfaction calculus approach, revised edition. Oxford: Oxford University Press.

Ferrie, J.E., M.J. Shipleya, K. Newman, S.A. Stansfeld and M. Marmot (2005) Self-reported job insecurity and health in the Whitehall II study: Potential explanations of the relationship, Social Science & Medicine, vol. 60: 1593-1602. Cited in Geishecker, I. (2009) *Perceived job insecurity and well-being revisited: Towards conceptual clarity*. Georg-August-Universitaet Goettingen, CEGE Discussion Paper Number 90. Online at http://wwwuser.gwdg.de/~lstohr/cege/Diskussionspapiere/90_Geishecker.pdf.

Frey, B.S. and A. Stutzer (2001) What can economists learn from happiness research? Journal of Economic Literature, 40: 402-435. Online at http://www.iew.unizh.ch/wp/iewwp080.pdf.

Frey, B.S. and A. Stutzer (2002) Happiness and economics – How the economy and institutions affect human well-being. New Jersey: Princeton University Press.

Garcia, J.d.J., N.C. Fuentes, S.A. Borrego, M.D. Gutierrez and A. Tapia (2007) Values and happiness in Mexico: The case of the metropolitan city of Monterry, in: Bruni, L. and P.L. Porta (eds.) (2007) Handbook on the Economics of Happiness. Cheltenham: Edward Elgar: 407-428.

Gardner, J. and A.J. Oswald (2005) Do divorcing couples become happier by breaking up? IZA DP No. 1788. Online at ftp://repec.iza.org/RePEc/Discussionpaper/dp1788.pdf.

Geishecker, I. (2009) Perceived job insecurity and well-being revisited: Towards conceptual clarity. Georg-August-Universitaet Goettingen, CEGE Discussion Paper

Number 90. Online at http://wwwuser.gwdg.de/~lstohr/cege/Diskussionspapiere/90_Geishecker.pdf.
Gine, X. and S. Klonner (2006) Technology adoption with uncertain profits: The case of fibre boats in South India. Online at www.icrier.org/pdf/14-15dec06/Paper_XavierGine.pdf.
Gine, X., R.M. Townsend and J. Vickery (2009) Forecasting when it matters: Evidence from semi-arid India. Online at www.econ.yale.edu/seminars/develop/tdw10/gine- 100405.pdf.
Goldberg, D.P., R. Gater, N. Sartorius, T.B. Ustun, M. Piccinelli, O. Gureje and C. Rutter (1997) The validity of two version of the GHQ in the WHO study of mental illness in general health care. Psychological Medicine, 27:191–197.
Graham, C. and J.C. Chaparro (2011) Insecurity, health and well-being: An initial exploration based on happiness surveys. Inter-American Development Bank. Online at http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=35807824.
Guarnaccia, P. J. and P. Parra (1996). Ethnicity, social status, and families'experiences of caring for a mentally ill family member. Community Mental Health Journal, 32, 243–260.
Hankins, M. (2008) The reliability of the twelve-item general health questionnaire (GHQ-12) under realistic assumptions, *BMC Public Health* 2008, vol. 8,355. Online at http://www.biomedcentral.com/1471-2458/8/355.
Ho, K.W. and K.C. Tan (2008) Happiness of the healthy elderly: Determinants and relationship with the past and future, presented at the Interdisciplinary Studies on Happiness workshop at Chulalongkorn University, Bangkok, Thailand, on February 14, 2008.
Hoogeveen, J, E. Tesliuc, R. Vakis and S. Dercon (2004) A guide to the analysis of risk, vulnerability and vulnerable groups. Online at http://siteresources.worldbank.org/INTSRM/Publications/20316319/RVA.pdf.
Jensen, R. (2010) The perceived returns to education and the demand for schooling. Online at http://www.mitpressjournals.org/doi/pdfplus/10.1162/qjec.2010.125.2.515.
Kahneman, D. and A.B. Krueger (2006) Developments in the measurement of subjective well-being, Journal of Economic Perspective, vol. 20, no. 1, 3–24. Online at http://www.aeaweb.org/articles/issue_detail.php?journal=JEP&volume=20&issue=1&issue_date=Winter%202006.
Kahneman, D., D. Slovic and A. Tversky (1982) Judgment under uncertainty: Heuristics and biases. Cambridge: Cambridge University Press.
Kahneman, D. and A. Tversky (1974) Judgement under uncertainty: Heuristics and biases, Science, New Series, 185 (4157): 1124-1131.
Kittisuksathit S., P. Rukumnuaykit, R. Soottipong-Gray and V. Thongthai (2008) Inner happiness among Thai elderly, Journal of Cross Cultural Gerontology. Online at http://www.springerlink.com/content/w211k1l158308501/.
Kreager, P. and E. Schroeder-Butterfill (2008) Indonesia against the trend? Aging and intergenerational wealth flows in two Indonesian communities, Demographic Research 19 (52): 1781-1810. Online at www.demographic-research.org/volumes/vol19/52/.
Layard, R. (2005) Happiness: Lessons from a new science. London: The Penguin Press.
Lacey, H., D.M. Smith and P.A. Ubel (2006) Hope I die before I get old: Mispredicting happiness across the adult lifespan, Journal of Happiness Studies, 7: 167-182. Online at http://hdl.handle.net/10.1007/s10902-005-2748-7.
Lelkes, O. (2008) Happiness across the life cycle: Exploring age-specific preferences, European Centre for Social Welfare Policy and Research Policy Brief March (2) 2008. Online at www.euro.centre.org/data/1207216181_14636.pdf.
Liu, J.-T. and M.-W. Tsou (2001) Happiness and domain satisfaction in Taiwan, Journal of Happiness Studies 2: 269–288, 2001. Online at http://www.springerlink.com/content/w6434u8478275381/.
Mongkol, A., T. Tangseree, W. Huttapanom and W. Chutha (2007) The development of Thai mental health indicator (TMHI): From present to past. Online at http://gnh-movement.org/papers/mongkol.pdf.

Mujahid, G. (2007) Seminar on the Social, Health and Economic Consequences of Population Ageing in the Context of Changing Families Bangkok, Thailand 25th – 27th July, 2007. Online at http://www.unescap.org/esid/psis/meetings/Ageing_Change_Family/Population%20ageing%20in%20Asia%20Trends%20and%20implications%20by%20Mr%20Ghazy%20Mujahid.ppt.

NESDB (2550) รายงานสถานการณ์ความอยู่เย็นเป็นสุขร่วมกันในสังคมไทย, Annual Conference 2550

National Statistical Office of Thailand (NSO) (2007) Report on the 2007 survey of elderly in Thailand. Bangkok: National Statistical Office. Online at http://web.nso.go.th/en/survey/age/older07.htm.

Pootrakool and Sereechetpongse (2007) Safeguarding our nation's nest egg: Necessary reforms to our social security system, Bank of Thailand Working Paper DP/10/2007.

Powdthavee, N. (2007a) Causal analysis in happiness research. Online at http://www.powdthavee.co.uk/resources/Causal+Analysis+in+Happiness+Research.pdf.

Powdthavee, N. (2007b) Economics of happiness: A review of literature and applications, Forthcoming in Chulalongkorn Journal of Economics. Online at http://www.iim.com.my/v3/st_event/microsite_integrity_tools/files/system/Economics_of_Happiness.pdf.

Rojas, M. (2007) Life satisfaction and satisfaction in domains of life: Is it a simple or a simplified relationship?, Journal of Happiness Studies. Online at http://www.flacso.or.cr/fileadmin/documentos/FLACSO/Dialogos_Bienestar/Luis_Mariano8.pdf.

Schroeder-Butterfill, E. (2005) Old-age vulnerability in Indonesia: A longitudinal social network approach, monograph.

Silverstein, M. (2006) Intergenerational family transfers in social context, Handbook of aging and the social sciences (6th ed.), edited by Robert H. Binstock and Linda K. George. San Diego: Academic Press.

Stutzer, A. (2003) The role of income aspirations in individual happiness, University of Zurich Working Paper No. 124. Online at http://www.iew.unizh.ch/wp/iewwp124.pdf.

Sverke, M. and J. Hellgren (2002) The nature of job insecurity: Under-standing employment uncertainty on the brink of a new millennium, Applied Psychology, vol.51, no. 1, 23-42. Cited in Geishecker, I. (2009) *Perceived job insecurity and well-being revisited: Towards conceptual clarity*. Georg-August-Universitaet Goettingen, CEGE Discussion Paper Number 90. Online at http://wwwuser.gwdg.de/ ~lstohr/cege/Diskussionspapiere /90_Geishecker.pdf.

Townsend, R.M. (1994) Risk and insurance in village India, Econometrica, vol. 62, no. 3, 539–591. Online at http://links.jstor.org.

UN (Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat) World Population Ageing 2009. Online at http://www.un.org/esa/population/publications/WPA2009/WPA2009-report.pdf.

UN (Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat) World Population Prospects (2008) The 2008 Revision. Online at http://esa.un.org/unpp.

World Bank (2001) World Development Report (WDR) 2000/2001: Attacking poverty. Online at http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/0,,contentMDK:20195989~pagePK:148956~piPK:216618~theSitePK:336992~isCURL:Y,00.html.

Appendices

Appendix 1 Questionnaires and participant information sheet

A1-1. Participant information sheet (English)

A1-2. Participant information sheet (Thai)

A1-3. Questionnaire cover sheet

A1-4. Questionnaire Cohort “Old” (English)

A1-5. Questionnaire Cohort “Old” (Thai)

A1-6. Questionnaire Cohort “Middle age” (English)

A1-7. Questionnaire Cohort “Middle age” (Thai)

A1-8. Questionnaire Cohort “Young” (English)

A1-9. Questionnaire Cohort “Young” (Thai)

Appendix 2 Variables and variable descriptions

Variable	Explanation
Age	Years
Education (Ref: Primary school or lower)	Dummy variable
Secondary school	1 if secondary school is highest education completed and 0 otherwise
Vocational school	1 if vocational school is highest education completed and 0 otherwise
Higher education	1 if bachelor, master or doctoral degree completed and 0 otherwise
Male (Ref.: Female)	Dummy variable (1 if male and 0 if female)
Marital status (Ref.: Married / With partner)	Dummy variable
Single	1 if single and 0 otherwise
Divorced / Widowed	1 if divorced or widowed and 0 otherwise
Region (Ref.: Northeast)	Dummy variable
Central	1 if living in central region and 0 otherwise
North	1 if living in northern region and 0 otherwise
South	1 if living in southern region and 0 otherwise
Working (Ref.: Not working)	Dummy variable (1 if working and 0 otherwise)
Wealth	Sum of financial assets and property (fixed categories ranked 1 for lowest and 8 for highest)
Monthly income	Average of highest and lowest daily income in the past 12 months in Thai Baht
Health	Dummy variable (1 if self-reported health problem or disability and 0 otherwise)
Income aspirations	Ranked on 7-point Likert scale
Comparison (Ref.: More than reference group)	Dummy variable
Income comparison	Having less income than comparison group ranked on 7-point Likert scale
Comparison of material possessions	Having less material possessions than comparison group ranked on 7-point Likert scale
Extraversion	Ranked on 7-point Likert scale
High vulnerability (1 dimension)	High vulnerability in 1 out of 5 aspects
High vulnerability (2 dimensions)	High vulnerability in 2 out of 5 aspects
High vulnerability (3 dimensions)	High vulnerability in 3 out of 5 aspects
High vulnerability (4 dimensions)	High vulnerability in 4 out of 5 aspects
High vulnerability (5 dimensions)	High vulnerability in all aspects
Relatively vulnerable (1 dimension)	Relative vulnerable in 1 out of 5 aspects
Relatively vulnerable (2 dimensions)	Relative vulnerable in 2 out of 5 aspects
Relatively vulnerable (3 dimensions)	Relative vulnerable in 3 out of 5 aspects
Relatively vulnerable (4 dimensions)	Relative vulnerable in 4 out of 5 aspects
Relatively vulnerable (5 dimensions)	Relative vulnerable in all aspects
High vulnerability (income)	Highly vulnerable in the income dimension only
High vulnerability (assets)	Highly vulnerable in the assets dimension only
High vulnerability (consumption)	Highly vulnerable in the consumption dimension only
High vulnerability (illness)	Highly vulnerable in the illness dimension only
High vulnerability (living arrangement)	Highly vulnerable in the living arrangement dimension only
Relative vulnerable (income)	Relatively vulnerable in the income dimension only
Relative vulnerable (assets)	Relatively vulnerable in the assets dimension only
Relative vulnerable (consumption)	Relatively vulnerable in the consumption dimension only
Relative vulnerable (illness)	Relatively vulnerable in the illness dimension only
Relative vulnerable (living arrangement)	Relatively vulnerable in the living arrangement dimension only

Appendix3 Descriptive statistics

Family Ties

The table below describes the relationship between family members of questionnaire responders. Two types of questions were used. Open-ended questions probed the responders for the number of hours they spend on various activities with their family. The others were strongly disagree, disagree, slightly disagree, neutral, slightly agree, agree, and strongly agree ranking with seven satisfaction/agreement levels (one being least satisfied or total disagreement, and, seven being most satisfied or total agreement).

Table A3-1 Mean and Standard Deviation of the Questions on Family Ties Categorized by Age Cohorts and Regions

	All		Age Cohorts						Region							
			Old Age		Middle Age		Young		South		Northeast		North		Central	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
How much time do you spend doing activities with your family each day? (hours per day)	6.83	6.26	7.61	7.04	7.00	6.61	6.49	5.74	8.25	6.84	6.66	6.18	6.89	5.62	6.37	6.65
I enjoy spending time with my family?	5.95	0.97	5.73	1.22	5.96	0.88	6.01	0.94	5.90	1.20	5.96	0.90	5.94	1.05	5.96	0.88
I am satisfied with the relationship I share(d) with your children?	6.42	0.78	6.20	1.06	6.37	0.76	6.56	0.62	6.47	0.71	6.39	0.83	6.41	0.74	6.43	0.79
I am satisfied with the relationship I share(d) with your grandchildren?	6.22	0.82	6.26	0.87	6.26	0.77	6.16	0.83	6.28	0.82	6.21	0.87	6.17	0.74	6.23	0.79
I am satisfied with the relationship I share(d) with your parent?	6.41	0.70	6.21	1.14	6.39	0.63	6.43	0.70	6.44	0.67	6.40	0.69	6.39	0.71	6.43	0.72
I am satisfied with the relationship I share(d) with your partner?	6.22	0.88	6.27	0.77	6.22	0.87	6.21	0.91	6.15	0.96	6.25	0.82	6.22	0.85	6.20	0.96
I am satisfied with the relationship I share(d) with your siblings?	6.08	0.89	5.89	1.12	6.04	0.83	6.16	0.85	6.17	0.93	6.06	0.91	6.08	0.80	6.07	0.89

The survey has found questionnaire responders to spend an average of 6.83 hours per day with their family. The old age group spends the most time with family at an average of 7.61 hours per day, followed by the middle age group at an average of 7 hours per day, and, the young group at an average of 6.45 hours per day. However, when asked if they enjoy their time with family, most people have given an agreeable rating of 5.95 out of the possible seven. The old age group is in least agreement at an average of 6.01 despite the fact that they spend more time with family than people from other age groups. Satisfaction is higher in the middle age group and the young group which is reciprocal to the amount of time spent on activities with the family. It appears that the longer time spent translates into lessened satisfaction.

When asked about their satisfaction with the interpersonal relationship with other family members such as parents, siblings, children and spouse, the average for all and

individual age groups is over six out of the possible seven, with one exception being the satisfaction old age people have with their siblings which is at 5.89 out of the possible seven which is nonetheless high. It can thus be concluded that Thai families in rural areas are extremely satisfied with the relationship between family members, regardless of their age group.

Considering separately by regions, we found the Southern responders spend the most time which is an average of 8.25 hours per day with their family. The Northerners spend the time with family at the second place at an average of 6.89 hours per day, followed by the Northeastern people at an average of 6.66 hours per day, and, the Central people spend the least time at an average of 6.37 hours per day. However, when asked if they enjoy their time with family, most people have given an agreeable rating of 5.90 – 5.96 out of the possible seven. The Southerners however is the least agreement at an average of 5.90 the fact that they spend more time with family than people from other regions. Satisfaction is higher in the Northern, the Northeastern and the Central people which are different direction to the amount of time spent on activities with the family. It appears that the longer time spent implies into less satisfaction.

When considered about their satisfaction with the interpersonal relationship with other family members, the average for all regions is over six out of the possible seven. Most people satisfy the relationship they shared with their children the most compare to other members in the families, with one exception being the satisfaction of the Northeastern people having with their parent the most.

Social Support

The table below describes the relationship between the questionnaire responders and the society. Two types of questions are used. Open-ended questions probed the responders for the number of friends and the number of hours they spend on various activities with their friends. The others were strongly disagree, disagree, slightly disagree, neutral, slightly agree, agree, and strongly agree ranking with seven satisfaction/agreement levels (one being least satisfied or total disagreement, and, seven being most satisfied or total agreement).

The survey has found questionnaire responders to have an average satisfaction on the relationship they share with their friends of 5.87 out of the possible seven. The middle age group is most satisfied, followed by the young group and the old age group, with group average satisfaction of 5.92, 5.88 and 5.76 respectively out of the possible seven. The average number of friends who questionnaire responders confide in but do not live with is 2.78 while there are 2.85 friends they can turn to when they are in a troubling situation. On the other hand, there are 3.22 friends questionnaire responders

are willing to offer assistance to when needed. This average number is consistent across all age groups (old age, middle age and young). The number of friends they can confide in and do not live with is lower than the number of friends they can turn to when they are in a troubling situation and the latter is still lower than the number of friends they to whom they are willing to offer assistance when needed.

Table A3-2 Mean and Standard Deviation of the Questions on Social Support Categorized by Age Cohorts and Regions

	All		Age Cohorts						Region							
			Old Age		Middle Age		Young		South		Northeast		North		Central	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
I am satisfied with the relationship I share with my friends	5.87	0.91	5.76	1.24	5.92	0.77	5.88	0.90	6.01	0.91	5.94	0.84	5.80	0.95	5.77	0.98
How many close friends (Whom you can confide in and who you do not live with, i.e. puean sanit) do you have?	2.78	1.96	2.95	1.95	2.83	1.87	2.69	2.03	2.90	1.77	2.87	2.16	2.93	1.79	2.42	1.83
How many friends do you have that you can fall back on when needed?	2.85	2.34	3.01	2.56	2.99	2.35	2.72	2.27	3.66	2.64	2.86	2.26	2.80	2.12	2.53	2.45
How many of your friends would you support if they were in need?	3.22	2.84	3.45	3.19	3.35	2.80	3.08	2.76	3.96	3.16	3.27	2.80	3.12	2.65	2.95	2.89
How much time do you spend with your friends each week? (Hours per week)	8.10	10.02	7.01	8.71	7.34	8.83	8.95	11.04	10.66	11.73	8.05	9.88	7.67	9.57	7.40	9.63
I usually play an important role in planning and carrying out new community initiatives	3.01	1.86	2.84	1.74	3.33	1.97	2.84	1.79	3.24	2.01	2.97	1.80	3.40	1.78	2.57	1.88
I usually take the initiative in making new friends.	3.45	1.93	3.11	1.80	3.32	1.91	3.64	1.97	3.52	1.89	3.52	1.94	3.46	1.88	3.26	1.99

The particulars of which are as follows: Data review by age group reveals that people in the old age group have an average of 2.95 friends they can confide in and do not live with and an average of 3.00 friends they can turn to when they are in a troubling situation, while there are an average of 3.45 friends to whom they are willing to offer assistance when needed. People in the old age group have an average of 2.83 friends they can confide in and do not live with and an average of 2.99 friends they can turn to when they are in a troubling situation, while there are an average of 3.35 friends to whom they are willing to offer assistance when needed. Similarly, people in the young group have an average of 2.69 friends they can confide in and do not live with and an average of 2.72 friends they can turn to when they are in a troubling situation, while there are averages of 3.08 friends to whom they are willing to offer assistance when needed.

While the old age group may have lowest satisfaction with their relationship with friends, they have more friends in all three categories than any other age group. Additionally, these statistics illustrate that questionnaire responders, regardless of the age group they are in, have similar numbers of friends they can turn to when they are in a troubling situation and friends to whom they are willing to offer assistance when needed; and, that the former is only slightly lower than the latter. From a pessimistic viewpoint, this may suggest that questionnaire responders, regardless of the age group

they are in, feel that they are supporting their friends more than they are supported by their friends, which in turn suggests the uncertainty they have with regard to their own friends.

When asked about the amount of time spent on activities with friends, the questionnaire responders spend an average of 8.10 hours per week with the young group spending the most time with friends compared to the middle age group and the old age group at 8.95, 7.34 and 7 hours per week respectively. A comparison of the number of friends of people in the different age groups reveal that, while young people may spend the most time with friends, the number of close friends they can turn to when they are in a troubling situation and the number of friends to whom they are willing to offer assistance when needed are lower than the middle age group or the old age group whose population spend the least time with friends but have the highest number of friends they can turn to when they are in a troubling situation and friends to whom they are willing to offer assistance when needed.

With regard to the forming of new friendly relationship, questionnaire responders are in agreement at the level of 3.45 out of the possible seven. People in the old age group agree that they have new friends regularly at 3.11, the middle age group at 3.32 and the young group at approximately 3.64. It can be inferred from this data that younger people are more outgoing. This is because younger people associate, mingle and spend more time on activities with friends and at a position where they meet more new friends than people in the other age groups. People in the middle age and old age usually spend the majority of their time on their work and family.

Data review by regions discloses that people in the Southern have an average of 2.90 friends they can confide in and do not live with and an average of 3.66 friends they can turn to when they are in a troubling situation, while there are an average of 3.96 friends to whom they are willing to offer assistance when needed. People in the Northeastern have an average of 2.87 friends they can confide in and do not live with and an average of 2.86 friends they can turn to when they are in a troubling situation, while there are an averages of 3.27 friends to whom they are willing to offer assistance when needed. Similarly, people in the Northern have an average of 2.93 friends they can confide in and an average of 2.80 friends they can turn to when they are in a troubling situation, while there are an average of 3.12 friends to whom they are willing to offer assistance when needed. People in the Central have an average of 2.42 friends they can confide in and do not live with and an average of 2.53 friends they can turn to when they are in a troubling situation, while there are an averages of 2.95 friends to whom they are willing to offer assistance when needed.

Noticeable, the people in the Central have the least numbers of friends in all categories while mostly people in the Southern have the most number of friends compared to other regions, with one exception being friends they can confide in and do

not live with which ranks in the second place. These reflect the satisfaction of the relationship they share with their friends which the people in the Southern get the highest score which is an average of 6.00 out of the possible seven. In contrast, the Central people have the least satisfaction of the relationship they share with their friends since they have the least numbers of friends in all categories. The satisfactions of the relationship they share with their friend of Southern, Northeastern, Northern, and Central people are 6.00, 5.94 5.80 and 5.77 out of the possible seven, successively.

When asked about the amount of time spent on activities with friends, the Southern responders spend an average of 10.66 hours per week with spending the most time with friends compared to the Northeastern, Northern, and Central people at 8.05, 7.67 and 7.40 hours per week respectively. In conclusion, the data reveal the similar results as the number of friends which is the least satisfaction of the relationship they share with their friends, the least time they spend with their friends each week and the least they take the initiative in making new friends.

Community Initiative

As for creativity and involvement in community initiatives, it is found that approximately 76.40% of the responders are not a member of projects or activities of the community in which they live while the remaining 23.60% are. Involvement is reported at 23.60%, 31.28% and 19.57% for old age, middle age and young groups respectively. As the figures suggest, the middle age group is more involved in community initiatives than other age groups. Involvement of young group is comparable to that of old age group with the latter being only slightly greater.

Table A3-3 Percentage of Respondents Who have the Community Initiative Categorized by Age Cohorts and Regions

		All		Age Cohort						Region							
				Old Age		Middle Age		Young		South		Northeast		North		Central	
		Obs	%	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%
Valid	No	1,039	76	156	80	334	69	549	81	110	71	416	75	244	74	269	85
	Yes	321	24	38	20	152	31	131	19	45	29	141	25	87	26	48	15
Total		1,360	100	194	100	486	100	680	100	155	100	557	100	331	100	317	100
Missing		16															
Total		1,376															

When asked about their role in the planning or the establishment of community clubs, questionnaire responders indicated that their significance is at 3.01 out of the possible seven. Significance is reported at 2.84, 3.33 and 2.84 for old age, middle age and young groups respectively. This corresponds with involvement in community

initiatives as the middle age group is most involved and believes that they are important or play an instrumental role in the planning of community initiatives. The level for old age and young people are very similar and their perception of self-worth in this area is consequently low. They play a supporting or follower's role rather than of a leader in the community in which they live.

Regarding by region, when asked about their role in the planning or the establishment of community clubs, questionnaire responders indicated that their significance is at 3.23, 2.97, 3.40, and 2.57 out of the possible seven for the Southerners, the Northeasterners, the Northerners, the Central people. It additionally shows that approximately 84.86% of the responders in Central part are not a member of projects or activities of the community in which they live while the remaining 15.14% are and it is the lowest rate of all. Involvement is reported at 29.03% of the Southern are members of any community initiative which is the highest percentage compared to other regions. Additionally, the survey is reported at 25.31% and 26.28% for the Northeasterners and the Northerners, respectively.

Work

The table below describes the opinion of questionnaire responders on workplace relationships. Only strongly disagree, disagree, slightly disagree, neutral, slightly agree, agree, and strongly agree ranking were used with seven satisfaction/agreement levels (one being least satisfied or total disagreement, and, seven being most satisfied or total agreement).

Table A3-4 Mean and Standard Deviation of the Questions on Work Categorized by Age Cohorts and Regions

	All		Age Cohorts						Region							
			Old Age		Middle Age		Young		South		Northeast		North		Central	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
I am satisfied with the work I have	5.87	1.07	5.83	1.19	6.06	0.87	5.73	1.17	5.96	1.11	5.79	1.15	5.86	0.93	5.98	1.03
My colleagues accept and respect me	5.82	0.93	5.94	0.95	5.92	0.90	5.72	0.94	5.79	1.08	5.78	0.91	5.83	0.82	5.88	0.99
I accept an respect my colleagues	5.90	0.91	5.92	0.98	5.97	0.88	5.83	0.92	5.83	1.06	5.85	0.88	5.96	0.76	5.93	1.00

The first items indicated the level of satisfaction questionnaire responders have with their current work. From the data appearing in the table, questionnaire responders are satisfied with their work at the level of 5.87 while perceiving that their colleagues accept and respect them at the level of 5.82 and that they accept and respect their colleagues at the level of 5.90 out of the possible seven. This means responders believe

that they believe that they accept and respect their colleagues more than the latter in return. The particulars of which are as follows:

People in the old age group are satisfied with their work at the level of 5.8 while perceiving that their colleagues accept and respect them at the level of 5.94 and that they accept and respect their colleagues at the level of 5.92 out of the possible seven. People in the middle age group are satisfied with their work at the level of 6.06 while perceiving that their colleagues accept and respect them at the level of 5.92 and that they accept and respect their colleagues at the level of 5.97 out of the possible seven. People in the young group are satisfied with their work at the level of 5.73 while perceiving that their colleagues accept and respect them at the level of 5.71 and that they accept and respect their colleagues at the level of 5.83 out of the possible seven. As you can see, middle age people are most satisfied with their work. This is the age where people usually are most successful with their work compared to other age groups. Following them in the level of satisfaction is the old age group and the young group which has most recently commenced with their career and started to build a life for themselves and their family. Questionnaire responders generally feel that they accept and respect their colleagues more than the latter do in return. This is true for the middle age group and the young group while the old age group believes that they accept and respect their colleagues less than the latter do.

From the regional data, people in the South are satisfied with their work at the level of 5.96 while perceiving that their colleagues accept and respect them at the level of 5.79 and that they accept and respect their colleagues at the level of 5.83 out of the possible seven. People in the Northeastern are satisfied with their work at the level of 5.79 while perceiving that their colleagues accept and respect them at the level of 5.78 and that they accept and respect their colleagues at the level of 5.85 out of the possible seven. People in Northern are satisfied with their work at the level of 5.86 while perceiving that their colleagues accept and respect them at the level of 5.83 and that they accept and respect their colleagues at the level of 5.96 out of the possible seven. People in the Central part are satisfied with their work at the level of 5.98 while perceiving that their colleagues accept and respect them at the level of 5.88 and that they accept and respect their colleagues at the level of 5.93 out of the possible seven. As you can see, the Central people are most satisfied with their work where people usually get the most opportunity of working since Central region is the center of commercial, industrial, as well as agricultural business compared to other regions. Following them in the level of satisfaction is the Southern, the Northern and the Northeastern.

Financial Security

This section is an analysis of financial security. Only strongly disagree, disagree, slightly disagree, neutral, slightly agree, agree, and strongly agree ranking were used with seven satisfaction/agreement levels (one being least satisfied or total disagreement, and, seven being most satisfied or total agreement).

Table A3-5: The Mean and Standard Deviation of the Questions on Financial Security Categorized by Age Cohorts and Regions

	All		Age Cohorts						Region							
			Old Age		Middle Age		Young		South		Northeast		North		Central	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
I am satisfied with my financial status	4.76	1.65	4.79	1.62	4.80	1.65	4.72	1.66	5.05	1.46	4.61	1.70	4.83	1.62	4.81	1.67
I have enough money to cover daily expenses	4.79	1.66	4.48	1.79	4.69	1.71	4.95	1.56	5.40	1.30	4.54	1.68	4.70	1.69	5.04	1.63
I feel I have less income than my comparison group	4.22	1.44	4.43	1.44	4.31	1.39	4.09	1.46	3.88	1.33	4.44	1.39	4.22	1.47	3.98	1.47
I am satisfied with my material possessions	5.63	1.10	5.53	1.15	5.74	1.00	5.57	1.14	5.65	1.15	5.50	1.15	5.73	0.99	5.74	1.06
I feel I have less material possessions than my comparison group	4.03	1.40	4.29	1.33	4.10	1.40	3.91	1.41	3.70	1.35	4.23	1.34	4.08	1.46	3.80	1.41

Questionnaire responders are satisfied with their financial security at the level of 4.76 out of the possible seven. Data review by age group reveals that the middle age group is most satisfied with their financial security at the level of 4.80, followed by the old age group and the young group at 4.79 and 4.72 respectively. This is because the middle age group is most successful with their work and thus of the greatest financial security compared to other age groups. They are more capable of generating income than other age groups and that translates into greater satisfaction with their financial security. The old age group follows as they are on a downward curve with reduced revenue generation capability. The number of channels through which they can generate revenue has dwindled as well. Most people in this age group require assistance or care from their children or relatives. As they must depend on others for daily spending, they sense the uncertainty and their satisfaction with financial security drops below that of middle age people.

As for other questions pertaining to financial security, it is found that people in rural areas generally feel that they have enough money for daily spending at the level of 4.79 while they feel that they have less income than their comparison group at the level of 4.22 out of the possible seven. This means that questionnaire responders possibly are not satisfied with their financial security. Data review by age group reveals that younger people have enough money for daily spending most at the level of 4.95, followed by the middle age group at the level of 4.69 and the old age group at the level of 4.48. This is

because younger people receive financial support from their parents and relatives. When their income is less than their spending, they are at liberty to seek assistance from their parents. They consequently are not pressured to work for more revenue and feel that they have enough money to spend more than the other age groups despite their lowest satisfaction with financial security.

Additionally, younger people feel that they have less income than their comparison group at the level of 4.09 while the middle age group feels more so at the level of 4.43 and the old age group even more so at the level of 4.31. This corresponds with their opinion on ownership of possessions. Younger people believe that they own fewer possessions than their comparison group at the level of 3.91 while the middle age group feels more so at the level of 4.10 and the old age group even more so at the level of 4.29. Meanwhile, older people feel that they have less income and fewer possessions than their comparison group as they feel insecure about the imminent future. It is found that older people are less satisfied with their possessions than other age groups as well at the level of 5.53, compared to the middle age group which is most satisfied at the level of 5.74 and the young group at the level of 5.57 out of the possible seven.

Data reveals that the Southern people is most satisfied with their financial security at the level of 5.05 out of the possible seven, followed by the Northern, the Central, and the Northeastern people at 4.83, 4.81 and 4.61, respectively. As for other questions pertaining to financial security, it is found that people in rural areas generally feel that they have enough money for daily spending at the level of 5.40, 5.04, 4.70, and 4.54 for people in the Southern, the Central, the Northern, and the Northeastern, decently. Consequently, the Southern people have enough money for daily spending most, as well as they are the least agree that they have less income than their comparison group at the level of 3.88. The Northeasterners however have money for daily spending the least and they are the most agree that they have less income than their comparison group at the level of 4.44 out of the possible seven.

The Southern people feel that they have less possession than their comparison group at the level of 3.70 while the Central people feels more so at the level of 3.80 and the Northern people even more so at the level of 4.08. Then the Northeastern people feel that they have less possession on material than their comparison group the most at the level of 4.23 out of the possible seven. However, the levels of satisfaction on their material possessions are different. The Central people have most satisfaction level followed by the Northerners, the Southerners and the Northeasterners which are 5.74, 5.73, 5.65, and 5.50, respectively.

Personal Health

This section deals with personal health. Strongly disagree, disagree, slightly disagree, neutral, slightly agree, agree, and strongly agree ranking were used with

seven satisfaction/agreement levels (one being least satisfied or total disagreement, and, seven being most satisfied or total agreement). Other questions are open-ended and designed to probe for the amount of time spent on exercises and the number of times the questionnaire responders had to seek medical advice.

Table A3-6 Mean and Standard Deviation of the Questions on Personal Health Categorized by Age Cohorts and Regions

	All		Age Cohorts						Region							
			Old Age		Middle Age		Young		South		Northeast		North		Central	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
I am satisfied with my personal health status	5.31	1.66	4.73	1.80	5.20	1.71	5.55	1.52	5.52	1.42	5.19	1.74	5.32	1.62	5.41	1.63
Compared with other people in same age group, I think my health is good	5.02	1.56	4.56	1.66	5.10	1.58	5.10	1.50	5.26	1.35	4.91	1.59	5.09	1.59	5.04	1.58
I have at least three nutritious meals a day	5.88	1.11	5.93	1.11	5.88	1.12	5.86	1.10	5.95	1.01	5.85	1.17	5.93	1.04	5.84	1.12
I am satisfied with the health care provision in this amphur	5.48	1.33	5.87	1.07	5.69	1.22	5.23	1.41	5.40	1.51	5.53	1.27	5.60	1.21	5.31	1.44
How much time do you spend exercising each week? (Hours per week)	4.42	6.08	4.13	5.51	4.39	6.36	4.53	6.04	5.77	7.81	3.97	5.31	5.72	6.79	3.25	5.23
How many times did you consult a medical doctor last year? (Times per year)	3.44	4.94	6.72	6.52	3.53	4.96	2.43	3.87	2.88	3.59	3.73	5.57	3.55	4.12	3.10	5.03

The first matter reviewed is the level of satisfaction with one's health. It is found that the level is at 5.31 with questionnaire responders feeling that they are healthier than other people of the same age at the level of 5.02 out of the possible seven. People in the old age group are least satisfied with their health, followed by the middle age group and the young group at the level of 5.20 and 5.55 respectively. It can thus be inferred that satisfaction with one's health lowers as one ages. Additionally, when comparing one's health with others of the same age group, the old age group believes that their health is better than that of others of the same age group at the level of 4.56, meaning that they believe that their health is worse than others in the group. That is followed by young people at the level of 5.10 and the middle age group at the level of 5.10 and the middle age group at the level of 5.10.

Questionnaire responders generally agree that they have three nutritious meals per day at the level of 5.88 out of the possible seven. People in the old age group agree most with this, followed by the middle age group and the young group at 5.93, 5.88 and 5.85 respectively. Additionally, it is found that the old age group is most satisfied with the healthcare management of the district in which they live, followed by the middle age group and the young group at the level of 5.87, 5.69 and 5.22 respectively. People in the old age group had to seek medical advice most frequently in the past year,

compared to people in other age groups, at an average of 6.72 times per year in the past year or once every two months. Middle age people seek medical advice less frequently than older people, followed by younger people at an average of 3.53 and 2.43 times per year respectively. This suggests that health issues are found more in older people who would then need to see the doctor more regularly. Nevertheless, when reviewing the number of exercise sessions, it should be noted that older people have fewer occasions to work out compared to other age groups at approximately 4.13 times per week and more in proportion with their age. Middle age people exercise at an average of 4.39 times per week. Younger people exercise at an average of 4.53 times per week which is another reason why it is easier to promote good health in younger people.

The satisfaction on one's health is firstly revealed. It is found that the level of satisfaction on the personal health status is highest at 5.52 for the Southern people followed by Central people (5.41), Northern people (5.32) and the Northeastern people (4.91). Noticeably, this corresponds with the number of times they needed to seek medical advice in the past year. People in the Northeastern had to seek medical advice most frequently in the past year, compared to people in other regions, at an average of 3.73 times per year in the past year. Then the Northern people had less to consult a medical doctor for 3.55 times per year in the past year followed by Central and Southern people 3.10, and 2.88, successively. This means the more they use the medical facilities, the least they satisfy on their health status.

Moreover, the Southern people feel that they are healthier than other people of the same age at the level of 5.26 out of the possible seven which is also the highest. Like level of satisfaction on the personal health status, the he Northeastern people have the lowest which is 4.91 while Northern people have 5.09 and the Central people have 5.04 out of seven. Southern responders generally agree most that they have three nutritious meals per day at the level of 5.95 out of the possible seven followed by the Northern, Northeastern, and Central people at 5.93, 5.85 and 5.84 respectively. However, it is found that the people in Northern is most satisfied with the healthcare management of the district in which they live at the level of 5.60 out of the possible seven followed by Northeastern, Southern, and Central people at the level of 5.53, 5.40 and 5.31, respectively.

Nevertheless, when reviewing the number of exercise sessions, it should be noted that Central people have fewer occasions to work out compared to other regions at approximately 3.25 times per week. Northeastern people exercise at an average of 3.97 times per week. Northern people exercise at an average of 5.72 times per week. Lastly, Southern people spend the most frequent times of exercising which average of 5.77 times per week, so maybe this is one of the reasons that the Southern people get the highest score on satisfaction with their personal health status.

Table A3-7 Percentage of Health Problems and Severity of the Respondents Categorized by Age Cohorts

		All		Old Age		Middle Age		Young	
		Obs	%	Obs	%	Obs	%	Obs	%
Do you have a health problem or disability?									
Valid	No	907	67	71	37	296	61	540	79
	Yes	453	33	123	63	190	39	140	21
Total		1,360	100	194	100	486	100	680	100
	Missing	16				3			
Total		1,376				489			
If yes, indicate the severity									
Valid	Very severe	43	10	14	11	20	11	9	6
	Quite severe	113	25	32	26	50	26	31	22
	Not severe	295	65	77	63	119	63	99	71
Total		451	100	123	100	189	100	139	100
	Missing	925		71		300		541	
Total		1,376		194		489		680	

The data indicates that generally 33.31% of the people have a health issue. Of this population, 9.53% experience very severe symptoms, 25.06% experience considerably severe symptoms while 65.41% do not feel the gravity of the illness. A breakdown by age group clearly indicates that old age group has the highest number of people with health issues at 63.40% and less in proportion with their age. The middle age group has 39.09% of its population with health issues and the number is 20.59 for the young group.

The old age group has the number of people with very severe symptoms at 11.38%, followed by considerably severe symptoms at 26.02% and not severe symptoms at 62.60%. The middle age group has slightly lower number of people with very severe symptoms at 10.58%, followed by considerably severe symptoms at 26.46% and not severe symptoms at 62.96%. The young group has the number of people with not severe symptoms at 71.22%, followed by considerably severe symptoms at 22.30% and severe symptoms at 6.47%.

Generally speaking, older people invariably have more health issues with other age groups. The number of affected people is greater, as is the severity of the illness. This explains why older people are least satisfied with their health compared to other age groups. They have more requirements of medical services and treatments. Older people have had more medical advices than other age groups in the last year as they are weak. Their elderly state has compelled them to feel that they have poorer health compared to other people of the same age. They clearly feel more insecure about their health than other age groups. Nevertheless, they are more satisfied with the medical services of the district in which they live than other age groups.

Table A3-8 Percentage of Health Problems and Severity of the Respondents Categorized by Regions

		South		Northeast		North		Central	
		Obs	%	Obs	%	Obs	%	Obs	%
Do you have a health problem or disability?									
Valid	No	101	65.16	377	67.68	217	65.56	212	66.88
	Yes	54	34.84	180	32.32	114	34.44	105	33.12
Total		155	100	557	100	331	100	317	100
If yes, indicate the severity									
Valid	Very severe	1	1.89	25	13.89	13	11.4	4	3.85
	Quite severe	4	7.55	52	28.89	35	30.7	22	21.15
	Not severe	48	90.57	103	57.22	66	57.89	78	75
Total		53	100	180	100	114	100	104	100
	Missing	102		377		217		213	
Total		155		557		331		317	

Considering by regions, people in the South have highest proportion of the people having a health issue which is 34.84%. Of this proportion, only 1.89% experience very severe symptoms, 7.55% experience considerably severe symptoms while 90.57% do not feel the gravity of the illness. The Northeastern people have 32.32% of its respondents with health issues. From this proportion, 13.89% experience very severe symptoms, 28.89% experience considerably severe symptoms while 57.22% do not severe of the illness. The Northern people have 34.44% of its respondents with health issues. This group has the number of people with very severe symptoms at 11.40%, followed by considerably severe symptoms at 30.70% and not severe symptoms at 57.89%. Additionally, there are 33.12% of people living in Central have health problems or disability and considerably very severe symptoms at 3.85%, quite severe symptoms at 21.15% and not severe symptoms at 75.00%.

It clearly indicates that even the Southern people has the highest number of people with health issues but the least in proportion of experiencing very severe symptoms (Highest proportion of not feel the severe symptoms), they have the highest satisfaction level of all. Nonetheless, the Northeastern people has lowest number of people with health issues but the highest in proportion of experiencing very severe symptoms (lowest proportion of not feel the severe symptoms), they have the lowest satisfaction level.

Religion

Religion provides an anchor for people in rural Thailand to hold on to. The majority of Thais in rural areas are Buddhists, followed by Muslims and Christians. Strongly disagree, disagree, slightly disagree, neutral, slightly agree, agree, and strongly agree ranking were used with seven satisfaction/agreement levels (one being least satisfied or total disagreement, and, seven being most satisfied or total

agreement). Other questions are open-ended and designed to probe for the number of times they have visited their religious site such as temple, mosque or church.

Table A3-9: The Mean and Standard Deviation of the Questions on Religion Categorized by Age Cohorts and Regions

	All		Age Cohorts						Region							
			Old Age		Middle Age		Young		South		Northeast		North		Central	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
To what extent are you satisfied with your religious life?	6.32	0.75	6.42	0.63	6.33	0.69	6.27	0.80	6.38	0.69	6.34	0.81	6.18	0.76	6.38	0.60
When I have problems, my belief in my religion will help me solve the problem	5.97	1.01	6.25	0.84	6.06	0.92	5.84	1.09	5.99	1.00	6.06	0.97	5.89	0.99	5.91	1.11
My religious teachings are applicable in my life	6.21	0.86	6.42	0.66	6.31	0.76	6.09	0.96	6.17	0.82	6.27	0.86	6.18	0.77	6.17	0.98
How often do you go to the temple/ mosque/ church to pray? (Times per week)	1.29	1.53	2.10	2.19	1.24	1.42	1.09	1.28	1.20	1.27	1.55	1.84	1.33	1.18	0.84	1.21

The results suggest that questionnaire responders are satisfied with their religion at the level of 6.32. When they are experiencing a problem, they believe that religious practice can help resolve their situation at the level of 5.97. They agree that religious teachings can be applied to daily life at the level of 6.21. Questionnaire responders on average visit a religious site 1.29 times per week.

Data review by age group reveals that the old age group is most satisfied with their religion, most agreeable with the statement that religious practice can help resolve their situation, and, visits religious sites most frequently in proportion with their age. All three figures are lowest in young people. The particulars of which are as follows:

The old age group is most satisfied with their religion at the level of 6.42, followed by the middle age group and the young group at the level of 6.33 and 6.27 respectively. The old age group is most agreeable with the fact that religious practice can help resolve their situation at the level of 6.24, followed by the middle age group and the young group at the level of 6.06 and 5.84 respectively. The ranking remains true for the other question items. The old age group is most agreeable with the fact that religious teachings can be applied to daily life at the level of 6.42. They are the group with greatest frequency of visit to religious site as well at an average of 2.10 times per week, followed by the middle age group and the young group who are least agreeable with the fact that religious teachings can be applied to daily life at the level of 6.09 and whose frequency of visit to a religious site is lowest at an average of 1.09 times per week.

The regional data reveals that the Central people are the most who satisfy with their religion at level of 6.38 out of the possible seven followed by Southern, Northeastern and Northern people which the levels of satisfaction are 6.38, 6.34 and 6.18, respectively. Although the Central have the highest score for the satisfaction level,

the highest acceptance of the belief on their religion is not on the Central region. When the Northeastern people are experiencing a problem, they are most agreeable that religious practice can help resolve their situation at the highest level compared to other regions which is 6.06 as well as they agree that religious teachings can be applied to daily life at the highest level of 6.27. Questionnaire responders from the Northeastern on average visit a religious site the greatest frequency at the average of 1.55 times per week.

The Southern people are agreeable with the fact that religious practice can help resolve their situation at the level of 5.99, followed by Central and Northern people at the level of 5.91 and 5.89 respectively. The Northern people agree with the fact that religious teachings can be applied to daily life at the level of 6.18 followed by Southern and Central people at the level of 6.17 and 6.17 respectively. The ranking remains true for another question. The people in Northeast are the group with greatest frequency of visit to religious site as well at an average of 1.55 times per week, followed by the Northern, Southern and Central people at the level of 1.33, 1.20 and 0.84 times per week, respectively.

Community

This section studies the bond among people within the community and the living conditions thereof. Strongly disagree, disagree, slightly disagree, neutral, slightly agree, agree, and strongly agree ranking were used with seven satisfaction/agreement levels (one being least satisfied or total disagreement, and, seven being most satisfied or total agreement). Other questions are open-ended and designed to probe for the number of friends and relatives they have living in the same community.

Table A3-10 Mean and Standard Deviation of the Questions on Community Categorized by Age Cohorts and Regions

	All		Age Cohorts						Region							
			Old Age		Middle Age		Young		South		Northeast		North		Central	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
I am satisfied with the living conditions in this village	5.75	1.15	5.99	1.08	5.94	1.07	5.55	1.18	5.62	1.20	5.83	1.10	5.87	0.99	5.55	1.31
This is a tight, close knit community	5.90	1.14	6.09	1.15	6.05	1.05	5.74	1.17	5.90	1.14	6.03	1.00	5.93	1.03	5.66	1.40
This is friendly place to live	5.96	0.97	6.09	0.91	6.09	0.94	5.84	0.99	5.88	1.07	6.03	0.92	6.00	0.86	5.85	1.11
This is a place where local people look after each other	5.92	1.08	6.13	0.93	6.09	1.00	5.74	1.15	5.83	1.06	6.06	0.97	5.99	0.94	5.64	1.33
Most people in this area trust each other	5.60	1.26	5.96	1.18	5.82	1.14	5.34	1.30	5.54	1.30	5.72	1.20	5.66	1.13	5.36	1.41
I am happy asking neighbors to keep an eye on my belongings	5.77	1.25	5.90	1.30	5.93	1.16	5.62	1.28	5.68	1.31	5.86	1.21	5.80	1.13	5.62	1.39
How many of your friends are living in this village?	13.44	37.71	11.64	22.72	18.53	59.05	10.42	14.88	32.26	98.35	10.65	16.11	7.81	7.49	14.76	24.89
How many of your (extended) family members are living in this village?	13.15	17.10	10.17	15.55	12.75	16.60	14.27	17.77	19.31	26.29	11.95	13.33	10.83	11.37	14.69	21.13

The table shows that questionnaire responders are satisfied with the living conditions of their own village at the level of 5.75, agree that people in the village or the

community share a close bond at the level of 5.90 and that there community is an inviting one at the level of 5.96. Additionally, questionnaire responders agree that people in the community usually help one another and are trustworthy at the level of 5.92 and 5.60 out of the possible seven. Questionnaire responders agree at the level of 5.77 that they can ask their neighbors to mind their belongings when they are away. They have an average of thirteen friends, family members or relatives living in the same village.

Data review by age group reveals that older people are most satisfied with the community in which they live than other age groups at the level of 5.99, followed by the middle age group at the level of 5.94 and the young group at the level of 5.55. This can be explained by the fact that older people are more familiar with their neighbors and other members of the community while younger people want to go out and work in other localities in order to earn more, resulting in lower satisfaction with their community. Further, it is found that the young group is least agreeable with the fact that people in the village or the community share a close bond at the level of 5.74 and that there community is an inviting one at the level of 5.84. These figures are 6.05 and 6.09 respectively for the middle age group, and, 6.09 and 6.09 out of the possible seven for the old age group.

With regard to trust within the community, older people are most agreeable at the level of 6.13 with the idea that members of the community in which they live help one another. They are followed by the middle age group at the level of 6.09 and the young group at the level of 5.74. The old age group believes most at the level of 5.95 that people within the community can trust one another, followed by the middle age group and the young group at the level of 5.82 and 5.34 respectively. Nevertheless, when asked about the trust in their neighbors and whether they are willing to seek assistance to help mind their belongings, the middle age group is most agreeable with the idea at the level of 5.93, followed by the old age group at the level of 5.90 and the young group at the level of 5.62.

An analysis of the number of friends and relatives in the same community reveals that middle age people have the highest average number of friends and relatives at approximately 31, comprising of approximately 18.52 friends and 12.75 relatives. Young people have an average of approximately 10.42 friends and 14.27 relatives. Older people have approximately 11.64 friends and an average of approximately 10.17 relatives in the same community. It can be noticed that the number of relatives in the same community of older people is lowest as some might have passed away previously. Middle age people have the greatest number of friends in the same village as people their age are most involved with community activities and lead more community activities compared to other age group as explained above. This has afforded them the chance to meet and develop a positive relationship with people in the same community.

The regional data reveals that the Northern people are the most who satisfy with their living condition in the village at level of 5.87 out of the possible seven followed by Northeastern, Southern and Central people which the levels of satisfaction are 5.83, 5.62 and 5.55, respectively. According to the table, we knows that people in the Northeastern are the most agreeable that in the village or the community share a close bond at the level of 6.03 followed by Northern, Southern, and Central people at the level of 5.93, 5.90, and 5.55, successively. Additionally, the ranking remains true for other questions. People in the Northeastern are the most agreeable that there community is an inviting one at the level of 6.03 out of the seven followed by Northern, Southern, and Central people at the level of 6.00, 5.88, and 5.85, respectively. Northeasterners are also the most agreeable on that in the community usually, look after each other (6.06) and are trustworthy (5.72), as well as agree that they can ask their neighbors to mind their belongings when they are away at the level of 5.86 out of the possible seven followed by Northern, Southern, and Central people. Noticeably, the levels of agreeable on community tight and trustworthy of the neighbors have some correlation with the level of satisfaction on the living conditions in the village. As you can see, if the levels of agreeable are low, the level of satisfaction is also low.

An analysis of the number of friends and relatives in the same community reveals that the Southern people have the highest average number of friends and relatives at approximately 51.57, comprising of approximately 32.26 friends and 19.31 relatives following with the Central people have an average of approximately 14.76 friends and 14.69 relatives. Northeastern people are ranked on the third which have averagely 10.65 friends and an average of 11.95 relatives in the same community. Also, the Northerners have the lowest average number of both at averagely 7.81 friends and 10.83 relatives. Regarding to the data, we can conclude that people in the Southern seems having more extended family compared to other regions.

Government

This section is an analysis of one's opinion on the government and its policies. Strongly disagree, disagree, slightly disagree, neutral, slightly agree, agree, and strongly agree ranking were used with seven satisfaction/agreement levels (one being least satisfied or total disagreement, and, seven being most satisfied or total agreement).

The first item reviewed is the questionnaire responders' satisfaction with the governmental policies where financial subsidy for healthcare and treatment for the elderly is concerned. It is found that questionnaire responders' general agreement is at the level of 4.57 which is lower than all other categories. The middle age group is most satisfied, followed by the old age group and the young group at the level of 4.69, 4.59 and 4.47 respectively. When asked about the government's communication with the

communities, it is found that questionnaire responders' generally feel at the level of 4.72 that the government is providing adequate information on the change in policy such as the information on the social security fund for the elderly or the health insurance plan for all. The middle age group is most agreeable at the level of 4.88, followed by the old age group at the level of 4.70 and the young group at the level of 4.61. This is probably due to the fact that younger people do not pay as much attention to these kinds of information as the people in the old age and the middle age group. Additionally, it is found that the questionnaire responders on average believe that they will have a chance to become involved with political issues or the politics at a very low level of 3.15. The middle age group is at the lowest level of 3.01, the young group is at the highest level of 3.19 while the old age group is approximately 3.14.

Table A3-11 Mean and Standard Deviation of the Questions on Government Categorized by Age Cohorts and Regions

	All		Age Cohorts						Region							
			Old Age		Middle Age		Young		South		Northeast		North		Central	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
In terms of financial support, the government has done enough for the health and medical care of the elderly	4.57	1.74	4.59	1.77	4.69	1.78	4.47	1.71	4.94	1.59	4.26	1.82	4.74	1.65	4.73	1.70
The government have provided me with sufficient information on policy changes	4.72	1.54	4.70	1.49	4.88	1.50	4.61	1.57	4.74	1.52	4.61	1.61	4.82	1.35	4.79	1.61
I feel that I have the possibility to engage in politically relevant issues	3.15	1.87	3.14	1.89	3.09	1.94	3.19	1.82	3.09	1.96	3.19	1.81	3.42	1.85	2.80	1.90

The regional data shows that the Southern responders most satisfaction with the governmental policies where financial subsidy for healthcare and treatment for the elderly is concerned compared to other regions. It is found that Southern responders' general agreement is at the level of 4.94 which is higher than all other categories. The Northeastern people are the least satisfied, followed by the Central and the Northern people at the level of 4.26, 4.73 and 4.74 respectively. When asked about the government's communication with the communities, it is found that Northern' generally feel highest agreed at the level of 4.61 that the government is providing adequate information on the change in policy such as the information on the social security fund for the elderly or the health insurance plan for all followed by the Central, the Southern, and the Northeastern people at the level of 4.79, 4.74, and 4.61, successively. Next, the Northern is most agreeable at the level of 3.42 out of the possible seven for the agreeable of possibility to engage in the politically relevant issues, followed by the Northeastern people at the level of 3.19, the Southern people at the level of 3.09, and the Central at the level of 2.80.

Table A3-12 Types of Welfare Should Government Provide to the Elderly and the Mean and Standard Deviation of Preferred Amount of Government Allowance Categorized by Age Cohorts and Regions

	All	Age Cohort			Region			
		Old Age	Middle Age	Young	South	Northeast	North	Central
Government living allowance	1210	176	434	600	124	512	308	266
Day care center	857	108	307	442	99	374	180	204
Multipurpose center	842	108	294	440	81	371	197	193
Home care in case of chronic diseases	623	73	223	327	51	278	135	159
Support of family member who provides home care	475	49	168	258	55	199	109	112
Continuing education	254	23	92	139	20	105	50	79
Preferred amount of government living allowance: **Mean (Baht)**	1,321.78	1,222.41	1,288.28	1,374.79	1,179.03	1,416.60	1,280.52	1,253.57
Std. Deviation	895.7	673.88	787.36	1,015.26	479.04	1,100.62	674.92	810.29

The table shows the chosen of the responders on the type of welfare should the government provide for elderly. This question we allowed the responders to answer more than one answer. The data shows that the higher government living allowance is most preferred choice with the total of 1210 responders. Next, they think that government should provide day care center (857 responders) followed by providing multipurpose center (842 responders), providing home care in care of chronic diseases (623 responders), supporting of family member who provides home care (475 responders), and lastly continuing education (254 responders). The results are the same in other age groups and other regions excepting the Northern. The Northern responders want government to give higher living allowance followed by providing the multipurpose center and day care center, home care for chronic diseases, supporting the family member who provides home care and continuing education for the elderly.

As you can see, the government welfare that most of people need is the higher government living allowance and it also true for all age groups and all regions. The preferred amount of the allowance is averagely 1,321.78 baht per month for all responders. However, there are some different between age groups and regional data. The old age need the lowest amount of the allowance which averagely 1,222.41 baht per month while the amount is higher when they are younger. The middle age want government giving higher living allowance at amount of 1,288.28 baht per month and the young want at amount of 1,374.79 baht per month. Since the young have the most expenses compared to other age group, they expect to get more than other age groups. This also remain true for other age group which the middle have lower expenses, so they need lower amount of allowances while the old age have even lower expenses, so then need the lowest amount of government living allowances.

Regarding to the regional data, the Northeast people want the highest amount of government allowance which the preferred amount of the allowance is averagely 1,416.60 baht per month followed by the Northern, the Central, and the Southern

people at the average of 1,280.52 baht per month, 1,253.57 baht per month, and 1,179.03 baht per month, respectively.

Happiness of Others

This section deals with happiness. Strongly disagree, disagree, slightly disagree, neutral, slightly agree, agree, and strongly agree ranking were used with seven satisfaction/agreement levels (one being least satisfied or total disagreement, and, seven being most satisfied or total agreement). The questions probed about the happiness of children and spouse. They measure the influence others' happiness has on the questionnaire responders, as well as inquire about overall satisfaction and happiness of the questionnaire responders as well. The details of which are as follows:

Table A3-13 Mean and Standard Deviation of Questions on Happiness of Others Categorized by Age Cohorts and Regions

	All		Age Cohorts						Region							
			Old Age		Middle Age		Young		South		Northeast		North		Central	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
How happy are your children?	6.03	1.02	5.62	1.16	5.96	1.03	6.30	0.85	6.18	1.02	5.90	1.09	6.04	0.95	6.18	0.90
The happiness of your children is important to you	6.57	0.71	6.36	0.86	6.58	0.64	6.65	0.67	6.41	0.97	6.60	0.68	6.53	0.69	6.64	0.60
How happy is your spouse/ partner?	6.04	1.00	5.86	1.17	6.05	1.00	6.08	0.96	6.07	1.05	5.98	1.05	6.08	0.96	6.07	0.95
The happiness of your spouse/ partner is important to you	6.37	0.83	6.19	1.01	6.39	0.80	6.40	0.78	6.28	0.83	6.45	0.76	6.36	0.80	6.28	0.92

The table illustrates that questionnaire responders generally believe that their children is happy at the level of 6.03 and their spouse at the level of 6.04 out of the possible seven which are high. Additionally, the happiness of their children and their spouse is highly influential on their personal happiness at the level of 6.57 while they agree at the level of 6.37 that the happiness of their children is slightly more important to them than the happiness of their spouse. Data review by age group reveals that younger people believe that their children are happiest compared to the opinion of other age groups as younger people's children are very young with limited daily activities and fewer burdens. That is the reason why younger people believe that their children are very happy at the level of 6.30, followed by the middle age group at the level of 5.96 and the elderly. Older people believe that their children are happy at the level of 5.62 which is considered high but lowest still when compared to the opinions of people from other age groups. Children of older people are invariably middle age people themselves and associated with the burden to raise money for the family. They are the age group with highest debt as well. Therefore, it is common to see older people think that their children are not as happy, compared to the opinion of other age groups.

The happiness of spouse corresponds with that of the children. That is, younger people believe that their couple is very happy compared to the opinions of people from other age groups. People in this age group are still building their family or newlyweds who still share activities and love. They have not been through many difficulties of marriage life and they do not have too many responsibilities. Therefore, people in this age group believe that their couple is happier than other age groups at the level of 6.08, followed by the middle age group at the level of 6.05 and the old age group at the level of 5.86 out of the possible seven which is the lowest of all. This is because older people clearly have more health issues than other age groups. They can compel the questionnaire responders to believe that their couple is not as happy as the other age groups.

Further, it is found that the happiness of the children matters most to younger people because the children are very young and they still have time to raise and be close to their children. For this reason, people in this age group are according the greatest importance to their children's happiness at the level of 6.65, compared to the middle age group at the level of 6.58 and the old age group at the level of 6.36. The same is true for the happiness of spouse which is accorded the importance at the level of 6.40, 6.39 and 6.19 by the young group, the middle age group and the old age group respectively.

Data review by region reveals that most responders generally believe that their children and their spouse are happy at the level more than 6.00 excepting the Northeastern people which have the lowest opinion on their children's and spouse's happiness which is at the level of 5.90 and 5.98 out of possible seven. The Central people believe that their children are happiest compared to the opinion of other people in other regions at the level of 6.18, followed by the Southern people at the level of 6.18 and the Northern people at the level of 6.04. People in the Northern believe that their couple is happier than others at the level of 6.08, followed by the Central at the level of 6.07 and the the Southern people at the level of 6.06 out of the possible seven.

Further, it is found that the happiness of the children and spouse matters very high for all people in every region which the level of agreeable are more than 6.28 out of possible seven. The happiness of the children matters most to the Central people at the level of 6.64 followed by the Northeastern (6.60), the Northern (6.53), and Southern people (6.41) while the happiness of the spouse matters most to the Northeastern at the level of 6.28 followed by the Central, the Northern, and the Northeastern people at the level of 6.28, 6.36, and 6.28, respectively.

Table A3-14 Mean and Standard Deviation of Questions on Overall Satisfaction and Happiness of the Respondents Categorized by Age Cohorts and Regions

	All		Age Cohorts						Region							
			Old Age		Middle Age		Young		South		Northeast		North		Central	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Overall, you are satisfied with your life	5.92	1.06	5.84	1.15	5.99	0.99	5.90	1.08	6.14	0.94	5.85	1.12	5.94	0.98	5.93	1.07
How happy would you say you are?	5.19	1.56	4.90	1.69	5.08	1.57	5.35	1.49	5.45	1.42	5.43	1.22	4.43	1.98	5.43	1.39

With regard to overall satisfaction and happiness of the questionnaire responders, it is found that they generally have an overall satisfaction at the level of 5.92 and believe that they are happy at the level of 5.12 out of the possible seven. Middle age people are most satisfied with their life at the level of 5.99, followed by younger people at the level of 5.90 and older people at the level of 5.84. The level of happiness differs, however, as younger people have an average happiness level of 5.35 which is highest of all age groups, followed by the middle age group and the old age group at the level of 5.08 and 4.90 respectively. As you can see, older people are least satisfied with their life and believe that they have the least happiness compared to the other age groups.

It is also found that all responders have higher overall satisfaction than happiness level for all regions. The Southern people have the most overall satisfaction and highest happiness compared to people in other regions. They generally have an overall satisfaction at the level of 6.14 and believe that they are happy at the level of 5.45 out of the possible seven. According to the overall satisfaction data, the second rank of the highest satisfaction is the Northern people followed by the Central and Northeastern people at the level of 5.94, 5.93 and 5.85, successively. In contrast, the second rank of the highest of believes that they are happy is the Central people followed by the Northeastern and Northern people at the level of 5.43, 5.43 and 4.43, successively.

Appendix 4 Perceived income at age 70

Income at age 70

Middle

All

Variable	Obs	Mean	Std. Dev.
Highest income pm	480	5,201	9,332
Lowest income pm	481	2,593	5,092
Monthly income > X_3	468	35	33
Monthly income > X_4	468	25	31
Monthly income < X_2	468	40	31
Monthly income < X_1	468	25	28
Highest amount of assets	463	1,080,570	4,939,862
Lowest amount of assets	462	543,769	2,547,743

	Male			Female		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Highest income pm	155	7,765	13,825	325	3,979	5,766
Lowest income pm	155	3,613	6,483	326	2,108	4,200
Monthly income > X_3	148	42	37	320	31	31
Monthly income > X_4	148	32	35	320	22	29
Monthly income < X_2	148	33	32	320	43	30
Monthly income < X_1	148	20	27	320	27	27
Highest amount of assets	154	1,258,942	2,527,489	309	991,673	5,779,807
Lowest amount of assets	152	640,526	1,623,598	310	496,327	2,896,366

	South			Northeast			North			Central		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean		Obs	Mean	Std. Dev.
Highest income pm	46	8,691	9,679	209	3,599	4,354	111	5,005	11,049	114	6,921	12,859
Lowest income pm	45	4,400	4,928	209	1,610	2,523	111	3,016	7,054	116	3,257	6,014
Monthly income > X_3	46	43	39	201	35	32	107	37	33	114	30	35
Monthly income > X_4	46	34	38	201	24	29	107	26	30	114	22	32
Monthly income < X_2	46	36	37	201	44	29	107	33	28	114	41	32
Monthly income < X_1	46	22	29	201	28	29	107	18	23	114	25	28
Highest amount of assets	41	845,707	1,538,476	203	534,517	882,233	104	1,121,538	1,990,773	115	2,091,157	9,566,625
Lowest amount of assets	41	365,761	615,868	203	266,704	485,504	103	568,583	1,162,162	115	1,075,852	4,904,512

Primary school				Secondary school			Vocational school			Higher education		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Highest income pm	348	3,830	7,637	81	6,893	12,758	19	9,816	7,077	32	13,094	11,733
Lowest income pm	349	1,843	4,052	81	2,781	4,178	19	5,842	6,002	32	8,359	10,196
Monthly income > X_3	341	28	29	76	46	35	19	61	36	32	66	41
Monthly income > X_4	341	18	24	76	36	34	19	52	37	32	61	44
Monthly income < X_2	341	45	29	76	32	31	19	19	24	32	20	33
Monthly income < X_1	341	28	28	76	18	23	19	8	15	32	13	29
Highest amount of assets	335	964,149	5,607,266	79	987,646	1,621,078	18	831,667	942,551	31	2,720,000	3,927,085
Lowest amount of assets	335	478,025	2,825,580	78	434,135	710,898	18	306,139	389,111	31	1,668,065	2,838,140

Young

All

Variable	Obs	Mean	Std. Dev.
Highest income pm	665	12,923	54,314
Lowest income pm	665	4,593	13,375
Monthly income > X_3	624	46	32
Monthly income > X_4	624	35	31
Monthly income < X_2	624	32	28
Monthly income < X_1	624	18	23
Highest amount of assets	625	928,980	4,386,927
Lowest amount of assets	624	331,138	956,475

Male				Female		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Highest income pm	227	19,427	81,401	438	9,553	31,973
Lowest income pm	226	6,464	20,026	439	3,630	7,902
Monthly income > X_3	210	49	33	414	45	32
Monthly income > X_4	210	37	31	414	34	31
Monthly income < X_2	210	32	27	414	33	28
Monthly income < X_1	210	18	22	414	19	23
Highest amount of assets	212	1,371,625	7,039,042	413	701,763	1,902,634
Lowest amount of assets	211	397,043	974,900	413	297,467	946,343

	South			Northeast			North			Central		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Highest income pm	81	13,275	18,866	261	12,933	73,258	154	5,945	11,670	169	19,098	54,564
Lowest income pm	82	6,607	9,410	262	4,138	16,071	152	2,639	4,626	169	6,079	15,359
Monthly income > X_3	77	61	35	241	47	31	145	42	30	161	43	34
Monthly income > X_4	77	47	36	241	34	30	145	31	27	161	34	33
Monthly income < X_2	77	21	27	241	35	27	145	33	27	161	34	29
Monthly income < X_1	77	11	19	241	20	22	145	19	24	161	18	24
Highest amount of assets	78	1,198,167	2,300,766	245	991,820	6,557,264	146	569,809	1,258,211	156	1,031,844	2,346,256
Lowest amount of assets	78	404,906	851,697	245	266,078	929,433	145	255,672	591,439	156	468,145	1,264,134

Primary school				Secondary school			Vocational school			Higher		
Variable	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.
Highest income pm	137	4,392	10,137	288	9,364	35,459	73	11,925	18,021	167	26,497	95,568
Lowest income pm	137	2,027	5,043	287	3,468	10,136	73	4,589	6,639	168	8,610	21,720
Monthly income > X_3	129	31	28	268	41	31	69	60	31	158	63	30
Monthly income > X_4	129	20	24	268	29	28	69	49	32	158	51	33
Monthly income < X_2	129	42	28	268	36	27	69	25	25	158	22	26
Monthly income < X_1	129	24	25	268	20	23	69	14	18	158	12	21
Highest amount of assets	130	328,824	573,800	269	646,103	1,719,537	68	975,971	1,936,763	158	1,884,165	8,259,365
Lowest amount of assets	130	130,412	197,588	268	283,224	923,178	68	425,434	921,723	158	536,981	1,304,780

Thresholds

	X4	X3	Midpoint	X2	X1
Central	7,500	6,000	4,500	3,000	1,500
North	5,000	4,000	3,000	2,000	1,000
Northeast	4,000	3,250	2,500	1,750	1,000
South	7,500	6,000	4,500	3,000	1,500

Appendix 5 Pair-wise correlations of global happiness and satisfaction, mental well-being and blood pressure

Table A5-1 Cohort old

	Global happiness	Global satisfaction	GHQ	Normal blood pressure
Global happiness (observations)	1 (194)			
Global satisfaction (observations)	0.2611* (194)	1 (194)		
GHQ (observations)	0.1650* (194)	0.4533* (194)	1 (196)	
Normal blood pressure	-0.1332 (71)	0.1848 (71)	0.2224 (71)	1 (71)

Table A5-2 Cohort middle

	Global happiness	Global satisfaction	GHQ	Normal blood pressure
Global happiness (observations)	1 (485)			
Global satisfaction (observations)	0.1073* (485)	1 (485)		
GHQ (observations)	0.0229 (485)	0.3102* (485)	1 (497)	
Normal blood pressure	0.0578 (297)	-0.0462 (297)	0.0479 (297)	1 (297)

Table A5-3 Cohort young

	Global happiness	Global satisfaction	GHQ	Normal blood pressure
Global happiness (observations)	1 (680)			
Global satisfaction (observations)	0.1364* (680)	1 (680)		
GHQ (observations)	0.1070* (680)	0.2475* (680)	1 (682)	
Normal blood pressure	-0.0326 (541)	0.0155 (541)	0.0476 (541)	1 (541)

Appendix 6 Regression results: Cohort old

Table A6-1 Regression results: Socio-demographic factors of subjective well-being

	Ordered probit regression				OLS regression	
	Global Happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	0.046 **	0.019	0.001	0.019	0.073	0.151
Education (Ref: Primary school or lower)						
Secondary school	-0.734 **	0.222	0.056	0.291	-1.711	2.097
Vocational school	0.595	1.011	-0.423	0.295	-4.286	5.408
Male (Ref.: Female)	-0.041	0.173	0.190	0.200	2.227	1.539
Marital status (Ref.: Married / With partner)						
Single	0.079	0.333	-0.945 **	0.230	-1.425	4.132
Divorced / Widowed	-0.079	0.179	-0.256	0.204	-2.630 *	1.369
Region (Ref.: Northeast)						
Central	-0.091	0.283	0.189	0.271	-1.275	1.820
North	-0.232	0.186	0.124	0.182	-0.453	1.487
South	0.066	0.264	0.510	0.325	-2.211	1.884
Working (Ref.: Not working)	0.200	0.171	0.206	0.179	-0.232	1.393
Wealth	0.050 **	0.024	0.040	0.024	0.244	0.204
Monthly income	0.000	0.000	0.000	0.000	0.000 ***	0.000
Constant					40.735 ***	10.202
Number of obs	183		183		Number of obs	183
Wald chi2(12)	30.430		30.320		F(12, 170)	3.470
Pseudo R2	0.027		0.038		R-squared	0.128

***p≤0.01, **p≤0.05, *p≤0.10

nb The variable Higher education was dropped due to insufficient number of observations.

Table A6-2 Regression results: Socio-demographic factors of subjective well-being and further controls

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	0.040 **	0.003	-0.014	0.020	-0.024	0.153
Education (Ref: Primary school or lower)						
Secondary school	-0.890 ***	0.264	-0.127	0.385	-2.248	2.730
Vocational school	0.861	0.946	-0.750 *	0.424	-3.951	3.991
Male (Ref.: Female)	-0.091	0.178	0.346	0.219	3.009 *	1.576
Marital status (Ref.: Married / With partner)						
Single	0.118	0.337	-1.057 ***	0.276	-1.299	3.399
Divorced / Widowed	-0.031	0.180	-0.114	0.207	-1.442	1.291
Region (Ref.: Northeast)						
Central	-0.054	0.188	-0.042	0.282	-1.999	1.982
North	-0.196	0.287	0.001	0.196	-1.041	1.503
South	-0.209	0.254	0.093	0.334	-4.198 **	2.063
Working (Ref.: Not working)	0.075	0.177	0.107	0.194	-1.413	1.394
Wealth	0.023	0.027	0.011	0.025	-0.021	0.195
Monthly income	0.000	0.000	0.000	0.000	0.000 **	0.000
Health (Ref.: No self-reported health problem)	**-0.175**	**0.159**	**-0.087**	**0.185**	**-2.713 ** **	**1.140**
Income aspirations	**0.162 *** **	**0.058**	**0.336 *** **	**0.061**	**1.826 *** **	**0.412**
Comparison (Ref.: More than reference group)						
Income comparison	**0.077**	**0.062**	**0.079**	**0.072**	**0.645**	**0.549**
Comparison of material possessions	**-0.031**	**0.074**	**-0.040**	**0.078**	**-1.155 ** **	**0.555**
Extraversion	**0.103 ** **	**0.049**	**-0.046**	**0.051**	**0.096**	**0.395**
High vulnerability (3 dimensions)	**-0.310**	**0.308**	**-0.062**	**0.292**	**-0.249**	**3.227**
Constant					45.151 ***	10.178
Number of obs	183		183		Number of obs	183
Wald chi2(18)	64.740		55.110		F(18, 164)	4.440
Pseudo R2	0.055		0.109		R-squared	0.269

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	0.039 **	0.018	-0.014	0.020	-0.024	0.152
Education (Ref: Primary school or lower)						
Secondary school	-0.887 ***	0.261	-0.126	0.385	-2.255	2.740
Vocational school	0.839	0.951	-0.759 *	0.421	-3.955	3.972
Male (Ref.: Female)	-0.072	0.177	0.352	0.216	3.016 *	1.567
Marital status (Ref.: Married / With partner)						
Single	0.130	0.341	-1.055 ***	0.276	-1.287	3.384
Divorced / Widowed	-0.030	0.176	-0.111	0.203	-1.461	1.301
Region (Ref.: Northeast)						
Central	-0.046	0.289	-0.042	0.283	-1.988	1.995
North	-0.209	0.186	-0.002	0.195	-1.051	1.490
South	-0.184	0.255	0.103	0.333	-4.201 **	2.067
Working (Ref.: Not working)	0.079	0.178	0.110	0.193	-1.415	1.393
Wealth	0.025	0.027	0.012	0.025	-0.019	0.193
Monthly income	0.000	0.000	0.000	0.000	0.000 **	0.000
Health (Ref.: No self-reported health problem)	-0.177	0.160	-0.089	0.187	-2.708 **	1.137
Income aspirations	0.165 ***	0.060	0.338 ***	0.062	1.818 ***	0.424
Comparison (Ref.: More than reference group)						
Income comparison	0.074	0.063	0.077	0.072	0.647	0.545
Comparison of material possessions	-0.038	0.074	-0.041	0.077	-1.161 **	0.556
Extraversion	0.099 **	0.049	-0.048	0.051	0.097	0.397
Relatively vulnerable (3 dimensions)	**-0.043**	**0.235**	**0.027**	**0.247**	**-0.248**	**1.831**
Constant					45.185	10.104
Number of obs	183	183			Number of obs	183
Wald chi2(18)	63.390	55.050			F(18, 164)	4.420
Pseudo R2	0.053	0.109			R-squared	0.269

***p≤0.01, **p≤0.05, *p≤0.10

Table A6-3 Regression results: Cumulative high and relative vulnerability across all dimensions

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	0.040 **	0.018	-0.014	0.020	-0.040	0.155
Education (Ref: Primary school or lower)						
Secondary school	-0.919 ***	0.263	-0.159	0.402	-2.018	2.815
Vocational school	0.876	0.947	-0.714	0.448	-2.659	3.672
Male (Ref.: Female)	-0.108	0.181	0.310	0.223	2.677 *	1.527
Marital status (Ref.: Married / With partner)						
Single	0.063	0.358	-1.164 ***	0.319	-1.515	3.377
Divorced / Widowed	-0.021	0.179	-0.116	0.206	-1.202	1.285
Region (Ref.: Northeast)						
Central	-0.072	0.278	-0.052	0.277	-1.908	1.934
North	-0.228	0.190	-0.032	0.199	-1.247	1.486
South	-0.179	0.262	0.122	0.329	-3.974 *	2.039
Working (Ref.: Not working)	0.114	0.180	0.150	0.188	-1.109	1.362
Wealth	0.020	0.028	0.008	0.026	-0.058	0.192
Monthly income	0.000	0.000	0.000	0.000	0.000 **	0.000
Health (Ref.: No self-reported health problem)	-0.116	0.165	-0.022	0.187	-2.051 *	1.125
Income aspirations	0.159 **	0.062	0.349 ***	0.064	1.710 ***	0.424
Comparison (Ref.: More than reference group)						
Income comparison	0.080	0.063	0.077	0.072	0.704	0.564
Comparison of material possessions	-0.023	0.074	-0.035	0.079	-1.138 **	0.568
Extraversion	0.098 *	0.050	-0.054	0.052	0.062	0.387
High vulnerability (1 dimension)	**-0.074**	**0.189**	**-0.056**	**0.210**	**-2.444 ***	**1.336**
High vulnerability (2 dimensions)	**0.087**	**0.277**	**0.304**	**0.286**	**0.096**	**1.599**
High vulnerability (3 dimensions)	**-0.368**	**0.339**	**-0.043**	**0.321**	**-1.448**	**3.361**
High vulnerability (4 dimensions)	**-0.738 *** **	**0.276**	**-0.603**	**0.435**	**-5.927 *** **	**2.028**
Constant					47.330 ***	10.660
Number of obs	183		183		Number of obs	183
Wald chi2(21)	72.560		56.590		F(21, 161)	4.670
Pseudo R2	0.061		0.118		R-squared	0.297

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	0.035 **	0.018	-0.017	0.020	-0.059	0.153
Education (Ref: Primary school or lower)						
Secondary school	-0.953 ***	0.285	-0.106	0.400	-2.441	2.715
Vocational school	0.906	0.908	-0.784 *	0.447	-3.951	3.666
Male (Ref.: Female)	-0.096	0.185	0.373 *	0.223	3.023 *	1.522
Marital status (Ref.: Married / With partner)						
Single	0.136	0.347	-1.014 ***	0.294	-1.060	3.458
Divorced / Widowed	-0.027	0.178	-0.081	0.201	-1.322	1.292
Region (Ref.: Northeast)						
Central	-0.040	0.289	-0.056	0.278	-2.032	1.990
North	-0.218	0.186	-0.009	0.195	-1.085	1.500
South	-0.232	0.276	0.010	0.342	-4.637 **	2.140
Working (Ref.: Not working)	0.133	0.183	0.128	0.192	-1.106	1.391
Wealth	0.014	0.028	0.002	0.026	-0.106	0.202
Monthly income	0.000	0.000	0.000	0.000	0.000 **	0.000
Health (Ref.: No self-reported health problem)	-0.176	0.161	-0.108	0.187	-2.721 **	1.147
Income aspirations	0.129 **	0.063	0.310 ***	0.064	1.528 ***	0.446
Comparison (Ref.: More than reference group)						
Income comparison	0.063	0.064	0.090	0.075	0.624	0.558
Comparison of material possessions	-0.019	0.073	-0.048	0.080	-1.103 *	0.560
Extraversion	0.104 **	0.049	-0.044	0.052	0.126	0.390
Relatively vulnerable (1 dimension)	**-0.422**	**0.268**	**-0.024**	**0.248**	**-1.603**	**1.783**
Relatively vulnerable (2 dimensions)	**-0.296**	**0.306**	**-0.334**	**0.259**	**-2.179**	**1.735**
Relatively vulnerable (3 dimensions)	**-0.428**	**0.349**	**-0.207**	**0.317**	**-2.530**	**2.341**
Relatively vulnerable (4 dimensions)	**-0.799 ****	**0.336**	**-0.570 ***	**0.344**	**-5.910 ****	**2.659**
Relatively vulnerable (5 dimensions)	**-0.718**	**0.508**	**-0.190**	**0.706**	**-3.321**	**3.840**
Constant					51.072 ***	10.741
Number of obs	183		183		Number of obs	183
Wald chi2(22)	71.770		57.160		F(22, 160)	3.950
Pseudo R2	0.063		0.117		R-squared	0.291

***p≤0.01, **p≤0.05, *p≤0.10

nb The variable High vulnerability (5 dimensions) was dropped due to insufficient number of observations.

Table A6-4 Regression results: Type of vulnerability

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	0.039 **	0.018	-0.012	0.020	-0.033	0.155
Education (Ref: Primary school or lower)						
Secondary school	-0.925 ***	0.268	-0.167	0.425	-1.453	2.687
Vocational school	0.924	1.005	-0.664	0.492	-3.393	3.692
Male (Ref.: Female)	-0.125	0.185	0.265	0.221	3.281 **	1.556
Marital status (Ref.: Married / With partner)						
Single	0.114	0.344	-1.045 ***	0.268	-0.763	3.395
Divorced / Widowed	-0.038	0.180	-0.197	0.209	-1.107	1.326
Region (Ref.: Northeast)						
Central	-0.037	0.292	-0.090	0.303	-1.864	2.033
North	-0.190	0.188	0.030	0.196	-1.061	1.546
South	-0.220	0.253	-0.036	0.346	-3.940 *	2.073
Working (Ref.: Not working)	0.072	0.178	0.066	0.199	-1.116	1.376
Wealth	0.024	0.028	0.016	0.025	-0.076	0.197
Monthly income	0.000	0.000	0.000	0.000	0.000 *	0.000
Health (Ref.: No self-reported health problem)	-0.136	0.162	-0.083	0.189	-2.457 **	1.144
Income aspirations	0.139 **	0.062	0.346 ***	0.065	1.662 ***	0.425
Comparison (Ref.: More than reference group)						
Income comparison	0.092	0.063	0.094	0.074	0.628	0.563
Comparison of material possessions	-0.017	0.076	0.010	0.086	-1.272 **	0.549
Extraversion	0.108 **	0.050	-0.040	0.052	0.076	0.385
High vulnerability (income)	**0.005**	**0.207**	**-0.022**	**0.223**	**-1.012**	**1.349**
High vulnerability (assets)	**-0.352 ***	**0.192**	**-0.799 *** **	**0.224**	**0.268**	**1.770**
High vulnerability (consumption)	**-0.109**	**0.233**	**0.264**	**0.245**	**-0.077**	**1.631**
High vulnerability (illness)	**-0.270**	**0.249**	**-0.220**	**0.251**	**-0.419**	**1.656**
High vulnerability (living arrangement)	**0.018**	**0.195**	**0.173**	**0.222**	**-2.680 ***	**1.392**
Constant					47.795 ***	10.598
Number of obs	183		183		Number of obs	183
Wald chi2(22)	69.600		72.310		F(23, 1233)	4.250
Pseudo R2	0.060		0.135		R-squared	0.286

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	0.035 *	0.018	-0.018	0.020	-0.069	0.153
Education (Ref: Primary school or lower)						
Secondary school	-1.017 ***	0.302	-0.176	0.418	-2.650	2.830
Vocational school	0.971	0.956	-0.609	0.454	-3.773	3.695
Male (Ref.: Female)	-0.051	0.184	0.304	0.224	3.292 **	1.572
Marital status (Ref.: Married / With partner)						
Single	0.248	0.363	-1.052 ***	0.250	-0.735	3.301
Divorced / Widowed	0.010	0.179	-0.117	0.215	-1.053	1.283
Region (Ref.: Northeast)						
Central	-0.029	0.294	-0.087	0.305	-1.696	2.018
North	-0.156	0.188	0.016	0.193	-0.816	1.485
South	-0.247	0.262	0.020	0.324	-4.549 **	2.044
Working (Ref.: Not working)	0.179	0.188	0.120	0.215	-0.771	1.359
Wealth	0.023	0.029	0.021	0.027	-0.089	0.205
Monthly income	0.000	0.000	0.000	0.000	0.000 *	0.000
Health (Ref.: No self-reported health problem)	-0.091	0.168	-0.031	0.190	-2.382 **	1.158
Income aspirations	0.129 **	0.063	0.339 ***	0.067	1.445 ***	0.432
Comparison (Ref.: More than reference group)						
Income comparison	0.057	0.065	0.077	0.075	0.557	0.573
Comparison of material possessions	-0.057	0.077	-0.006	0.086	-1.352 **	0.545
Extraversion	0.119 **	0.050	-0.039	0.053	0.166	0.383
Relatively vulnerable (income)	**0.247**	**0.185**	**0.304**	**0.217**	**0.419**	**1.290**
Relatively vulnerable (assets)	**-0.214**	**0.196**	**-0.700 *** **	**0.225**	**0.718**	**1.904**
Relatively vulnerable (consumption)	**-0.060**	**0.203**	**-0.166**	**0.230**	**-1.288**	**1.206**
Relatively vulnerable (illness)	**-0.366 ***	**0.211**	**0.006**	**0.201**	**-2.261 ***	**1.316**
Relatively vulnerable (living arrangement)	**-0.361 ****	**0.164**	**-0.105**	**0.177**	**-2.245 ***	**1.238**
Constant					52.402 ***	10.629
Number of obs	183		183		Number of obs	183
Wald chi2(22)	74.770		67.090		F(22, 160)	4.370
Pseudo R2	0.071		0.136		R-squared	0.301

***p≤0.01, **p≤0.05, *p≤0.10

nb The correlation coefficient of High vulnerability (income) and High vulnerability (illness) vis-a-vis High vulnerability (consumption) exceeds 0.40.

Appendix 7 Regression results: Cohort middle

Table A7-1 Regression results: Socio-demographic factors of subjective well-being

	Ordered probit regression				OLS regression	
	Global Happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	-0.017 *	0.011	-0.001	0.011	-0.115	0.079
Education (Ref: Primary school or lower)						
Secondary school	-0.053	0.144	0.267 **	0.134	0.373	0.941
Vocational school	0.256	0.239	0.737 **	0.297	4.159 **	1.743
Higher education	-0.484 **	0.225	0.060	0.201	2.707 *	1.466
Male (Ref.: Female)	0.062	0.113	-0.145	0.112	0.114	0.787
Marital status (Ref.: Married / With partner)						
Single	0.236	0.211	0.009	0.220	4.424 **	1.877
Divorced / Widowed	0.034	0.204	-0.271	0.200	1.437	1.315
Region (Ref.: Northeast)						
Central	0.065	0.119	0.123	0.132	1.484	0.952
North	-0.721 ***	0.145	0.172	0.127	-1.016 **	0.891
South	-0.069	0.172	0.174	0.189	-0.017	1.309
Working (Ref.: Not working)	0.085	0.127	0.430 ***	0.151	1.534	1.129
Wealth	0.060 ***	0.016	0.032 **	0.016	0.175	0.119
Monthly income	-1.1E-06	0.000	0.000	0.000	0.000	0.000
Constant					50.213 ***	3.841
Number of obs	479		479		Number of obs	479
Wald chi2(13)	48.21		32.4		F(12, 170)	3.04
Pseudo R2	0.0373		0.031		R-squared	0.0801

***p≤0.01, **p≤0.05, *p≤0.10

Table A7-2 Regression results: Socio-demographic factors of subjective well-being and further controls

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	-0.016 **	0.011	0.007	0.011	-0.092	0.079
Education (Ref: Primary school or lower)						
Secondary school	-0.151 **	0.151	0.263 *	0.148	0.106	0.944
Vocational school	0.092	0.256	0.630 **	0.287	3.038 *	1.759
Higher education	-0.657 ***	0.238	-0.164	0.209	1.582	1.527
Male (Ref.: Female)	0.039	0.117	-0.255 **	0.113	-0.365	0.805
Marital status (Ref.: Married / With partner)						
Single	0.227	0.201	-0.049	0.209	4.182 **	1.952
Divorced / Widowed	-0.063	0.205	-0.268	0.212	0.891	1.273
Region (Ref.: Northeast)						
Central	0.023	0.125	0.111	0.138	1.099	0.958
North	-0.689 ***	0.147	0.282 **	0.136	-0.993	0.926
South	-0.109	0.179	0.131	0.186	-0.537	1.265
Working (Ref.: Not working)	-0.010	0.127	0.409 **	0.159	0.556	1.132
Wealth	0.038 **	0.016	0.003	0.017	0.017	0.131
Monthly income	-1.8E-06 *	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	**-0.057**	**0.106**	**-0.121**	**0.111**	**-0.887**	**0.756**
Income aspirations	**0.081 ****	**0.033**	**0.233 *****	**0.038**	**0.663 *****	**0.230**
Comparison (Ref.: More than reference group)						
Income comparison	**0.046**	**0.052**	**-0.006**	**0.057**	**-0.486**	**0.321**
Comparison of material possessions	**-0.156 *****	**0.048**	**-0.008**	**0.055**	**-0.414**	**0.322**
Extraversion	**0.022**	**0.027**	**0.032**	**0.029**	**0.121**	**0.206**
High vulnerability (3 dimensions)	**-0.208**	**0.145**	**-0.187**	**0.170**	**-0.816**	**1.248**
Constant					52.508 ***	4.179
Number of obs	461		461		Number of obs	461
Wald chi2(19)	65.4		81.37		F(19, 441)	3.55
Pseudo R2	0.053		0.0845		R-squared	0.13

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	-0.016	0.011	0.006	0.011	-0.091	0.079
Education (Ref: Primary school or lower)						
Secondary school	-0.137	0.152	0.275 *	0.146	0.187	0.952
Vocational school	0.101 ***	0.255	0.637 **	0.287	3.063 *	1.761
Higher education	-0.641	0.240	-0.153	0.209	1.710	1.535
Male (Ref.: Female)	0.039	0.117	-0.257 **	0.114	-0.340	0.810
Marital status (Ref.: Married / With partner)						
Single	0.201	0.203	-0.067	0.210	3.982 **	1.934
Divorced / Widowed	-0.043	0.204	-0.254	0.213	1.036	1.272
Region (Ref.: Northeast)						
Central	0.019	0.124	0.106	0.138	1.078	0.964
North	-0.688 ***	0.147	0.281 **	0.135	-0.981	0.924
South	-0.097	0.180	0.140	0.186	-0.476	1.263
Working (Ref.: Not working)	0.010	0.127	0.427 ***	0.158	0.636	1.130
Wealth	0.040 **	0.016	0.005	0.017	0.028	0.130
Monthly income	-1.8E-06 **	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	-0.068	0.105	-0.129	0.111	-0.943	0.761
Income aspirations	0.079 **	0.033	0.230 ***	0.038	0.664 ***	0.229
Comparison (Ref.: More than reference group)						
Income comparison	0.041	0.052	-0.012	0.057	-0.495	0.320
Comparison of material possessions	-0.161 ***	0.049	-0.011	0.055	-0.449	0.323
Extraversion	0.021	0.027	0.032	0.029	0.118	0.207
Relatively vulnerable (3 dimensions)	**0.011**	**0.132**	**-0.016**	**0.149**	**0.601**	**0.979**
Constant					52.270 ***	4.233
Number of obs	461		461		Number of obs	461
Wald chi2(19)	62.76		78.36		F(19, 441)	3.56
Pseudo R2	0.0523		0.0835		R-squared	0.1299

***p≤0.01, **p≤0.05, *p≤0.10

Table A7-3 Regression results: Cumulative high and relative vulnerability across all dimensions

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	-0.017	0.011	0.011	0.011	-0.072	0.078
Education (Ref: Primary school or lower)						
Secondary school	-0.151	0.153	0.238	0.146	-0.145	0.912
Vocational school	0.084	0.258	0.581 **	0.287	2.587	1.733
Higher education	-0.643 ***	0.241	-0.159	0.204	1.710	1.467
Male (Ref.: Female)	0.034	0.118	-0.289 **	0.115	-0.579	0.798
Marital status (Ref.: Married / With partner)						
Single	0.233	0.202	-0.021	0.208	4.395 **	1.934
Divorced / Widowed	-0.012	0.209	-0.238	0.218	1.386	1.266
Region (Ref.: Northeast)						
Central	0.036	0.126	0.124	0.139	1.272	0.933
North	-0.691 ***	0.147	0.250 *	0.138	-1.220	0.941
South	-0.130	0.180	0.123	0.185	-0.704	1.237
Working (Ref.: Not working)	-0.009	0.128	0.466 ***	0.162	0.866	1.109
Wealth	0.034 **	0.016	-0.003	0.017	-0.052	0.128
Monthly income	-1.9E-06 **	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	-0.035	0.107	-0.067	0.113	-0.392	0.754
Income aspirations	0.076 **	0.033	0.214 ***	0.039	0.475 **	0.230
Comparison (Ref.: More than reference group)						
Income comparison	0.056	0.052	-0.011	0.057	-0.464	0.311
Comparison of material possessions	-0.151 ***	0.047	-0.007	0.055	-0.357	0.319
Extraversion	0.018	0.027	0.039	0.028	0.130	0.204
High vulnerability (1 dimension)	**-0.018**	**0.130**	**-0.293 ****	**0.137**	**-2.522 *****	**0.882**
High vulnerability (2 dimensions)	**-0.205**	**0.154**	**-0.254**	**0.159**	**-3.233 *****	**1.041**
High vulnerability (3 dimensions)	**-0.313 ***	**0.173**	**-0.401 ****	**0.192**	**-3.029 ****	**1.364**
High vulnerability (4 dimensions)	**-0.500 ****	**0.208**	**-0.300**	**0.328**	**-5.235 *****	**1.794**
High vulnerability (5 dimensions)	**0.416**	**0.746**	**-1.907 *****	**0.367**	**-9.217**	**5.692**
Constant					54.227 ***	4.185
Number of obs	461		461		Number of obs	461
Wald chi2(23)	75.19		119.52		F(23, 437)	3.51
Pseudo R2	0.0578		0.0958		R-squared	0.1629

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	-0.017	0.011	0.007	0.011	-0.069	0.079
Education (Ref: Primary school or lower)						
Secondary school	-0.160	0.151	0.265 *	0.148	-0.084	0.946
Vocational school	-0.004	0.258	0.596 **	0.285	2.318	1.733
Higher education	-0.686 ***	0.247	-0.168	0.208	1.571	1.486
Male (Ref.: Female)	0.028	0.120	-0.261 **	0.114	-0.544	0.815
Marital status (Ref.: Married / With partner)						
Single	0.214	0.213	-0.068	0.213	4.125 **	1.926
Divorced / Widowed	-0.013	0.206	-0.239	0.218	1.599	1.274
Region (Ref.: Northeast)						
Central	0.005	0.126	0.100	0.139	1.287	0.943
North	-0.749 ***	0.147	0.260 *	0.137	-1.248	0.933
South	-0.158	0.182	0.121	0.184	-0.792	1.264
Working (Ref.: Not working)	0.020	0.126	0.433 ***	0.156	0.763	1.119
Wealth	0.034 **	0.016	0.001	0.017	-0.017	0.128
Monthly income	-2.1E-06 **	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	-0.004	0.107	-0.096	0.113	-0.554	0.758
Income aspirations	0.064 *	0.033	0.224 ***	0.039	0.534 **	0.235
Comparison (Ref.: More than reference group)						
Income comparison	0.049	0.052	-0.005	0.058	-0.414	0.316
Comparison of material possessions	-0.152 ***	0.049	-0.007	0.056	-0.338	0.320
Extraversion	0.013	0.027	0.029	0.028	0.118	0.207
Relatively vulnerable (1 dimension)	**-0.057**	**0.177**	**0.013**	**0.172**	**-0.969**	**1.206**
Relatively vulnerable (2 dimensions)	**-0.293 ***	**0.169**	**-0.078**	**0.173**	**-2.289 ***	**1.213**
Relatively vulnerable (3 dimensions)	**-0.237**	**0.188**	**-0.104**	**0.197**	**-1.421**	**1.361**
Relatively vulnerable (4 dimensions)	**-0.545 *****	**0.192**	**-0.234**	**0.225**	**-2.715**	**1.538**
Relatively vulnerable (5 dimensions)	**-0.466 ***	**0.255**	**-0.257**	**0.272**	**-7.389 *****	**1.999**
Constant					53.136	4.342
Number of obs	461		461		Number of obs	461
Wald chi2(23)	75.75		87.11		F(23, 437)	3.52
Pseudo R2	0.0592		0.0855		R-squared	0.1597

***p≤0.01, **p≤0.05, *p≤0.10

Table A7-4 Regression results: Type of vulnerability

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	-0.015	0.011	0.009	0.011	-0.073	0.077
Education (Ref: Primary school or lower)						
Secondary school	-0.157	0.154	0.244	0.149	-0.178	0.944
Vocational school	0.073	0.256	0.613 **	0.287	2.775	1.760
Higher education	-0.644 ***	0.243	-0.146	0.204	1.629	1.478
Male (Ref.: Female)	0.027	0.118	-0.277 **	0.114	-0.563	0.809
Marital status (Ref.: Married / With partner)						
Single	0.211	0.205	-0.026	0.209	4.439 **	1.998
Divorced / Widowed	-0.045	0.206	-0.224	0.213	1.110	1.266
Region (Ref.: Northeast)						
Central	0.028	0.126	0.124	0.140	1.234	0.948
North	-0.704 ***	0.149	0.275 *	0.139	-1.098	0.935
South	-0.127	0.181	0.102	0.186	-0.859	1.260
Working (Ref.: Not working)	0.014	0.127	0.434 ***	0.160	0.652	1.128
Wealth	0.034 **	0.017	-0.003	0.017	-0.052	0.129
Monthly income	-2.0E-06 **	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	-0.015	0.109	-0.082	0.114	-0.428	0.759
Income aspirations	0.069 **	0.034	0.218 ***	0.039	0.514 **	0.226
Comparison (Ref.: More than reference group)						
Income comparison	0.051	0.051	-0.001	0.057	-0.395	0.315
Comparison of material possessions	-0.152 ***	0.048	-0.004	0.055	-0.331	0.320
Extraversion	0.017	0.027	0.033	0.029	0.104	0.207
High vulnerability (income)	-0.103	0.113	-0.063	0.125	-1.013	0.810
High vulnerability (assets)	-0.129	0.109	-0.129	0.134	-1.460	0.913
High vulnerability (consumption)	-0.143	0.122	-0.187	0.135	-1.864 **	0.827
High vulnerability (illness)	-0.146	0.130	-0.083	0.146	-0.882	0.997
High vulnerability (living arrangement)	0.025	0.126	-0.141	0.134	-0.829	0.894
Constant					53.528 ***	4.096
Number of obs	461		461		Number of obs	461
Wald chi2(23)	70.13		89.03		F(23, 437)	3.57
Pseudo R2	0.0566		0.0898		R-squared	0.1579

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	-0.015	0.011	0.008	0.011	-0.080	0.078
Education (Ref: Primary school or lower)						
Secondary school	-0.175	0.152	0.235	0.147	-0.261	0.945
Vocational school	0.001	0.256	0.589 **	0.286	2.377	1.734
Higher education	-0.708 ***	0.244	-0.179	0.209	1.252	1.465
Male (Ref.: Female)	0.017	0.118	-0.278 **	0.114	-0.578	0.809
Marital status (Ref.: Married / With partner)						
Single	0.224	0.208	-0.067	0.210	4.204 **	1.959
Divorced / Widowed	-0.038	0.203	-0.303	0.215	0.732	1.268
Region (Ref.: Northeast)						
Central	0.013	0.125	0.104	0.138	1.020	0.943
North	-0.749 ***	0.147	0.261 *	0.138	-1.345	0.930
South	-0.158	0.181	0.131	0.184	-0.877	1.257
Working (Ref.: Not working)	0.021	0.127	0.421 ***	0.158	0.648	1.135
Wealth	0.036 **	0.017	0.000	0.017	-0.027	0.128
Monthly income	-2.1E-06 **	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	0.000	0.109	-0.110	0.116	-0.478	0.763
Income aspirations	0.061 *	0.034	0.217 ***	0.039	0.473 **	0.234
Comparison (Ref.: More than reference group)						
Income comparison	0.049	0.051	-0.001	0.056	-0.417	0.315
Comparison of material possessions	-0.146 ***	0.048	-0.007	0.055	-0.324	0.324
Extraversion	0.016	0.027	0.028	0.029	0.070	0.203
Relatively vulnerable (income)	-0.211 *	0.107	-0.096	0.117	-1.244	0.785
Relatively vulnerable (assets)	-0.049	0.105	-0.081	0.118	-0.825	0.749
Relatively vulnerable (consumption)	-0.141	0.119	-0.241 *	0.134	-2.140 ***	0.827
Relatively vulnerable (illness)	-0.148	0.114	0.061	0.121	-0.429	0.782
Relatively vulnerable (living arrangement)	-0.017	0.108	0.017	0.111	-0.049	0.744
Constant					54.461 ***	4.182
Number of obs	461		461		Number of obs	461
Wald chi2(23)	76.56		86.12		F(23, 437)	3.58
Pseudo R2	0.059		0.0882		R-squared	0.1536

***p≤0.01, **p≤0.05, *p≤0.10

Appendix 8 Regression results: Cohort young

Table A8-1 Regression results: Socio-demographic factors of subjective well-being

	Ordered probit regression				OLS regression	
	Global Happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	-0.002	0.010	0.005	0.011	-0.129 *	0.074
Education (Ref: Primary school or lower)						
Secondary school	-0.176	0.108	0.166	0.113	-0.614	0.798
Vocational school	0.117	0.159	0.084	0.156	0.927	1.106
Higher education	-0.114	0.125	0.047	0.133	0.822	0.943
Male (Ref.: Female)	-0.031	0.094	0.074	0.099	-0.088	0.687
Marital status (Ref.: Married / With partner)						
Single	0.088	0.108	0.068	0.109	0.890	0.791
Divorced / Widowed	0.241	0.233	-0.214	0.220	-2.507 *	1.523
Region (Ref.: Northeast)						
Central	-0.062	0.098	-0.030	0.109	1.329	0.813
North	-0.476 ***	0.121	-0.141	0.111	-1.179	0.777
South	0.100	0.140	0.257 *	0.152	1.020	1.048
Working (Ref.: Not working)	-0.166 *	0.100	-0.068	0.100	1.653 **	0.744
Wealth	0.001	0.012	0.039 ***	0.012	0.173 **	0.084
Monthly income	0.000 **	0.000	0.000	0.000	0.000	0.000
Constant					51.689 ***	2.303
Number of obs	667		667		Number of obs	667
Wald chi2(13)	43.39		24.15		F(13, 653)	2.42
Pseudo R2	0.021		0.015		R-squared	0.0457

***p≤0.01, **p≤0.05, *p≤0.10

Table A8-2 Regression results: Socio-demographic factors of subjective well-being and further controls

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	0.003	0.011	0.008	0.012	-0.049	0.079
Education (Ref: Primary school or lower)						
Secondary school	-0.210 *	0.115	0.131	0.122	-0.727	0.821
Vocational school	0.049	0.161	0.049	0.173	0.465	1.120
Higher education	-0.199	0.133	0.009	0.141	-0.155	0.928
Male (Ref.: Female)	-0.044	0.103	0.002	0.106	-0.387	0.700
Marital status (Ref.: Married / With partner)						
Single	0.052	0.113	-0.025	0.110	0.759	0.788
Divorced / Widowed	0.305	0.224	-0.143	0.230	-1.988	1.385
Region (Ref.: Northeast)						
Central	-0.045	0.107	-0.076	0.118	1.226	0.826
North	-0.441 ***	0.129	-0.122	0.120	-0.846	0.795
South	0.170	0.151	0.135	0.155	0.404	1.028
Working (Ref.: Not working)	-0.156	0.107	-0.016	0.106	1.907 **	0.792
Wealth	-0.002	0.013	0.031 **	0.013	0.100	0.087
Monthly income	0.000	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	**-0.110**	**0.106**	**-0.138**	**0.106**	**-1.956 ** **	**0.800**
Income aspirations	**0.082 *** **	**0.032**	**0.146 *** **	**0.033**	**0.426 * **	**0.214**
Comparison (Ref.: More than reference group)						
Income comparison	**0.051**	**0.039**	**0.005**	**0.039**	**-0.169**	**0.282**
Comparison of material possessions	**-0.063**	**0.040**	**-0.083 * **	**0.043**	**-1.002 *** **	**0.296**
Extraversion	**0.021**	**0.025**	**-0.014**	**0.026**	**0.062**	**0.178**
High vulnerability (3 dimensions)	**-0.207**	**0.139**	**-0.338 * **	**0.189**	**-3.919 *** **	**1.058**
Constant					53.286 ***	3.022
Number of obs	613		613		Number of obs	613
Wald chi2(19)	61.42		70.38		F(19, 593)	4.8
Pseudo R2	0.0306		0.0418		R-squared	0.1306

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	0.001	0.011	0.006	0.012	-0.086	0.078
Education (Ref: Primary school or lower)						
Secondary school	-0.224 *	0.116	0.104	0.123	-0.871	0.819
Vocational school	0.043	0.160	0.040	0.171	0.303	1.107
Higher education	-0.207	0.132	-0.001	0.141	-0.449	0.937
Male (Ref.: Female)	-0.049	0.103	-0.005	0.106	-0.513	0.711
Marital status (Ref.: Married / With partner)						
Single	0.044	0.112	-0.036	0.113	0.604	0.789
Divorced / Widowed	0.289	0.231	-0.165	0.227	-2.015	1.400
Region (Ref.: Northeast)						
Central	-0.056	0.106	-0.093	0.117	0.993	0.827
North	-0.450 ***	0.128	-0.137	0.120	-1.081	0.792
South	0.166	0.153	0.128	0.159	0.080	1.044
Working (Ref.: Not working)	-0.150	0.107	-0.009	0.106	2.057 ***	0.793
Wealth	-0.001	0.013	0.032 **	0.013	0.101	0.087
Monthly income	0.000	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	-0.133	0.103	-0.179 *	0.103	-2.327 ***	0.801
Income aspirations	0.087 ***	0.032	0.154 ***	0.033	0.423 *	0.221
Comparison (Ref.: More than reference group)						
Income comparison	0.046	0.039	-0.001	0.038	-0.258	0.281
Comparison of material possessions	-0.064	0.040	-0.083 *	0.042	-0.992 ***	0.298
Extraversion	0.021	0.025	-0.012	0.026	0.036	0.178
Relatively vulnerable (3 dimensions)	**0.041**	**0.111**	**0.098**	**0.121**	**-1.965 ** **	**0.824**
Constant					55.179	3.037
Number of obs	613		613		Number of obs	613
Wald chi2(19)	54.4		64.12		F(19, 441)	4.39
Pseudo R2	0.0298		0.0396		R-squared	0.1239

***p≤0.01, **p≤0.05, *p≤0.10

Table A8-3 Regression results: Cumulative high and relative vulnerability across all dimensions

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	0.003	0.011	0.009	0.012	-0.039	0.080
Education (Ref: Primary school or lower)						
Secondary school	-0.223 *	0.115	0.130	0.124	-0.687	0.822
Vocational school	0.036	0.162	0.051	0.173	0.509	1.129
Higher education	-0.226 *	0.135	0.013	0.144	-0.231	0.937
Male (Ref.: Female)	-0.051	0.103	-0.004	0.106	-0.434	0.704
Marital status (Ref.: Married / With partner)						
Single	0.050	0.113	-0.026	0.110	0.787	0.792
Divorced / Widowed	0.304	0.224	-0.147	0.231	-1.969	1.395
Region (Ref.: Northeast)						
Central	-0.050	0.107	-0.073	0.117	1.185	0.831
North	-0.453 ***	0.130	-0.117	0.121	-0.859	0.790
South	0.156	0.151	0.143	0.156	0.357	1.028
Working (Ref.: Not working)	-0.144	0.107	-0.006	0.108	2.003 **	0.802
Wealth	-0.003	0.014	0.030 **	0.013	0.079	0.090
Monthly income	0.000	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	-0.102	0.106	-0.141	0.106	-1.958 **	0.805
Income aspirations	0.080 **	0.032	0.149 ***	0.034	0.400 *	0.224
Comparison (Ref.: More than reference group)						
Income comparison	0.051	0.039	0.002	0.039	-0.192	0.285
Comparison of material possessions	-0.062	0.041	-0.078 *	0.043	-0.957 ***	0.299
Extraversion	0.020	0.026	-0.014	0.026	0.043	0.178
High vulnerability (1 dimension)	-0.099	0.109	-0.086	0.112	-1.251	0.774
High vulnerability (2 dimensions)	-0.118	0.133	0.067	0.129	-0.691	0.972
High vulnerability (3 dimensions)	-0.267 *	0.153	-0.356 *	0.198	-4.498 ***	1.153
High vulnerability (4 dimensions)	0.019	0.345	-0.048	0.279	-0.296	2.562
High vulnerability (5 dimensions)	-0.712	0.466	-0.023	0.164	2.399 **	0.961
Constant					53.719 ***	3.089
Number of obs	613		613		Number of obs	613
Wald chi2(23)	63.01		72.14		F(23, 589)	11.24
Pseudo R2	0.0317		0.0426		R-squared	0.135

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	0.002	0.011	0.005	0.012	-0.091	0.077
Education (Ref: Primary school or lower)						
Secondary school	-0.226 *	0.116	0.103	0.124	-0.928	0.826
Vocational school	0.030	0.161	0.038	0.175	0.212	1.109
Higher education	-0.222 *	0.133	-0.033	0.143	-0.844	0.946
Male (Ref.: Female)	-0.050	0.103	-0.016	0.106	-0.620	0.711
Marital status (Ref.: Married / With partner)						
Single	0.051	0.112	-0.060	0.112	0.491	0.782
Divorced / Widowed	0.283	0.226	-0.185	0.225	-2.291	1.424
Region (Ref.: Northeast)						
Central	-0.057	0.106	-0.082	0.117	1.082	0.826
North	-0.447 ***	0.128	-0.121	0.121	-0.854	0.782
South	0.149	0.157	0.071	0.160	-0.373	1.048
Working (Ref.: Not working)	-0.148	0.107	0.003	0.106	2.194 ***	0.775
Wealth	-0.003	0.013	0.031 **	0.013	0.082	0.087
Monthly income	0.000	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	-0.119	0.104	-0.170	0.103	-2.169 ***	0.790
Income aspirations	0.083 **	0.033	0.161 ***	0.034	0.439 **	0.222
Comparison (Ref.: More than reference group)						
Income comparison	0.048	0.039	0.000	0.038	-0.244	0.284
Comparison of material possessions	-0.060	0.040	-0.077 *	0.043	-0.934 ***	0.297
Extraversion	0.022	0.025	-0.014	0.026	0.026	0.175
Relatively vulnerable (1 dimension)	0.000	0.150	-0.370 **	0.146	-2.023 *	1.071
Relatively vulnerable (2 dimensions)	-0.065	0.150	-0.414 ***	0.149	-3.411 ***	1.150
Relatively vulnerable (3 dimensions)	-0.021	0.161	-0.208	0.170	-4.257 ***	1.247
Relatively vulnerable (4 dimensions)	-0.185	0.183	-0.194	0.195	-1.956	1.406
Relatively vulnerable (5 dimensions)	-0.213	0.332	-0.449 **	0.206	-4.708 *	2.457
Constant					57.372 ***	3.129
Number of obs	613		613		Number of obs	613
Wald chi2(23)	56.64		70.15		F(23, 589)	4.17
Pseudo R2	0.0308		0.0455		R-squared	0.1415

***p≤0.01, **p≤0.05, *p≤0.10

Table A8-4 Regression results: Type of vulnerability

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	0.003	0.011	0.006	0.012	-0.058	0.079
Education (Ref: Primary school or lower)						
Secondary school	-0.229 **	0.115	0.119	0.122	-0.935	0.811
Vocational school	0.035	0.161	0.021	0.173	0.137	1.125
Higher education	-0.230 *	0.133	-0.025	0.143	-0.624	0.936
Male (Ref.: Female)	-0.050	0.103	-0.020	0.107	-0.532	0.706
Marital status (Ref.: Married / With partner)						
Single	0.049	0.112	-0.020	0.112	0.746	0.793
Divorced / Widowed	0.293	0.228	-0.136	0.223	-2.184 *	1.326
Region (Ref.: Northeast)						
Central	-0.060	0.106	-0.094	0.118	0.902	0.823
North	-0.452 ***	0.129	-0.113	0.119	-1.074	0.801
South	0.151	0.151	0.133	0.158	0.185	1.054
Working (Ref.: Not working)	-0.145	0.109	-0.028	0.107	2.079 ***	0.793
Wealth	-0.004	0.014	0.029 **	0.013	0.082	0.089
Monthly income	0.000	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	-0.111	0.105	-0.178 *	0.106	-2.284 ***	0.793
Income aspirations	0.079 **	0.032	0.148 ***	0.034	0.426 *	0.222
Comparison (Ref.: More than reference group)						
Income comparison	0.049	0.039	0.002	0.039	-0.193	0.280
Comparison of material possessions	-0.060	0.040	-0.084 *	0.043	-0.985 ***	0.294
Extraversion	0.021	0.025	-0.016	0.026	0.069	0.178
High vulnerability (income)	-0.089	0.109	0.078	0.124	-1.981 ***	0.768
High vulnerability (assets)	-0.082	0.105	-0.094	0.108	-0.227	0.785
High vulnerability (consumption)	-0.018	0.115	-0.159	0.118	-0.423	0.815
High vulnerability (illness)	-0.082	0.123	0.160	0.147	0.711	0.865
High vulnerability (living arrangement)	-0.048	0.111	-0.156	0.125	-1.399 *	0.830
Constant					54.423 ***	3.020
Number of obs	613		613		Number of obs	613
Wald chi2(23)	59.79		70.72		F(23, 589)	3.85
Pseudo R2	0.031		0.0431		R-squared	0.1306

	Ordered probit regression				OLS regression	
	Global happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Age	0.001	0.011	0.005	0.012	-0.076	0.078
Education (Ref: Primary school or lower)						
Secondary school	-0.224 *	0.114	0.121	0.122	-0.899	0.824
Vocational school	0.033	0.160	0.043	0.175	0.055	1.102
Higher education	-0.223 *	0.133	0.005	0.144	-0.673	0.935
Male (Ref.: Female)	-0.049	0.104	-0.015	0.107	-0.651	0.719
Marital status (Ref.: Married / With partner)						
Single	0.044	0.112	-0.033	0.113	0.706	0.780
Divorced / Widowed	0.286	0.229	-0.178	0.222	-2.089	1.420
Region (Ref.: Northeast)						
Central	-0.061	0.106	-0.097	0.118	1.064	0.815
North	-0.449 ***	0.129	-0.130	0.119	-0.899	0.788
South	0.141	0.157	0.117	0.160	-0.031	1.054
Working (Ref.: Not working)	-0.145	0.108	-0.016	0.105	1.987 **	0.794
Wealth	-0.003	0.013	0.031 **	0.013	0.058	0.090
Monthly income	0.000	0.000	0.000	0.000	0.000	0.000
Health (Ref.: No self-reported health problem)	-0.114	0.104	-0.162	0.103	-2.354 ***	0.797
Income aspirations	0.082 **	0.032	0.149 ***	0.034	0.444 **	0.218
Comparison (Ref.: More than reference group)						
Income comparison	0.048	0.039	-0.005	0.039	-0.193	0.284
Comparison of material possessions	-0.060	0.040	-0.078 *	0.043	-0.991 ***	0.297
Extraversion	0.021	0.025	-0.014	0.026	0.043	0.174
Relatively vulnerable (income)	-0.023	0.094	0.159	0.102	-1.699 **	0.665
Relatively vulnerable (assets)	-0.061	0.091	-0.035	0.093	-0.769	0.668
Relatively vulnerable (consumption)	-0.037	0.113	-0.170	0.115	-0.391	0.800
Relatively vulnerable (illness)	-0.080	0.094	-0.037	0.104	1.054	0.710
Relatively vulnerable (living arrangement)	-0.001	0.091	-0.068	0.093	-1.398 **	0.625
Constant					55.991	3.052
Number of obs	613.00		613.00		Number of obs	613.00
Wald chi2(23)	55.40		67.85		F(23, 589)	3.85
Pseudo R2	0.03		0.04		R-squared	0.14

***p≤0.01, **p≤0.05, *p≤0.10

Appendix 9 Domain satisfaction by cohort

Table A9-1 Correlations between life satisfaction and domain satisfactions

	Life satisfaction
Satisfaction with	
Family	0.3247* (699)
Alternatively: "Enjoy time spent with family"	*0.1908* (1358)*
Health	0.2769* (1359)
Financial status	0.3119* (1360)
Work	0.1722* (991)
Social support	0.1107* (1276)
Religion	0.1268* (1359)
Community	0.2520* (1360)
Provision for old age	0.2550* (1165)

Table A9-2 Regression results: Cohort old

	Ordered probit regression				OLS regression	
	Global Happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Satisfaction with						
Family	-0.148	0.124	0.303 ***	0.107	0.968	0.588
Health	0.272 **	0.130	0.228	0.149	1.655 *	0.988
Financial status	0.174	0.113	0.261 **	0.120	1.644 *	0.982
Work	0.177	0.115	0.033	0.163	0.974	0.872
Social support	-0.056	0.068	0.133 **	0.066	-0.066	0.345
Religion	0.123	0.172	0.160	0.188	0.143	1.704
Community	0.042	0.159	0.137	0.187	0.424	0.839
Constant					20.712 *	11.296
Number of obs	74		74		Number of obs	74
Wald chi2(7)	18.47		33.65		F(7, 66)	4.02
Pseudo R2	0.055		0.1596		R-squared	0.2461

***p≤0.01, **p≤0.05, *p≤0.10

nb Satisfaction with provision for old age does not apply to Cohort old.

A9-3 Regression results: Cohort middle

	Ordered probit regression				OLS regression	
	Global Happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Satisfaction with						
Family	0.008	0.074	0.156 *	0.087	1.693 ***	0.444
Health	0.073	0.053	0.265 ***	0.068	0.864 **	0.388
Financial status	0.189 ***	0.060	0.340 ***	0.060	1.621 ***	0.365
Work	0.010	0.069	0.095	0.076	0.038	0.508
Social support	0.005	0.026	0.026	0.029	-0.059	0.197
Religion	0.097	0.070	0.204 **	0.087	-0.406	0.543
Community	0.007	0.071	0.175 *	0.095	0.133	0.558
Constant					30.426 ***	4.598
Number of obs	389		389		Number of obs	389
Wald chi2(7)	17.25		102.04		F(7, 381)	8.3
Pseudo R2	0.018		0.1303		R-squared	0.128

	Ordered probit regression				OLS regression	
	Global Happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Satisfaction with						
Family	0.010	0.075	0.133	0.090	1.683 ***	0.443
Health	0.071	0.053	0.226 ***	0.069	0.851 **	0.393
Financial status	0.191 ***	0.060	0.334 ***	0.061	1.613 ***	0.372
Work	0.011	0.069	0.091	0.076	0.035	0.510
Social support	0.005	0.026	0.022	0.028	-0.062	0.198
Religion	0.093	0.071	0.150 *	0.088	-0.423	0.548
Community	0.004	0.071	0.158	0.100	0.129	0.560
Provision for old age	0.007	0.049	0.293 ***	0.056	0.079	0.364
Constant					30.311 ***	4.654
Number of obs	388		388		Number of obs	388
Wald chi2(8)	17.33		103.1		F(8, 379)	7.18
Pseudo R2	0.018		0.1628		R-squared	0.1275

***p≤0.01, **p≤0.05, *p≤0.10

Table A9-4 Regression results: Cohort young

	Ordered probit regression				OLS regression	
	Global Happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Satisfaction with						
Family	0.169 ***	0.053	0.096 *	0.052	0.611 *	0.350
Health	0.113 **	0.054	0.234 ***	0.058	0.567	0.412
Financial status	0.094 *	0.051	0.280 ***	0.053	1.639 ***	0.363
Work	-0.004	0.059	0.023	0.063	0.565	0.422
Social support	0.021	0.026	0.015	0.029	0.111	0.191
Religion	0.027	0.054	0.116 **	0.054	-0.012	0.370
Community	0.021	0.058	0.194 ***	0.067	0.564	0.432
Constant					31.531 ***	3.977
Number of obs	472		472		Number of obs	472
Wald chi2(7)	21.76		96.54		F(7, 464)	6.06
Pseudo R2	0.018		0.0751		R-squared	0.0934

	Ordered probit regression				OLS regression	
	Global Happiness		Life satisfaction		GHQ-11	
	Coef.	Std. Err.	Coef.	Std. Err.	Coef.	Std. Err.
Satisfaction with						
Family	0.169 ***	0.053	0.092 *	0.052	0.590 *	0.347
Health	0.114 **	0.054	0.221 ***	0.059	0.502	0.416
Financial status	0.095 *	0.052	0.264 ***	0.054	1.557 ***	0.365
Work	-0.004	0.058	0.014	0.064	0.520	0.420
Social support	0.021	0.026	0.015	0.029	0.110	0.190
Religion	0.029	0.055	0.087	0.055	-0.143	0.381
Community	0.021	0.058	0.197 ***	0.067	0.572	0.430
Provision for old age	-0.005	0.039	0.082 *	0.044	0.370	0.299
Constant					31.357 ***	3.976
Number of obs	472		472		Number of obs	472
Wald chi2(8)	21.75		96.01		F(8, 463)	5.36
Pseudo R2	0.018		0.0781		R-squared	0.0964

***p≤0.01, **p≤0.05, *p≤0.10