

Expectations and Reality in Meeting Financial Needs of Thai  
Elderly: A Gender Perspective

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จากการสำรวจความคิดเห็นของประชาชนเกี่ยวกับความรู้และทัศนคติที่มีต่อผู้สูงอายุ พ.ศ.2550 (ผู้ตอบแบบสำรวจอายุ 50 ถึง 59) และ การสำรวจประชากรสูงอายุในประเทศไทย พ.ศ. 2560 (ผู้ตอบแบบสำรวจอายุ 60 ถึง 69) จัดโดยสำนักงานสถิติแห่งชาติ วิจัยนี้ระบุกลุ่มบุคคลและวัดผลต่างระหว่างสัดส่วนของความคาดหวังและความเป็นจริงของการตอบสนองความต้องการทางการเงินในวัยสูงวัยของผู้สูงอายุไทยเพศชายและหญิง โดยเน้นที่ผลกระทบจากภูมิภาคและการศึกษา วิจัยนี้ใช้สมการ OLS dummy regression สามแบบเพื่อค้นหาขนาด เครื่องหมายและความสำคัญของผลต่างระหว่างความคาดหวังและความเป็นจริงในการเงิน ผลของวิจัยนี้พบว่าผลต่างของแหล่งรายได้จากเงินออมและบำนาญ/บำนาญมีความคล้ายคลึงกันอย่างมากระหว่างชายและหญิง ในขณะที่แหล่งรายได้จากการทำงานในวัยชราและบุตรยังคงมีความสำคัญ แต่ในความเป็นจริงแล้วสัดส่วนของผู้สูงอายุที่ได้รับรายได้จากทั้งสองแหล่งนี้น้อยกว่าความคาดหวังด้วยอัตราการเจริญพันธุ์ที่ลดลง เราพบว่าผลต่างระหว่างความคาดหวังและความเป็นจริงในการมีรายได้จากการทำงานในวัยชรานั้นมีขนาดใหญ่ถึงเกือบสามเท่าในผู้หญิงเมื่อเทียบกับผู้ชาย แหล่งรายได้ของผู้สูงวัยจากบุตรมีความสัมพันธ์กับภูมิภาคและการศึกษาของผู้สูงอายุ ผลต่างของแหล่งรายได้จากบุตรสำหรับผู้สำรวจเพศหญิงที่อาศัยอยู่ในภาคอีสานนั้นน้อยกว่าเกือบครึ่งหนึ่งของผู้สำรวจที่อาศัยอยู่ในภาคอื่น ซึ่งบ่งบอกถึงความสัมพันธ์ที่ติระหว่างวัยในภาคอีสาน ผู้สูงอายุที่มีการศึกษาสูงมักไม่ค่อยได้รับการสนับสนุนทางการเงินจากบุตร โดยมีผลต่างที่ใหญ่กว่าสองเท่าของผลต่างของผู้สำรวจที่มีการศึกษาค่ำกว่า ผลยังพบอีกว่าผู้สูงอายุในชนบทมีแนวโน้มที่จะทำงานเมื่ออายุมากขึ้น โดยผลต่างสำหรับผู้สำรวจเพศชายที่อาศัยอยู่ในกรุงเทพฯ ใหญ่กว่าสี่เท่าของผลต่างของผู้สำรวจเพศชายที่อาศัยอยู่นอกกรุงเทพฯ นโยบายและเบี้ยเลี้ยงในอนาคตจะมีส่วนสำคัญในการลดผลต่างระหว่างความคาดหวังและความเป็นจริงของบุคคลที่มีความเสี่ยงต่อทางการเงินในสังคมไทย



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Using the 2007 Survey of Knowledge and Attitudes on Elderly Issues surveying respondents aged 50 to 59 and the 2017 Survey of Older Persons in Thailand surveying respondents aged 60 to 69, this study identified a cohort to examine the gap between reality and expectations of Thai elderly males and females with regards to financial sources in meeting financial needs at old age with emphasis placed on the effect of regions and education. Three models of OLS dummy regression were ran to find the magnitude, sign, and significance of the reality-expectations gap. The results of the study found that the gaps for savings and pension as an elderly financial source is similar for both males and females. While, working at old age and children remain important sources to meeting the financial needs of the Thai elderly, reality continues to disappoint with declining fertility rates. We found that the gap between expectation and reality was almost three times larger for females than for their male counterparts when it came to working at old age. Elderly financial support from their adult children were prominently linked to regional and educational differences in Thailand. The gap of children support for females living in the Northeast was about half of those living elsewhere indicating the strong intergenerational ties in the Northeast. Highly educated elders are less likely to receive support from their children with the gap for respondents with university education to be twice that of lower educated respondents. Rural elders were also more likely to work at old age given the gap for males living in Bangkok being four time larger than for males living outside Bangkok. Future policy and public allowance will inevitably play a crucial role in closing the gap of financially vulnerable individuals in Thai society.

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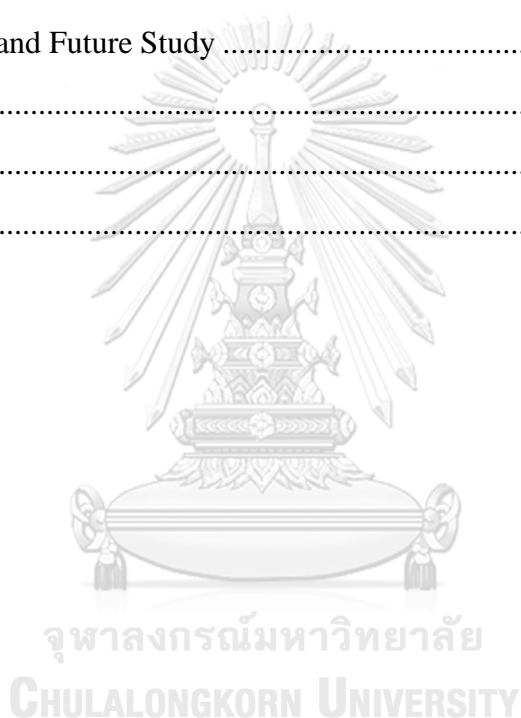
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## 1. Introduction

### 1.1 Thailand's aging population

Thailand has the highest share of elderly people among developing countries in East Asia and Pacific, including China (World Bank, 2016a). With a decline in fertility and a fast pace of aging, the proportion of Thailand's elderly population will continue to increase (World Bank, 2016a; UNFPA, 2011). The proportion of Thai population aged 65 years and older has increased from 5% in 1990 to 8% in 2010 (UNFPA, 2011). By 2030, the proportion of elderly is projected to be over 15% or even exceeding 20% according to the United Nations Population Fund (UNFPA) and the National Economic and Social Development Board (NESDB) respectively (UNFPA, 2011; NESDB, 2007). The World Bank predicts that by 2040 more than a quarter of Thailand's population, which is approximately 17 million will be 65 years or older (World Bank, 2016a).

Thailand's speed of aging is increasing at an unprecedented rate, one of the fastest globally and is faster than other ASEAN countries (World Bank, 2016a). The speed of aging in Thailand is primarily driven by a steep decline in fertility which has existed as a continuous trend for many years (UNFPA, 2011; World Bank, 2016a). According to the World Bank, fertility rates decreased from 6.1 in 1965 to 1.5 in 2015 (World Bank, 2016a). Between 1970 and 1990, the total fertility rate decreased from 5.5 to 2.2 (UNFPA, 2011). Remarkably, this 20-year period show the fastest decline out of all the countries in Southeast Asia (UNFPA, 2011). In lesser extent than fertility, increasing life expectancy is also a contributing factor to the speed of aging in Thailand (UNFPA, 2011).

The working age population is expected to shrink by approximately 11% as a share of total population between 2016 and 2040 from 49 million to 40.5 million people (World Bank, 2016a). The decline in the working age population is higher in Thailand than in other developing countries in East Asia and Pacific, including China (World Bank, 2016a). It is predicted that the decline in working age population will begin after or little before 2020 (UNFPA, 2011). Thailand's elderly dependency ratio which is the percentage of elderly population relative to the working age population is increasing continuously. In 1994, the elderly dependency ratio was 10.7% which increased to 14.3% in 2002 (Suwanrada, 2009). The future projection of Thailand's elderly dependency ratio is expected to almost triple from 15% in 2016 to 42% by 2040 (World Bank, 2016a). The potential support ratio, the ratio of individuals in the labour force supporting at least one elderly person has also decreased from 9.3 in 1994 to 6.3 in 2007 (Suwanrada, 2009). By 2023, it is predicted that the potential support ratio will drop to 2.52 (NESDB, 2007). Specifically, a falling potential support ratio reflects the shrinking support of working adults whom elderly can depend on (UNFPA, 2011). The decline in working age population combined with an increasing elderly dependency ratio, and a decreasing potential support ratio, point towards the fact that the aging population in Thailand will evidently face a significant decline in financial support from children and family members.

## **1.2 Financial status of Thai elderly**

Income of older persons has increased over time. In 1986, over half of people age 60 and above reported an annual income of less than 10,000 baht which declined to only 17% by 2007 (income expressed in 2007 values to adjusted for inflation)

(UNFPA, 2011). While, those with income of 100,000 baht or more reported an increase from 4% to 15% in 1986 and 2007 respectively (UNFPA, 2011). Despite continued improvements in social and economic well-being of Thai elderly, poverty and financial hardships still remain among older persons. Among Thai individuals aged 60 years and older, 21% reported having inadequate income, 28% were not satisfied with their financial situation, and 19% reported both income inadequacy and financial dissatisfaction (UNFPA, 2011). When separated between urban and rural, 21% of rural elderly reported both income inadequacy and financial dissatisfaction (UNFPA, 2011). While, this was reported for 13% of urban elderly (UNFPA, 2011).

The majority of Thai elderly are unable to support themselves financially and would need to rely on intergenerational transfers, family support, and government in addition to their personal savings (Yoon et al., 2017; Suwanrada, 2009; Witvorapong, 2015). In Thailand, elderly support and care has been traditionally the role of family and adult children (Knodel et al., 2013a). However, filial obligations to Thai elderly may face a decline over time as older adults with children have increasingly lower expectations for financial assistance (Basten et al., 2014). Additionally, with demographic changes in the near future, it will be unclear on how much family support and intergenerational transfers remain. As for government financial support, the Thai government can provide greater financial security to older persons through programs that guarantee certain income levels for elderly (Suwanrada, 2009). In 1993, an old age allowance system was introduced by the Thai government to provide monetary aid for vulnerable older adults, which was later expanded in 2009 to cover all older adults without a formal pension (Suwanrada, 2009; Knodel et al., 2013a). However, it is claimed that government allowances are not sufficient for subsistence

living above the national poverty line (Witvorapong, 2015). The main purpose of savings for Thai individuals with a minimum income of 20,000 baht is for post-retirement spending (Suppakitjarak & Krishnamra, 2015). Empirical evidence on saving behavior of Thai individuals also raise concerns for financial security later in life. An analysis of saving behavior of employed persons in Thailand conducted by NESDB reported that 39% do not save, 26% have balanced earning and expenditure, 9% borrow in order to make ends meet, and 3% is capable of saving but do not (NESDB, 2008) According to the Bank of Thailand, 41% of Thais have not planned or started saving for retirement, 29% of Thais are still in debt at the age of 60, 43% of Thais age 45 and above work in the informal sector (Chittinandana et al., 2017). From a macro level perspective, personal savings was 3.5% to 8% of 2000 to 2007 GDP (gross domestic product) in Thailand (NESDB, 2009). Further evidence also suggests that a number of Thai elders are facing financial instabilities. The Survey of Older Persons in Thailand in 1994 and 2002 reported that 15.7% of Thai elderly living alone have financial difficulties (Suwanrada, 2009). While, 31.3% of Thai elderly do not have savings or financial assets and 34.1% of Thai elderly have an annual income that is less than 20,000 baht (Suwanrada, 2009). Hence, in response to changing demographic patterns, filial norms, savings behavior, and government policies, it is crucial to investigate the financial needs of the Thai population at old age.

### **1.3 Objectives**

This study examines the expectations and reality of Thai elderly financial needs from a gender perspective through the following sources of financial support: personal savings, pension, children, spouse, relatives, government support and by

working at old age. The objective of this study is to (1) determine the gap between reality and expectations in meeting elderly financial needs of males and females in Thailand, and (2) to determine whether region (urbanization) and education (human capital development) are associated in the gap in (1).

#### **1.4 Scope**

This thesis presents a descriptive study with a scope focusing on expectation and reality sources of financial support for elderly males and females in Thailand between 2007 to 2017. Expectations and reality of elderly financial support are from cross-sectional data collected from two national surveys: 2007 Survey of Knowledge and Attitudes on Elderly Issues and 2017 Survey of the Older Persons in Thailand. Expectations of elderly income source comes from non-elderly survey respondents age 50 to 59 in the 2007 Survey of Knowledge and Attitudes on Elderly Issues. Actual elderly income source comes from elderly survey respondents age 60 to 69 in the 2017 Survey of the Older Persons in Thailand. These specific age groups were chosen to align with the year surveyed as an advantage to study the same cohort or generation who were non-elderly ten years ago and became elderly ten years later. Given that the two surveys constitute of national representative respondents, further potential endogeneity is mitigated by focusing on same cohort for analysis.

#### **1.5 Contributions of the study**

With Thailand currently emerging into an aging society at an unprecedented rate, it is crucial to investigate whether the financial needs of Thai elderly are being met. Such research will be valuable to study as Thailand is undergoing changes in



demographic patterns and financial behavior and therefore it will be important to see how well the aging population is able to prepare for their finances with such changes. In contrast to other literature on Thailand's aging population, the present study focuses on the expectations and reality of financial support at old age. Importantly, the present study also looks at a perspective of gender on elderly financial well-being adding the considerable impacts of regional effects and education across males and females. In particular, lower mortality rates among females and the ever-evolving role of females has resulted in the importance of examining a gender perspective on the theme of aging. Undoubtedly, with an aging population examining among gender allows us to capture the gender inequality aspects of elderly finances. Specifically, is the growing concern of presumed greater social and economic vulnerability among older females compared to males in Thailand.

Furthermore, the findings of this study will be much valuable in providing further implications and policy recommendations for government, individuals, and other relevant financial institutions. With Thailand emerging into an aging society, more government policies that are geared towards supporting the aging population will be much needed. In the context of this study's objectives on financial needs of elderly, it will be important for such policies to help close the gap on expectations and reality of financial sources of elderly in order for Thai individuals to prepare better for their finances when reaching old age. By further examining from a gender perspective in different regions and education levels, the study may potentially contribute to help target financially vulnerable individuals before they reach old age. This will help develop more efficient policies that can better target certain groups of individuals in Thai society in order to ensure that government spending will not go to waste.

The rest of this thesis is structured as follows. Section two is a review of relevant literatures on the study's topic. The first part of the literature review is organized based on the examined elderly financial sources (children, working, government, pension, personal savings, spouse and relatives). The second part of the literature review is a compilation of relevant studies on the financial well-being among gender and gender roles across region and educational attainment. Section three discusses the conceptual framework of the present study and section four states the hypotheses. Section five explains the research methodology including data source, summary, and econometric models utilized. The results and discussion are stated in section six and seven respectively. The paper concludes with the conclusion and further recommendations in the last section.

## **2. Literature Review**

### **2.1 Sources of financial support for Thai elderly**

The elderly is supported financially through various sources which is generally divided by public transfers, private transfers, and other sources. The literature review focuses on financial support at old age from the following sources: children, working at old age, government, pension, personal savings, spouse, and relatives.

#### **2.1.1 Children and intergenerational transfers**

For many decades, the main source of financial support for Thai elderly has primarily been from children. According to the 1994 and 2007 Surveys of Older Persons in Thailand, it was reported that among Thais age 60 and older, their children are the most common source of income and is the most common main income source

as well (UNFPA, 2011). Given that the Thai family traditions of reciprocity to parents influences children to take care of financial needs and care of older parents, it may be expected of children to take on this role in society (Suwanrada, 2009; Knodel et al., 2013a). Evidence of traditional norms of support from children have been shown in interviews and discussions with Thai elderly themselves. Rattanamongkolgul et al. (2012) conducted a qualitative study on Thai elderly's perspective on preparing for aging. Using a combination of observations and in-depth interviews, their study reported that Thai elderly believe that, once they raise children, their children should reciprocate by taking care of them in their old age (Rattanamongkolgul et al., 2012). Thai elderly in their study also expressed willingness to try to minimize the burden of care by taking care of themselves, contributing to household duties, earning extra money, and helping with household expenses (Rattanamongkolgul et al., 2012). Knodel et al. (2013a) examines how Thai parents who are approaching old age and their adult children view changes of decline in co-residence with children and how they intend to deal them. Knodel et al. (2013a) uses a combination of analysis of national survey and open-ended interviews and discussion. Many near elderly parents express concerns about becoming a burden to their children and maintaining their independence as long as possible (Knodel et al., 2013a). While, adult children generally proclaim willingness to live with and care for parents, but it remains an open question if these intentions will be carried out (Knodel et al., 2013a).

A number of studies have examined financial support from children and intergenerational transfers towards the elderly. Theerawanviwat (2014) studies the level and patterns of elderly parent and adult child resource transfer and the relationship between family structure and the direction of resource transfer in

Thailand. Using 2009 panel survey, they found that 60% of Thai elderly parents receive financial support from their adult children, whereas about 14 % of Thai elderly parents neither give nor receive financial support to or from their adult children (Theerawanviwat, 2014). It was also found that the median amount of money elderly parents received from their adult children was 22,250 baht in 2009, which was slightly above Thailand's poverty line of that year (Theerawanviwat, 2014).

Witvorapong (2015) examines the relationship between the wealth of older parents and the receipt of in-kind and monetary transfers from non-resident adult children in Thailand. Using a national survey sample from 2007 and 2011, the study employed a sample-selected bivariate ordered probit model to explore different measures of wealth including home ownership, income, and savings (Witvorapong, 2015). The study found that the relationships between measure of elderly wealth and the receipt of in-kind as well as monetary transfers are positive and statistically significant (Witvorapong, 2015). Specifically, this means that wealthier parents are more likely to receive larger transfers from children (Witvorapong, 2015). Previous national statistics also suggests that filial financial support varies with the family size. According to the 2007 Survey of Older Persons in Thailand, Thai elderly who have greater number of children are more likely to receive financial support than those with fewer children (UNFPA, 2011). However, Thai elderly with fewer children are more likely to report greater satisfaction of their finances and have sufficient income (UNFPA, 2011). A possible explanation may be due to existing evidence suggesting that elderly with fewer children are economically better off than those with more numbers of children. Havanon et al. (1992) examines the impact of family size on wealth accumulation in rural Thailand households. Through an analysis of survey and

focus-group data of couples collected in 1988, the study found that couples in rural Thailand with fewer children were better at accumulating wealth than couples with more numbers of children. This further implies that smaller families could have more potential to accumulate wealth later in life thereby reducing the need to depend on their children for financial support (UNFPA, 2011).

### **2.1.2 Working**

For the elderly, the labour market in Thailand has some constraints. For the public sector, most elderly will face a mandatory retirement age at 60 years old in Thailand. There is no legal retirement age in the private sector as it is typically stated in individual employment contracts (Fujioka & Thangphet, 2009). A large share of persons who are self-employed, such as farmers and informal sector workers, the mandatory retirement age is inapplicable (UNFPA, 2011). This is probably why there are greater numbers of elderly working in rural areas compared to urban areas (UNFPA, 2011). According to a published report by the International Labour Organization (ILO), the labour force participation of Thai elderly have been relatively low and stable as observed from 1991 to 2008 (Fujioka & Thangphet, 2009). 37.7%, 35.4%, 33.6%, 38.8% and 37.9% of Thais age 60 and above worked in 1991, 1995, 2000, and 2008 respectively (Fujioka & Thangphet, 2009). In terms of the total elderly population in Thailand, more than half of Thais age 60 to 64 worked of which 71% were men and around 44% were women as of 2007 (UNFPA, 2011). However, labour force participation declines with increasing age for Thai elderly, as shown in elderly aged 75 or older with only about 13% working (UNFPA, 2011). As for employment status, the majority of working elderly people in 2001 and 2005 were

“own-account workers”, meaning self-employed or business owners (Fujioka & Thangphet, 2009). Specifically, self-employment rates of 90% and higher for elderly in East Asia and Pacific countries are common in rural areas of the region (Giles et al., 2015).

Among different regions in Thailand, the South had the most percentage of elderly working at 46.3% (Fujioka & Thangphet, 2009). In exception of Bangkok, other regions in Thailand saw an increase in labour force participation among people age 60 and older (Fujioka & Thangphet, 2009). Previous literature suggests that there is no clear evidence on why labour participation of older persons outside of Bangkok are increasing. However, possible reasons may include expanded work opportunities for the elderly or improving health conditions that have allowed elderly to continue working (Fujioka & Thangphet, 2009). A decline in support from children or family could also be the case as without the traditionally provided care given by family, elderly would have to support themselves (Fujioka & Thangphet, 2009). However, the World Bank reported that own labour was the primary source of elderly financial support compared to public transfer, private transfer, and other income (Giles et al., 2015). Specifically, in 2011 almost 60% of people over 60 years old reported that their own labor as a main source of financial support in both urban and rural areas (Giles et al., 2015).

### **2.1.3 Government**

With a demographic change towards aging society, the Thai government is under pressure to play its part to support Thai elderly through a public pension scheme. Before the universal pension scheme, the old-age allowance system was

established in 1993 to provide financial assistance to the underprivileged elderly, referring to persons age 60 or older with inadequate income to meet expenses or is unable to work (Sakunphanit & Suwanrada, 2011; Suwanrada, 2009). The monthly allowance started with providing 200 baht per person and was increased to 500 baht per person by 2005 (Sakunphanit & Suwanrada, 2011). With the limitations of the old age allowance system, the 500-baht universal pension scheme was introduced in 2009 and is eligible to all elderly regardless of their financial need, but the scheme does not apply to government employees with formal government pension (Sakunphanit & Suwanrada, 2011; UNFPA, 2011). As of the fiscal year 2010, 77.5% of the Thai elderly population were recipients of the 500-baht pension (Sakunphanit & Suwanrada, 2011).

Most Thais believe that the government should play a bigger role in supporting elderly financially in the future (World Bank, 2016a). A recent survey asked Thai adults who ideally should be the primary source of financial support at old age found that around two thirds of Thai adults report government as a primary source of elderly support (World Bank, 2016a). Similarly, it was found that Thai adults believe that the government should be most responsible for providing personal care to retired people when they need help with everyday living or are sick or disabled (Jackson & Peter, 2015). In addition, evidence from 2011 national data shows that public financial transfers are relatively less important than private transfers in reducing poverty in Thai elderly (Giles et al., 2015). This implies that the current public transfers from government are insufficient to support everyday living for the elderly.

#### 2.1.4 Pension

In order to provide adequate old age financial support with an aging population, Thailand will see an increase in the demand for wider coverage of the pension system (World Bank, 2016a). In Thailand, public sector employees including those working in government and state enterprise have long been covered by the government guaranteed retirement benefits (UNFPA, 2011). While, coverage for Thai workers in the private sector was later established in 1999 as the old age pension fund within the national social security system (UNFPA, 2011). There are 7.8 million Thais under the social security programs for retirement and children support, 1.1 million are members of the government pension fund, and 1.5 million are members of the private provident fund (Pootrakool et al., 2005). With significant progress made towards greater coverage of its social pension, Thailand faces financial sustainability challenges with existing schemes as it struggles to expand the formal sector pension schemes (World Bank, 2016a). Compared to other countries around the world, Thailand has a very low contribution rate of only 6% of salary with public sector employees having a separate scheme which is more generous than the private sector (World Bank, 2016a). Evidence shows that Thailand currently has a pension program that is insufficient to support retirement living. Specifically, with over 80% of Thais receiving pension by the age of 61, elderly employment rates especially for those living in rural areas are still relatively high (Giles et al., 2015).

The coverage of Thai pension programs can still be improved upon as there are still many individuals that are uncovered by the existing pension programs. Out of the 13.4 million Thais who are employed in the private sector, only 7.8 million are



under social security programs, and 1.1 million have savings through private provident funds (Pootrakool et al., 2005). There are still many more workers making up about 50% of Thailand's workforce of 17.1 million of Thais, who are uncovered due to their working position as own-account worker or unpaid family worker (Pootrakool et al., 2005). More important is the fact that most working Thai elderly are own-account workers (Fujioka & Thangphet, 2009). However, this may soon change for the future of Thais as evidence shows that there is a substantial increase in the proportion of Thai younger adults that have some form of formal financial coverage for retirement (UNFPA, 2011). Specifically, the number of Thai adults having coverage increase with decreasing age (UNFPA, 2011). This implies that future Thai elderly will inevitably have pension as monthly or lump sum payment when they retire.

#### **2.1.5 Personal savings**

Personal savings rate may decline with an aging population as older people are likely to use up their savings as their labour income falls (World Bank, 2016a). There is no clear evidence that this may be the case as findings from previous studies have given mixed results. Kim & Lee (2007) analyzes the empirical relationships among demographic changes, saving, and current account balances in East Asia. Using panel VAR model, the study found that an increase in dependency rate lowers saving rates and worsens current account balances (Kim & Lee, 2007). From a discussion paper done by the Bank of Thailand, Pootrakool et al. (2005) examines long-term savings in Thailand and looks into the impacts of aging population on household savings. Holding the saving amount and income of each age group

constant, the study finds that aging population will not reduce the level of household saving rate from 1990 to 2020, given that the changing demographic structure will increase the level of income of working age groups (Pootrakool et al., 2005). As the results of this study are investigated at the aggregate level, the authors suggest that enough savings at an aggregate level does not imply that savings will be enough at an individual level, especially with an aging population (Pootrakool et al., 2005). To increase additional savings for retirement, the study points towards government and private pension funds as an aid to provide employees with additional savings (Pootrakool et al., 2005).

Further evidence also show that Thais have relatively low amounts of saving. At the end of 2014, Thai net household savings rate was at 4.88% of GDP decreasing from around 12% of GDP in 1980 (World Bank, 2016a; Pootrakool et al., 2005). Along with low household savings, Thai household debt are also substantially high. In 2015, the household debt to GDP ratio was around 80% of GDP outstanding loans to households and the debt service ratio was 26% (World Bank, 2016a). With the low levels of saving rate and high household debt, the World Bank claims that Thais are currently not saving enough to assure a comfortable old age (World Bank, 2016a). From the Bank of Thailand's 2004 Household Attitude towards Debt and Savings survey, it was found that 54% of interviewed households indicate that they are not saving enough for emergencies and retirement (Pootrakool et al., 2005). Specifically, low income, low financial literacy, low education, high numbers of household members, being a renter or mortgage holder, and being a laborer or firm employee all contribute to households not saving enough (Pootrakool et al., 2005). In addition, statistics on financial preparedness shows that 41% of Thais have not planned or

started saving for retirement (Bank of Thailand, 2017). There is existing evidence suggesting that only a small portion of Thai elderly are using savings as a main source of elderly income (Giles et al., 2015). However, surveying Thais age 20 years or older with a minimum level of income at 20,000 baht, Suppakitjarak & Krishnamra (2015) found that the main objective of household savings was for post-retirement spending.

### **2.1.6 Spouse and relatives**

Spouses play an important role in the economic well-being of elderly as they can be primary sources of financial support. A large portion of Thai elderly are married. In 2007, over 60% of Thai elderly remain married and are living together and only 3% of Thai elderly have never married (UNFPA, 2011). While, around 32% of Thai elderly are widowed and about 2% are divorced or separated (UNFPA, 2011). Although spouses are commonly less important sources of financial support when compared to own work and children (UNFPA, 2011). Existing national data in 2007 shows that only about a quarter of Thai elderly cite their married partner as a source of income (Knodel & Chayovan, 2008). Among gender, differences between female and male elderly having income from their spouses are very little (Knodel & Chayovan, 2008). In terms of financial preparedness for old age, variation among marital status was also observed. Chansarn (2013) studied the economic preparation for retirement of older Thai adults aged 50 to 59 years. The study found that married people had about 1.17 times greater chance of having above than average economic preparation for retirement than for individuals that were single, divorced, widowed, and separated (Chansarn, 2013). Additionally, Thais that were married to the head of

household had the highest chance of having above than average economic preparation for retirement (Chansarn, 2013).

Although not as common, relatives can also be a source of financial support at old age. Relatively low numbers of Thai elderly report their relatives as sources of income. In 2007, only about 11% of Thai elderly have income from their relatives (UNFPA, 2011). While even lesser amounts at about 2% are reported as main source of income at old age (UNFPA, 2011). Among gender, elderly women are more likely to have income from relatives than elderly men (Knodel et al., 2013b).

## **2.2 Gender roles and financial well-being of Thai elderly**

Existing literature has also examined how financial well-being and income sources of the elderly varies with gender in Thailand or elsewhere in the world. Specifically, this section of the literature review focuses finances of Thai elderly in terms of gender differences and gender roles with urbanization and educational attainment.

### **2.2.1 Gender**

Generally, there has been significant differences of income in terms of gender. For the elderly, it is reported that economic hardship and poverty have been found to be more prevalent among elderly women than elderly men in Southeast Asia as men generally have higher mean income and more income sources (Ofstedal et al., 2004, Masud et al., 2008). Specifically, elderly women are more likely to rely on their adult children for financial support (Masud et al., 2008). A possible explanation is the fact that women tend to live longer and suffer from social and cultural disadvantages

leading to lack of economic independence in later life (Masud et al., 2008). In particular, Thailand's elderly population are predominantly females with 55% age 60 and older and 59% age 80 and older as of 2010 (UNFPA, 2011). Labour force participation rate of elderly females are relatively lower compared to elderly males in Thailand. As of 2005, 51% of males age 60 and older work and about 29% of females age 60 and older work (Fujioka & Thangphet, 2009). In terms of financial support from children, younger traditional filial norms of support are stronger for daughters towards mothers (Silverstein et al., 2006).

Continued improvements of living standards and financial well-being among gender are also observed for Thai elderly. Examining material and quality of household living for Thai elderly found that little percentage difference between men and women who live in better housing with appliances and amenities were found (Knodel & Chayovan, 2008). Gender differences among financial status are also improving for Thailand. The percentage of individuals having sufficient income and are satisfied with their financial situation are almost identical for men and women (UNFPA, 2011). However, married women tend to report lower personal income and wealth compared to men (UNFPA, 2011). Among unmarried older persons, females and males are quite equal in terms of wealth (UNFPA, 2011). Continued improvements of gender equality among elderly is evidently beneficial to Thailand's aging population given that the majority of Thai elders are females.

### **2.2.2 Region**

More Thai elderly are residing in rural areas compared to urban areas. In 2006, 69% of Thai elderly are from rural areas and 31% of Thai elderly are from urban areas

(Fujioka & Thangphet, 2009). Among different regions in Thailand, aging in the North and Northeast region has been more rapid than other regions (Fujioka & Thangphet, 2009). It is also commonly known for younger Thai generations to migrate to urban areas from these regions (Fujioka & Thangphet, 2009). While, the lowest proportion of older persons in the total population was found in Bangkok (Fujioka & Thangphet, 2009). Comparing fertility rates between urban and rural areas in Thailand, fertility decline faster in urban than in rural areas, but showed little difference since fertility differentials were relatively small (UNFPA, 2011)

Income and source of income may also differ between individuals from different regions in Thailand. In terms of place of residence between urban and rural area, substantial income differences are still evident with wealthier older persons living in urban areas. In 2007, it was reported that elderly in urban areas are more than twice as likely as rural elderly to have 100,000 baht or more as income (UNFPA, 2011). Similarly, urban elderly is only half as likely as rural elderly to report income under 10,000 baht (UNFPA, 2011).

Rural elderlies are more likely to report work as a source of income reflecting the tendency to remain economically active longer in life (Knodel & Chayovan, 2008). In particular, the South region had the most percentage of elderly working at 46.3% (Fujioka & Thangphet, 2009). This suggests that rural elderly engaging in agriculture consider retirement as a gradual process and not subject to a prescribed retirement age (Knodel & Chayovan, 2008). Similar findings are found in the labour force participation rate by location. It was found that Thai rural elderly males have the highest labour force participation accounting for about 90% in 2011 (Giles et al., 2015). While, urban females account for the lowest labour participation rate in

Thailand (Giles et al., 2015). In exception of Bangkok, other regions in Thailand saw an increase in labour force participation among people age 60 and older (Fujioka & Thangphet, 2009). Older people in rural areas of Southeast Asia tend to continue working long hours (World Bank, 2016b). In rural areas, elderly males who continue to work as old as 75 years do so for 30 to 40 hours a week compared to elderly females working 20 to 35 hours a week (World Bank, 2016b).

Findings from self-employment data by location also reveal similar results. The share of Thai population who are self-employed was higher for rural than urban residences (Giles et al., 2015). Specifically, self-employed Thais at the age of 60 was highest for rural females accounting for about 80% (Giles et al., 2015). This was followed by rural males, urban females, and urban males at approximately 70%, 60%, and 50% respectively of self-employed Thais at the age 60 (Giles et al., 2015). In urban areas, an increase in the self-employed share around age 60 indicates that self-employed urban workers, often in commerce and trade tend to remain in the workforce while employees from the formal sector retire (World Bank, 2016b).

Household saving behavior of Thais among different regions reveal mixed results. From Kosiyanon (1974), household saving behavior of Thais were investigated from 1960 to 1972 using a cross-sectional data from the socioeconomic survey. The results of the study indicate that there is a saving differential between urban and rural areas in Thailand (Kosiyanon, 1974). In particular, the urban marginal propensity to save was higher than rural areas and differ significantly among different regions in Thailand (Kosiyanon, 1974). Tengumnuay (1981) examined saving behavior in the central region and greater Bangkok area as part of the Economic Research Department of the Bank of Thailand. Using data from the socioeconomic

survey, the findings indicate that urban-rural difference have significant effects on saving behavior in Thailand (Tengumnuay, 1981). Specifically, self-employed and farm households in the rural central area tended to save more (Tengumnuay, 1981). The role of females in Thailand's rural regions have long played an important role in household economies (Singhanetra-Renard & Prabhudhanitisarn, 1992). In rural areas, females are likely to be found working next to their husbands and brothers in the rice fields and often play the important role of "holding the purse strings" and financial planning (Yoddumnern-Attig, 1992).

Compared to Thai elders living in rural areas, urban areas elders are more likely to report pensions as a source of income (Knodel & Chayovan, 2008). In 2007, approximately 12% of urban elderly have income sources from pensions as lump sum payments on retirement compared to around 3% for rural elderly (Knodel & Chayovan, 2008). Thus, reflecting the greater likelihood for urban elderly to have previously worked in the formal sector, such as government civil service (Knodel & Chayovan, 2008). This also supports the fact that many urban older persons, especially females stop working at retirement age (Giles et al., 2015). Withdrawal of urban elderly from work is correlated with access to a formal sector pension (Giles et al., 2015).

In recent years, there has been an increasing trend for adult children to migrate from rural to urban areas for better employment opportunities (Knodel, 2014). As a result, many rural Thai elders are left behind to take care of their grandchildren (Knodel, 2014). A study done by Knodel & Saengtienchai (2007) examines social and economic consequences of the migration of adult children to urban areas for rural parents in Thailand. Using open-ended interviews conducted in 2004, it was found



that children migrating to urban areas contributes positively to the material well-being of rural elderly parents (Knodel & Saengtienchai, 2007). In particular, adult children who moved from rural to urban areas, especially to Bangkok are more likely to provide larger remittances to their elderly parents (Knodel, 2014). When intergenerational transfers were examined across urban and rural areas, evidence suggests that there was no significant difference in familial intergenerational transfers between urban and rural areas (Theerawanviwat, 2014). However, urban elderly parents are receiving substantially higher monetary transfers than rural elderly parents. The median amount of money transfer from children to urban parents is 30,000 baht, almost doubling of 17,500 baht for rural parents (Theerawanviwat, 2014). Rural elderly parents are also more likely to receive the largest amount of money from their eldest child only, compared to urban elderly parents where the first two children are greatest financial providers (Theerawanviwat, 2014).

Examining the role of females among migration of domestic workers in Thailand can be complex. In developing countries, female household members may be restricted from migration because of power hierarchies in the family and sociocultural expectations (Chant & Radcliffe 1992). However, this may not be the case in the Thai context since Chant & Radcliffe (1992) reported that the case study of Mae Sa village in the Ping River Valley, Thailand shows the increasing trend toward labor migration among young and single females. Female's participation in rural-urban migrant streams in Thailand is quite prominent, reaching as high as 60 percent of all migrants (Chamrathirong et al., 1995; Tantiwiranond, 1995). According to the 1992 National Migration Survey, most migrants to the Bangkok metropolitan area were in their early twenties or teenage years with at least half of

these migrants being females (Chamratrithirong et al., 1995). Importantly, females are reported to earn one-third to one-half as much as males in similar occupations (Tantiwiranond, 1995). Findings from Curran et al. (2005) suggests that in the Thai context, females are considered more reliable remitters than males. However, higher rates of female migrants may also weaken their ties to natal villages in rural Thailand and shift patterns of care provision from daughters to sons (Curran et al., 2005).

### **2.2.3 Education**

Education level is an important factor for being financially supported at old age. With basic skills in reading and writing being critical for access to information and employment opportunities, education significantly determines one's economic well-being and financial status later in life (Knodel & Chayovan, 2008; Knodel et al., 2013b). In 2011, only 6% of Thais age 60 to 64 have no formal education and this increases to 27% among Thais age 80 and older (Knodel et al., 2013b). Almost 90% of Thais age 60 and older have only basic primary education (Knodel et al., 2013b). Urban elders are better educated than rural elderly and are more likely to continue schooling beyond the basic primary level to receive secondary education (Knodel et al., 2013b). Gender differences are also apparent among elderly education attainment with elderly men receiving more formal education than elderly women (Knodel et al., 2013b). In particular, gender differences of education attainment are more pronounced with increasing age of older persons in Thailand (Knodel et al., 2013b).

It is more likely for lower educated elderly parents to receive monetary support from their adult children (Theerawanviwat, 2014). This suggests that lower educated individuals are more likely to depend on others for financial support. This

also proves to show that education increases one's ability to become financially independent. Data on the employment rate of Thais by educational attainment reveals that better-educated people tend to withdraw from the labour force earlier (Giles et al., 2015). Elderly with least education are more likely to continue working at old age, often out of necessity because of low assets and savings and limited access to old age security programs (World Bank, 2016b). At the age of 60, almost 60% of Thais with an education level of college or higher were still employed compared to about 80% employment rate for Thais with middle school or less education (Giles et al., 2015). Among gender, female elders who had more children, living with children, with less annual family income, who had worked in government jobs, and perceived themselves to be in poor health were all associated with withdrawal from the labor force (Adhikari et al., 2011). While, females with less education, who were heads of households and indebted were quite likely to continue working in old age (Adhikari et al., 2011).

Future trends of education for the elderly in Thailand will inevitably improve in the coming years. Previous data on education of elderly reveal that primary and secondary education of older persons in 1994 were substantially lower than of those in 2011 (Knodel et al., 2013b). According to the 2010 labour force survey, current and projected education of Thai elderly from 2010 to 2050 show that future elderly will be increasingly better educated than current elders in Thailand (UNFPA, 2011). Specifically, a rise in secondary education of older persons of age 60 will increase significantly from 12% in 2010 to 80% in 2050 (UNFPA, 2011). Additionally, gender differences among educated elders will also continue to improve. Although the gender gap in education of elders will continue for the next few decades, it will eventually

close and reverse with females projected to have outnumbered males on having secondary or higher education by 2050 (UNFPA, 2011). The improvement of education among older persons will positively contribute to the financial well-being at old age and potentially affect future intergenerational transfers and elderly employment.

### **3. Conceptual Framework**

The main objective of this study examines the gap between reality and expectations of elderly financial support for males and females in Thailand. In particular, older Thai males and females evidently have different experiences in terms of financial well-being at old age. On the perspective of elderly financial support among gender, the framework utilized in this study is on the concept of “gender system” as outlined by Mason (2001). In basic social fundamentals, all societies have a set of norms and practices that define the roles, rights and obligations of males and females; this is formally referred to as a “gender system” (Mason 2001). Gender systems can vary and differ across societies and they condition the experiences of males and females throughout the life course. Gender systems, in turn, are both influenced and reinforced by social and economic factors.

In particular, is the importance of gender systems in the household where family is traditionally well-known for being a primary supporter of elderly care and finances. The role of family in Thailand, particularly children is considered the most common source of income for elderly parents across Thai households (UNFPA, 2011). Specifically, the traditions of Thai family on reciprocity to parents influences

children to take care of financial needs and care of older parents (Knodel et al., 2013a). Thus, the concept of gender systems is most definitely applicable to male and female elders in the Thai context. Gender systems also outlines the differences among patrilineal/patriarchal and the bilateral systems. Given that bilateral systems are more commonly found in Southeast Asia (Ofstedal et al., 2004), the bilateral system can be justified in the Thai context. Where, in patrilineal systems the responsibility of sons (and their wives) are stressed for caring for and supporting parents, whereas under the bilateral systems daughters occupy equally or more important roles in contributing to their parents' well-being (Ofstedal et al., 2004). According to the gender system concept, Mason (2001) theorizes that within bilateral systems, motherhood among elderly females are more likely to receive as much support and care as their elderly fathers do.

The influence of gender systems in the Thai family is most definitely affected by gender differences in economic and financial authority, such as property rights and participation in the workforce. Specifically, Thailand have had a long history of females being actively involved in the labour force, holding basing property and inheritance rights, and having relatively high economic status (Ofstedal et al., 2004). With both economic independence and household roles that Thai females hold, this potentially further differentiates the Thai women from men in terms of receiving public financial support, such government allowance and pension. Thus, the framework of gender systems fully encompasses all of the examined financial sources studied in this research.

Along with the part of gender systems and roles, there will be other variables and factors that may possibly affect or be associated with the financial needs of both

older males and females. This includes major socioeconomic factors, like the regional effect (urbanization) and educational attainment (human capital development). Given the rapid economic developments of Thailand, urbanization has increased significantly with the expansion of urban areas and large movements of population. Accounting for nearly 80% of total urban area in Thailand, Thai urban growth is primarily dominated by the Bangkok urban area, which is the fifth largest area in the East Asia region (World Bank, 2015). While, at an individual level, movement of migrants primarily from rural to urban are dominated by younger females (Chamratrithirong et al., 1995). Therefore, to capture the impact of urbanization among gender, the different regions of Thailand (Bangkok, Central, North, Northeast, and South) are examined separately for elderly financial support among males and females. In terms of educational attainment, education is an important factor in determining one's economic well-being and financial status later in life (Knodel & Chayovan, 2008). Importantly, gender differences are apparent among elderly education attainment with elderly males receiving more formal education than elderly females (Knodel et al., 2013b). Along with employment opportunities, education also significantly improves the financial planning of many individuals through increasing financial literacy.

Although Thailand over the 10 years, between 2007 and 2017, has been turbulent, regularly punctuated by natural disasters and political instability, the macroeconomy has been somewhat consistent, if not stable. According to World Bank (2020), real GDP growth averaged about 3.2% for the year 2007 to 2017, while CPI inflation and unemployment rate remained low at about 1%. Tourism entering Thailand also grew steadily, and between 60% to 55% of Thais were employed in the

informal sector (NSO, 2008; NSO, 2017). More importantly, the data of this study from both surveys are randomized samples of nationally represented survey respondents and fixing the cohort to 10 years allows us to control for possible unobservable factors including fixed-effects, as discussed above.

#### **4. Data Source and Summary**

The data used in this study are from two national surveys conducted by the National Statistical Office (NSO): 2007 Survey of Knowledge and Attitudes on Elderly Issues and 2017 Survey of the Older Persons in Thailand. The 2007 Survey of Knowledge and Attitudes on Elderly Issues is a comprehensive national survey on opinions, attitudes, and expectations towards the elderly of Thailand's working age population ages 18 to 59. The 2017 Survey of the Older Persons in Thailand is a nationally representative household survey on social, health, and economic characteristics. In this study, only questions regarding the source of income at old age were examined in both surveys. Only survey respondents ages 50 to 59 from the 2007 Survey of Knowledge and Attitudes on Elderly Issues were used to represent non-elderly expectations of income source at old age. The Survey of Knowledge and Attitudes on Elderly Issues is used to capture what Thai non-elderly (aged 50 to 59) expect their income sources would be when they become elderly, age 60 and over. While, only survey respondents ages 60 to 69 from the 2017 Survey of the Older Persons in Thailand were used to represent the reality of elderly income source. These specific age groups were chosen to reflect the same cohort or group of individuals who were non-elderlies ten years ago and became elderlies ten years later. And

because both surveys are randomized samples of nationally represented survey respondents, using the same cohort allows us to control for possible unobservable factors including fixed-effects and time-effects, albeit with some limitations. After specifying into defined age groups, the total number of survey respondents was 2,034 for non-elderly respondents from the 2007 Survey and 22,673 for elderly respondents from the 2017 Survey respectively.

Thai respondents in both surveys was categorized according to gender, region, and educational attainment. In the 2007 Survey of Knowledge and Attitudes on Elderly Issues, 47.79% (N= 972) of non-elderly respondents were males, whereas 52.21% (N=1,062) of non-elderly respondents were females (Figure 1). As for the 2017 Survey of the Older Persons in Thailand, 44.67% (N=10,127) of elderly respondents were males and 55.33% (N=12,546) of elderly respondents were females (Figure 1). Respondents in both surveys were categorized into respective regions in Thailand: Bangkok, central, north, northeast, and south. In the 2007 Survey of Knowledge and Attitudes on Elderly Issues, 10.62% (N=216), 24.09% (N=490), 24.09% (N=490), 26.75% (N=544), and 14.45% (N=294) of non-elderly respondents are from Bangkok, central, north, northeast, and south respectively (Figure 2). In the 2017 Survey of the Older Persons in Thailand, 4.66% (N=1,056), 27.82% (N=6,308), 26.33% (N=5,969), 27.83% (N=6,310), 13.36% (N=3,030) of elderly respondents are from Bangkok, central, north, northeast, and south respectively (Figure 2). As for education, respondents were categorized according to their highest education level received. This includes three broad education levels: primary and below, secondary and high school, university and higher. According to the 2007 Survey of Knowledge and Attitudes on Elderly Issues, 81.42% (N=1,656), 12.29% (N=250), 6.29% (N=128)



of non-elderly respondents have primary and below, secondary and high school, and university and higher education respectively (Figure 3). The 2017 Survey of the Older Persons in Thailand comprises of 83.42% (N= 18,885), 9.49% (N=2,153), 7.21% (N= 1,635) of elderly respondents have primary and below, secondary and high school, and university and higher education respectively (Figure 3).

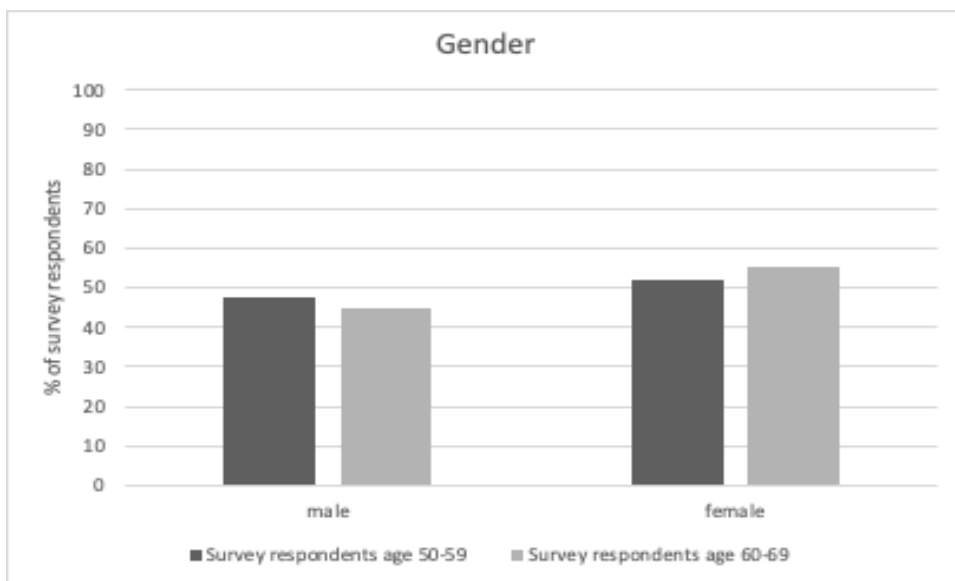


Figure 1. The percentage of survey respondents by gender.

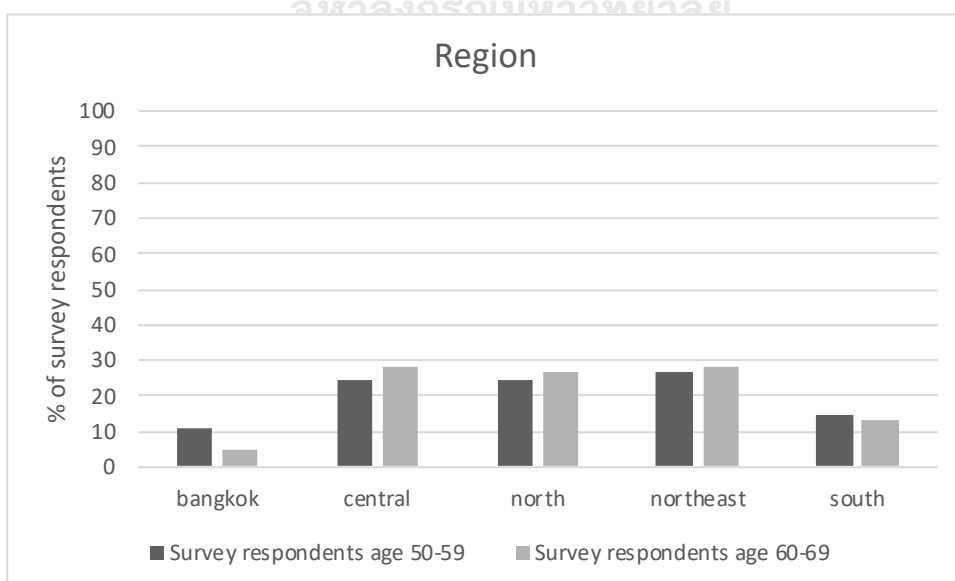


Figure 2. The percentage of survey respondents by region in Thailand.

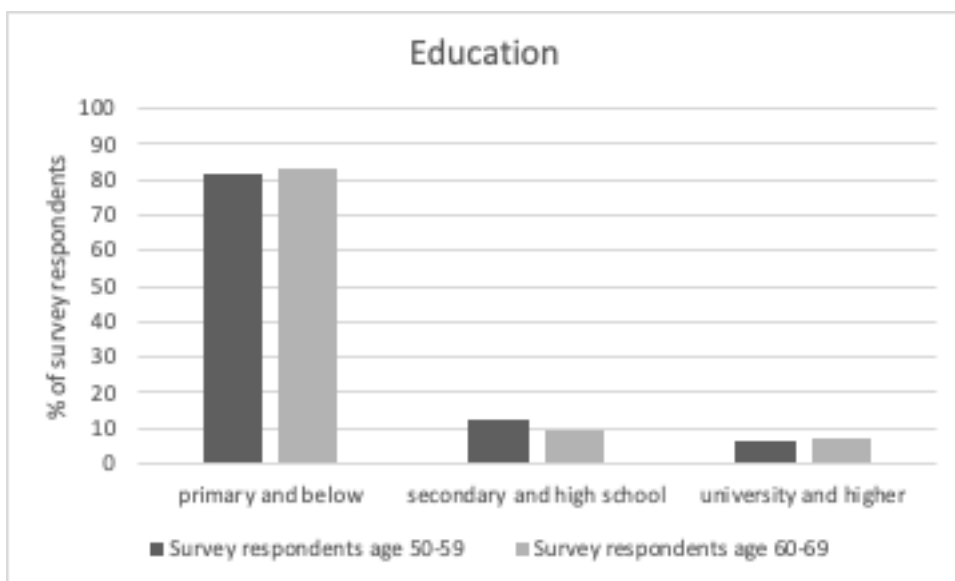


Figure 3. The percentage of survey respondents by education.

Non-elderly and elderly survey respondents were asked of expecting or having income at old age from different sources in both surveys. In this study, the examined sources of elderly financial support include personal savings, pension, children, spouse, relatives, government, and working at old age. The question of interest from 2007 Survey of Knowledge and Attitudes on Elderly Issues both in Thai (original) and translated to English are stated as follows:

ท่านคาดหวังว่าจะมีแหล่งเงินสำหรับเลี้ยงดูตนเองยามสูงอายุ จากแหล่งต่อไปนี้หรือไม่ (มี/ไม่มี)

1. ทำงานเลี้ยงตนเอง
2. บุตร
3. รัฐบาล (เบี้ยยังชีพ)
4. บำเหน็จ/บำนาญ
5. เงินออม/ทรัพย์สิน (เช่น บ้าน ที่ดิน เครื่องประดับ เป็นต้น)
6. คู่สมรส
7. ญาติ

*Do you expect to have financial support at old age from the following sources (yes/no)*

1. Working to support self
2. Children
3. Government (allowance)
4. Pension
5. Savings/assets (eg. house, property, jewelry)
6. Spouse
7. Relatives

The question from 2017 Survey of the Older Persons in Thailand both in Thai (original) and translated to English are stated as follows:

ในระหว่าง 12 เดือนก่อนวันสัมภาษณ์ท่านมีรายได้หรือทรัพย์สิน (รวมรายได้ที่ไม่ใช่ตัวเงิน) ในการเลี้ยงชีพตนเองจากแหล่งต่อไปนี้หรือไม่ (มี/ไม่มี)

- 1.การทำงาน
2. บุตร
3. เบี้ยยังชีพจากทางราชการ
4. บ้านหนึ่ง/บ้านญาติ
5. ดอกเบี้ยเงินออม/เงินออม/ทรัพย์สิน
6. คู่สมรส
7. พี่/น้อง/ญาติ

*Within the past 12 months before the surveyed date, did you have income (including income not in monetary form) to financially support yourself from the following sources (have/don't have)*

1. working
2. Children
3. Government allowance
4. Pension
5. Savings interest/savings/assets
6. Spouse
7. Siblings/relatives

It is also important to note that working as a source of elderly income refers to survey respondent's own work and does not take into account income from family member's or spouse's work.

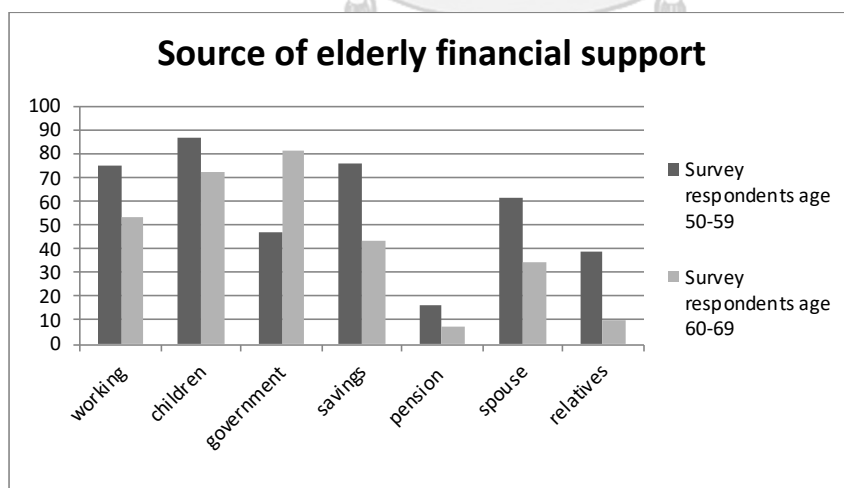


Figure 4. Percentage of survey respondents reported expecting or having financial support at old age from the following sources (N of survey respondents age 50-59 = 2,034, N of survey respondents age 60-69 = 22, 673).

The percentage distribution of expected and actual elderly source of financial support is shown in Figure 4. About 75% of non-elderly expect to be working at old age, but only around 54% of elderly actually work for a living. This shows that individuals are expecting to work at old age, but fewer actually work. In terms of financial support from children, about 87% of non-elderly expect their children to support them financially, but slightly fewer of 73% of elderly actually receive them. From statistics and future projections, this supports the current trend of declining fertility and potential support ratio implying less financial support given through intergenerational transfers. In reality, much more elderly are receiving government allowance than is expected from non-elderly. Only 47% of non-elderly expect to have financial support from government allowance, but 82% of elderly actually receive them. This may be due to the Thai government introducing the 500 Baht Universal Pension Scheme in 2009 for every elderly Thai person who is not in elderly public facilities or does not currently receive income permanently (Sakunphanit & Suwanrada, 2011). In the fiscal year 2010, approximately 77.5% of Thailand's elderly population were recipients for the 500-baht pension (Sakunphanit & Suwanrada, 2011). Savings, pension, married partner, and relatives as an income source at old age was much less than expected. In terms of savings, about 76% of non-elderly expect to have savings as an income source, but only 43% of elderly use their savings as income. 16% of non-elderly expected to have pension at old-age, but only 7% of elderly reported having pension in the form of lump-sum and monthly pension. About 62% of non-elderly expected to be financially supported by their spouse at old age. However, only 34% of elderly were supported by their spouse in

reality. Relatives play a less important role of financial support towards elderly with 39% expecting and 10% actually receiving support.

Further comparison can also be made on the ranking of each financial source at old. Given that government was highly unexpected due to the implementation of the 500 Baht Universal Pension Scheme in 2009, the comparison between ranks omitted the financial support from government. For Figure 4, both expectations (2007 Survey) and reality (2017 Survey) ranked financial support from children to be first. Second rank of expectations was for savings, while reality was for working at old age. Third rank of expectations was for working, while reality was for savings. Both expectations and reality ranked spouse, relatives, and pension as fourth, fifth, and sixth respectively.

Breaking down further by socioeconomic factors, expectations and reality of sources of elderly financial support was examined by gender, region, and education. Figure 5 and Figure 6 shows the percentage distribution of expectations and actual sources of elderly financial support by gender. According to male respondents (Figure 5): 78% expected to work at old age, 67% actually work, 86% expected support from children, 69% receive support from children, 46% expected support from the government, 78% receive support from the government, 77% expected support from own savings, 45% receive support from own savings, 19% expected support from pension, 9% receive pension, 64% expected support from their spouse, 33% receive support from their spouse, and 38% expected support from relatives, and 8% receive support from relatives. According to female respondents (Figure 6): 72% expected to work at old age, 43% work at old age, 87% expected support from children, 75% receive support from children, 48% expected support from the government, 84%

receive government support, 74% expected support from own savings, 42% receive support from own savings, 15% expected having pension, 6% have pension, 60% expected support from their spouse, 35% receive support from their spouse, 40% expected support from relatives, and 12% receive support from relatives.

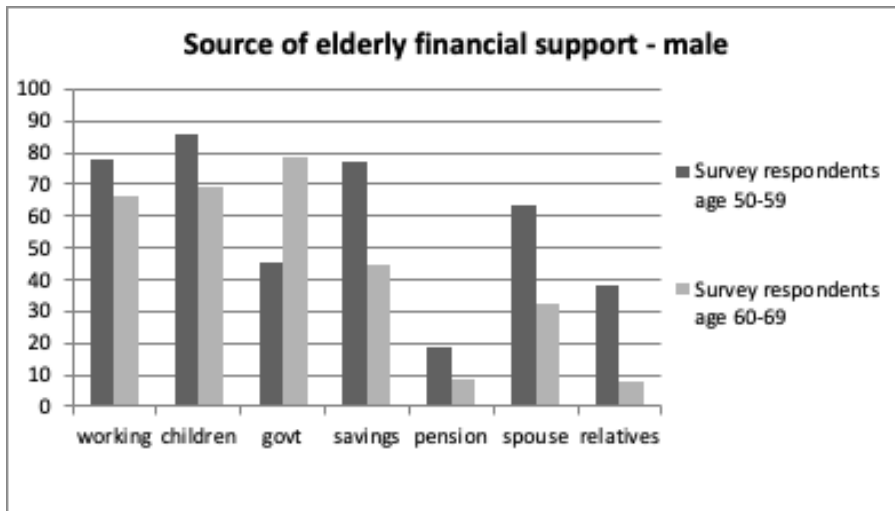


Figure 5. Percentage of male survey respondents reported expecting or having financial support at old age from the following sources (N of survey respondents age 50-59 = 972, N = survey respondents age 60-69 = 10,127).

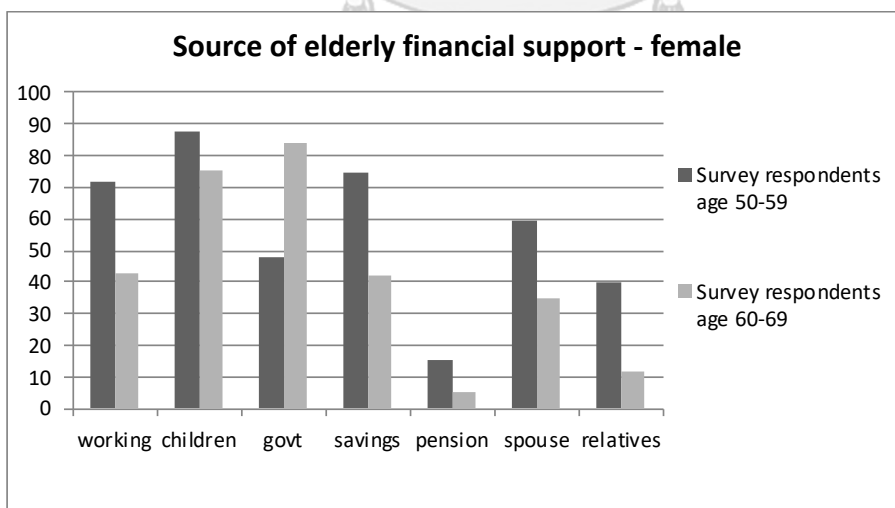


Figure 6. Percentage of female survey respondents reported expecting or having financial support at old age from the following sources (N of survey respondents age 50-59 = 1,062, N of survey respondents age 60-69 = 12,546).

Figure 7, 8, 9, 10, and 11 shows the percentage distribution of expectations and reality of financial sources at old age by region of respondent's residence.

According to survey respondents living in Bangkok (Figure 7): 78% expected to work at old age, 31% actually work at old age, 78% expected support from children, 62% receive support from children, 44% expected government support, 68% receive government support, 81% expected support from own savings, 54% receive support from own savings, 29% expected to have pension, 11% have pension, 58% expected to receive support from spouse, 26% receive support from spouse, 44% expected support from relatives, and 10% receive support from relatives. Survey respondents that were surveyed in the central region of Thailand included all provinces in the central region except for Bangkok. According to survey respondents living in the central region (Figure 8): 74% expected to work at old age, 49% actually work at old age, 85% expected support from children, 66% receive support from children, 40% expected government support, 80% receive government support, 72% expected support from own savings, 37% receive support from own savings, 18% expected to have pension, 8% have pension, 55% expected support from spouse, 28% receive support from spouse, 37% expected support from relatives, and 7% receive support from relatives. According to survey respondents living in the north region (Figure 9): 75% expected to work at old age, 57% work at old age, 87% expected support from children, 74% receive support from children, 54% expected government support, 83% receive government support, 82% expected support from own savings, 47% receive support from own savings, 14% expected to have pension, 7% have pension, 65% expected support from spouse, 37% receive support from spouse, 37% expected support from relatives, and 11% receive support from relatives. According to survey

respondents living in the northeast region (Figure 10): 73% expected to work at old age, 58% work at old age, 91% expected support from children, 82% receive support from children, 56% expected government support, 85% receive government support, 68% expected support from own savings, 44% receive support from own savings, 15% expected to have pension, 5% have pension, 65% expected support from spouse, 37% receive support from spouse, 62% expected support from relatives, and 14% receive support from relatives. According to survey respondents living in the south region (Figure 11): 78% expected to work at old age, 56% work at old age, 87% expected support from children, 68% receive support from children, 32% expected government support, 78% receive government support, 80% expected to have savings as support, 47% have savings as support, 12% expected to have pension 8% have pension, 64% expected support from spouse, 37% receive support from spouse, 45% expected support from relatives, and 8% receive support from relatives.

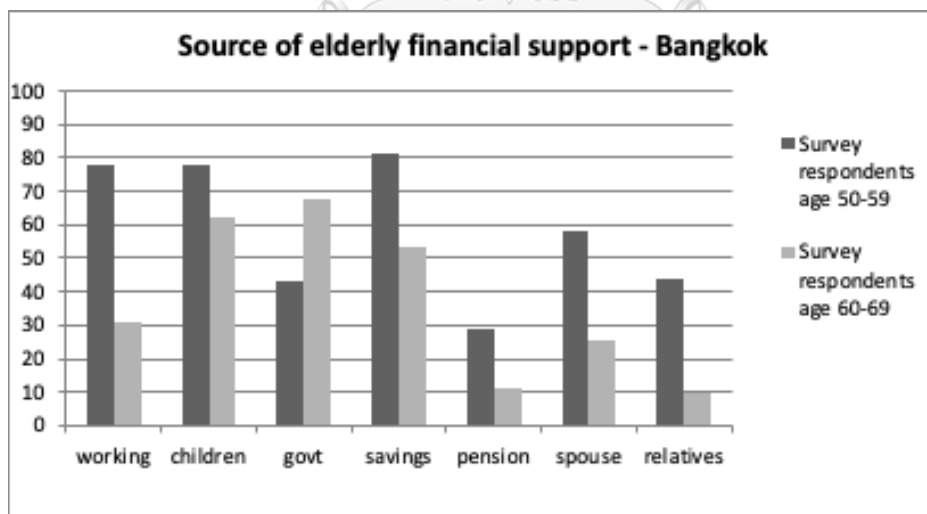


Figure 7. Percentage of survey respondents from Bangkok who reported expecting or having financial support at old age from the following sources (N of survey respondents age 50-59 = 216, N of survey respondents age 60-69 = 1,056).



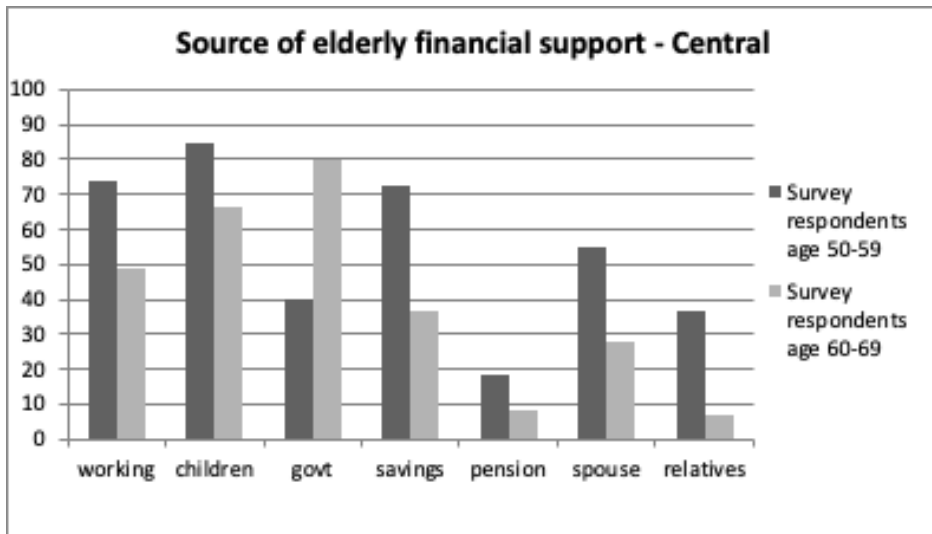


Figure 8. Percentage of survey respondents from central region who reported expecting or having financial support at old age from the following sources (N of survey respondents age 50-59 = 490, N of survey respondents age 60-69 = 6,308).

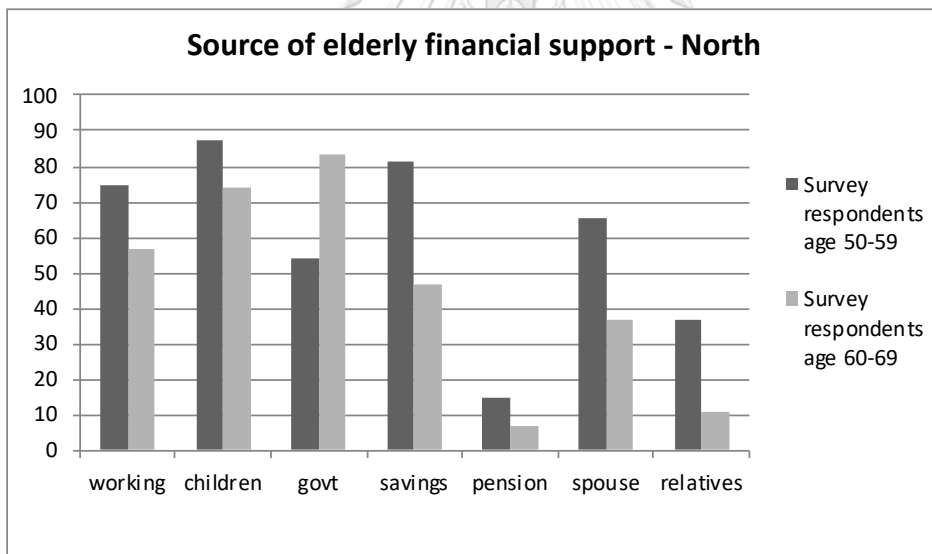


Figure 9. Percentage of survey respondents from north region who reported expecting or having financial support at old age from the following sources (N of survey respondents age 50-59 = 490, N of survey respondents age 60-69 = 5,969).

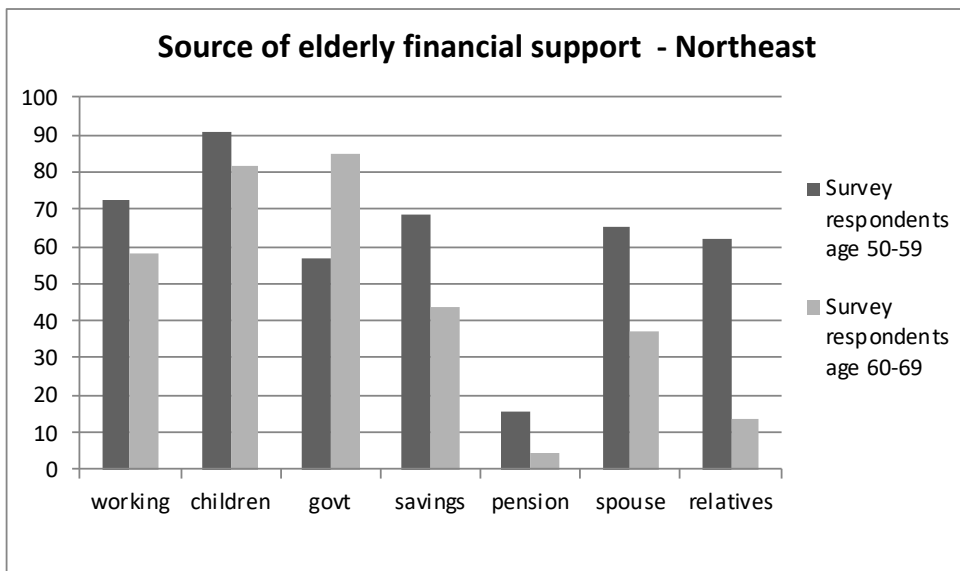


Figure 10. Percentage of survey respondents from northeast region who reported expecting or having financial support at old age from the following sources (N of survey respondents age 50-59 = 544, N of survey respondents age 60-69 = 6,310).

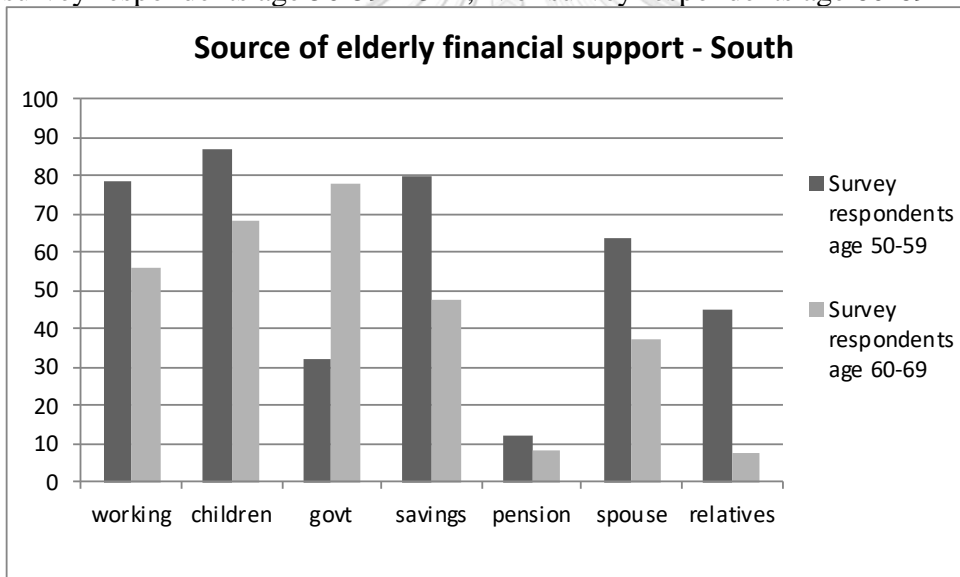


Figure 11. Percentage of survey respondents from south region who reported expecting or having financial support at old age from the following sources (N of survey respondents age 50-59 = 294, N of survey respondents age 60-69 = 3,030).

Figure 12, 13, and 14 shows the percentage distribution of expectations and reality of financial sources at old age by educational attainment of respondents. According to survey respondents with primary and below education (Figure 12): 75% expected to work at old age, 57% actually work at old age, 89% expected support from children, 77% receive support from children, 48% expected government support, 89% receive

government support, 74% expected support from own savings, 40% receive support from own savings, 10% expected to have pension, 0.7% have pension, 62% expected to receive support from spouse, 34% receive support from spouse, 40% expected support from relatives, and 10% receive support from relatives. According to survey respondents with secondary and high school education (Figure 13): 73% expected to work at old age, 46% actually work at old age, 80% expected support from children, 58% receive support from children, 40% expected government support, 63% receive government support, 75% expected support from own savings, 55% receive support from own savings, 34% expected to have pension, 22% have pension, 58% expected support from spouse, 32% receive support from spouse, 37% expected support from relatives, and 9% receive support from relatives. According to survey respondents with university and higher education (Figure 14): 70% expected to work at old age, 23% work at old age, 74% expected support from children, 45% receive support from children, 46% expected government support, 22% receive government support, 91% expected support from own savings, 72% receive support from own savings, 78% expected to have pension, 69% have pension, 62% expected support from spouse, 35% receive support from spouse, 44% expected support from relatives, and 8% receive support from relatives.

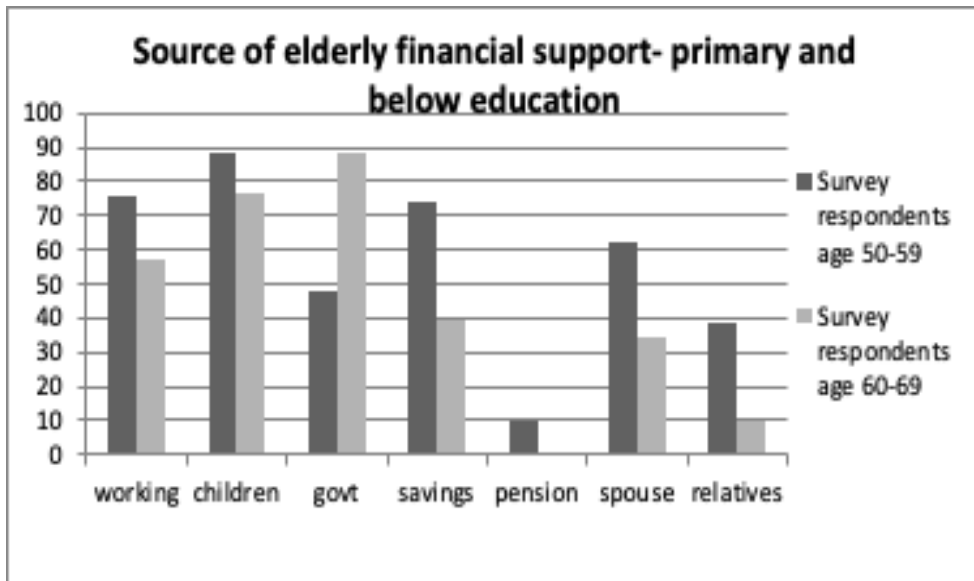


Figure 12. Percentage of survey respondents with primary and below education who reported expecting or having financial support at old age from the following sources (N of survey respondents age 50-59 = 1656, N of survey respondents age 60-69 = 18885).

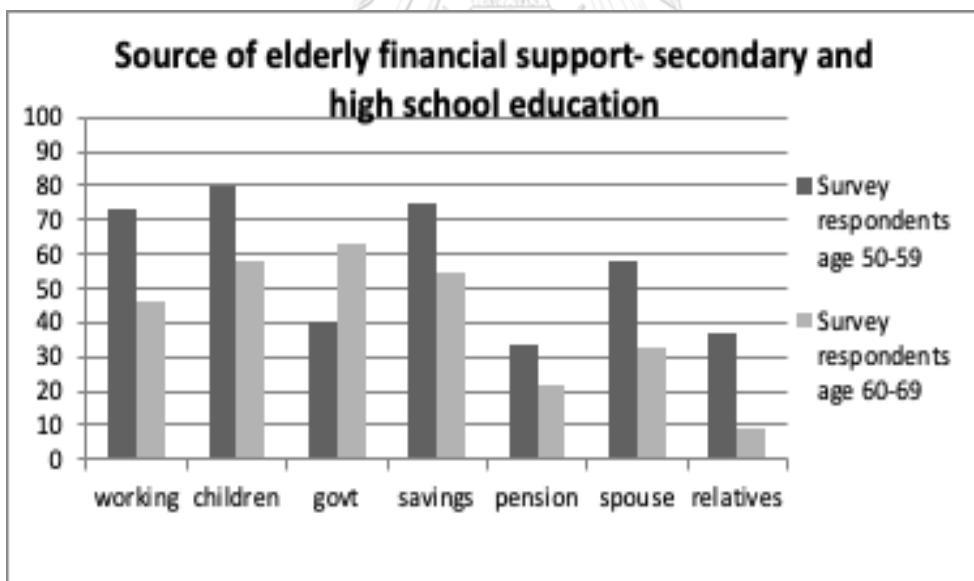


Figure 13. Percentage of survey respondents with secondary and high school education who reported expecting or having financial support at old age from the following sources (N of survey respondents age 50-59 = 250, N of survey respondents age 60-69 = 2153).

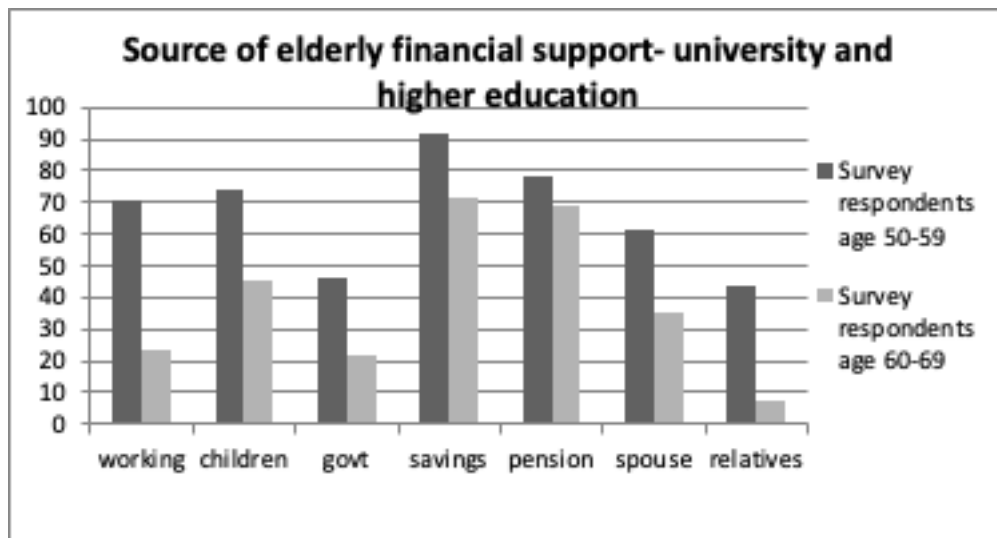


Figure 14. Percentage of survey respondents with secondary and high school education who reported expecting or having financial support at old age from the following sources (N of survey respondents age 50-59 = 128, N of survey respondents age 60-69 = 1635).

## 5. Research Methodology

### 5.1 Econometric Model

Given the above data summary on the proportions of expectations (2007 Survey) and proportions of reality (2017 Survey) for each examined financial source at old age categorized by gender, region, and education, we get the measure GAP which is the variable of interest in this study. The gap between reality and expectations (GAP) measured for each of the financial sources captured in both surveys is defined as the difference between reality and expectations of financial source at old age, or more formally as follows:

$$GAP_a = \%reality - \% expectations$$

where  $GAP_f$  is percentage expecting from 2007 pre-elderly Survey of Knowledge and Attitudes on Elderly Issues subtract the percentage that had access to financial source

$a$  when elderly from the 2017 Survey of the Older Persons. The financial source in question are denoted  $a = \{\text{savings, pension, children, spouse, relatives, government and working}\}$ . The gap can be presented as an overestimation of financial source, where expectations are greater than reality or an underestimation of financial source, where expectations are less than reality.

We further ran 3 models of OLS dummy regression to examine the magnitude and significance of the survey GAP with (1) financial sources at old age, (2) financial sources at old age across gender, education, and region, (3) financial sources at old age within gender (differentiate male and female respondents) across education and region. To prepare the data for the OLS regression models, each variable was binary coded as 0 or 1. In terms of examined seven financial sources at old age, 0 = don't expect/have and 1 = expect/have. For surveys; 0 = expectations from 2007 Survey, 1 = reality from 2017 survey. For gender; 0 = males, 1 = females. Education and region are a simple 0, 1 binary outcome of specified region or education level (eg. 0 = not from Bangkok, 1 = from Bangkok).

Description of each OLS dummy regression model are described as follows. The first model is a **Base Model**, a univariate OLS regression model with the dependent variable as the examined financial sources at old age and the independent variable as the GAP between surveys. The **Base Model** will give us the coefficient to find the survey GAP for each financial source.

$$Source_{ai} = c + \beta_1 Survey_i \quad (Base Model)$$

Where,  $Source_{ai}$  is the financial source examined denoted  $a = \{\text{savings, pension, children, spouse, relatives, government and working}\}$ ,  $c$  is the constant, and  $Survey_i$  is the expectations and reality response from both surveys. In total, seven OLS dummy regression of *Base Model* were ran for each type of financial support.

The second set of models is a multivariate OLS regression model with the gender, education, and region variable included. Namely, the ***Regression by Gender Model***, ***Regression by Education Model***, and ***Regression by Region Model***. It also includes a two-way interaction variable as the product of survey variable multiplied by either gender, education, or region variable. The *Regression by Gender Model* will give us the coefficient interpretations to find the survey GAP among gender and difference between gender for each financial source. *Regression by Education Model* and *Regression by Region Model* will give us the coefficient interpretation to find the survey GAP among education levels and regions for each financial source.

$$Source_{ai} = c + \beta_1 Survey_i + \beta_2 Fem_i + \beta_3 (Fem_i \times Survey_i)$$

(Regression by Gender Model)

$$Source_{ai} = c + \beta_1 Survey_i + \beta_2 Educ_{bi} + \beta_3 (Educ_{bi} \times Survey_i)$$

(Regression by Education Model)

$$Source_{ai} = c + \beta_1 Survey_i + \beta_2 Reg_{ci} + \beta_3 (Reg_{ci} \times Survey_i)$$

(Regression by Region Model)

Where,  $Fem_i$ ,  $Educ_{ai}$ ,  $Reg_{bi}$  are female, education, and region variables respectively.  $Educ_{bi}$  is the education level examined denoted  $b = \{\text{primary and below, secondary and high school, and university and higher}\}$ .  $Reg_{ci}$  is the region in Thailand

examined denoted  $c = \{\text{Bangkok, Central, North, Northeast, and South}\}$ .

$Fem_i \times Survey_i$ ,  $Educ_{bi} \times Survey_i$ , and  $Reg_{ci} \times Survey_i$  are two-way interaction variables with each respective socioeconomic variable. Seven OLS dummy regression of each financial source were ran for *Regression by Gender Model*. Seven OLS dummy regression of each financial source were ran for each three education levels in *Regression by Education Model*. Seven OLS regression of each financial source were ran for each five regions in *Regression by Region Model*.

The third set of models is a multivariate OLS regression model with the gender variable interacting with either education, or region variable. Namely, ***Gender-Education Interaction Model*** and ***Gender-Region Interaction Model***. It also includes both two-way and three-way interaction variables, where three-way interaction variable is the product of survey variable multiplied by gender variable and education variable, or survey variable multiplied by gender variable and region variable. The *Gender-Education Interaction Model* will give us the coefficient interpretations to find survey GAP among gender and difference between gender depending on different education levels for each financial source. The *Gender-Region Interaction Model* will give us the coefficient interpretations to find survey GAP among gender and difference between gender depending on different regions for each financial source.

$$\begin{aligned} Source_{ai} = & c + \beta_1 Survey_i + \beta_2 Fem_i + \beta_3 (Fem_i \times Survey_i) + \beta_4 Educ_{bi} \\ & + \beta_5 (Educ_{bi} \times Survey_i) + \beta_6 (Educ_{bi} \times Fem_i) \\ & + \beta_7 (Educ_{bi} \times Fem_i \times Survey_i) \end{aligned}$$

(*Gender-Education Interaction Model*)



$$\begin{aligned}
Source_{ai} = & c + \beta_1 Survey_i + \beta_2 Fem_i + \beta_3 (Fem_i \times Survey_i) + \beta_4 Reg_{ci} \\
& + \beta_5 (Reg_{ci} \times Survey_i) + \beta_6 (Reg_{ci} \times Fem_i) \\
& + \beta_7 (Reg_{ci} \times Fem_i \times Survey_i)
\end{aligned}$$

*(Gender-Region Interaction Model)*

Where,  $Educ_{bi} \times Fem_i \times Survey_i$  and  $Reg_{ci} \times Fem_i \times Survey_i$  are three-way interaction variables with each respective socioeconomic variable.  $Educ_{bi} \times Fem_i$  and  $Reg_{ci} \times Fem_i$  are two-way interaction variables with each respective socioeconomic variable. Seven OLS dummy regression of each financial source were ran for each three levels of education in *Gender-Education Interaction Model*. Seven OLS dummy regression of each financial source were ran for each five regions in *Gender-Region Interaction Model*.

## 5.2 Interpretation of OLS Dummy Regression Coefficient

To find the survey GAP within gender and differences between gender for each survey, we find coefficients that represents the survey GAP within gender and differences between gender from each three models. Representative coefficients are found by calculating the expectation equation of OLS dummy regression models given 0 and 1 binary outcomes of dummy variables. To find the survey GAP, we subtract expectation equation of Survey 2017 (reality) by expectation equation of Survey 2007 (expectations) from each model. To find the differences between gender (male-female), we subtract expectation equation of males by expectation equation of females from each model.

The interpretation of the coefficient to find the survey GAP for examined financial source at old age from the *Base Model* is shown in the example of calculation below with  $Source_{ai}$  specified as working:

Given the OLS dummy regression:

$$working_i = c + \beta_1 Survey_i$$

The coefficient for survey GAP,

2007 Survey (*expectations*):

$$E(working|Survey = 0) = c$$

2017 Survey (*reality*):

$$E(working|Survey = 1) = c + \beta_1$$

Survey GAP with *working* as financial source at old age:

$$\begin{aligned} &= E(working|Survey = 0) - E(working|Survey = 1) \\ &= \beta_1 \end{aligned}$$

$\beta_1$  represents the survey GAP for examined financial source. A negative sign of  $\beta_1$  indicates that the survey GAP has expectations greater than the reality.

The interpretation of the coefficient from OLS dummy regression of the second set of models are same across females (*Regression by Gender Model*), education levels (*Regression by Education Model*), and regions (*Regression by Region Model*). The example of calculation below is from *Regression by Gender Model* with  $Source_{ai}$  specified as working:

Given the OLS dummy regression:

$$working_i = c + \beta_1 Survey_i + \beta_2 Fem_i + \beta_3 (Fem_i \times Survey_i)$$

First the coefficient interpretation for survey GAP within gender,

*Males and 2007 Survey (expectations):*

$$E(working|fem = 0, Survey = 0) = c$$

*Males and 2017 Survey (reality):*

$$E(working|fem = 0, Survey = 1) = c + \beta_1$$

Survey GAP within *males* with *working* as financial source at old age:

$$\begin{aligned} &= E(working|fem = 0, Survey = 0) - E(working|fem = 0, Survey = 1) \\ &= \beta_1 \end{aligned}$$

**$\beta_1$  represents the survey GAP within males for examined financial sources.** A negative sign of  $\beta_1$  indicates that the survey GAP has expectations greater than the reality.

*Females and 2007 Survey (expectations):*

$$E(working|fem = 1, Survey = 0) = c + \beta_2$$

*Females and 2017 Survey (reality):*

$$E(working|fem = 1, Survey = 1) = c + \beta_1 + \beta_2 + \beta_3$$

Survey GAP within *females* with *working* as financial source at old age:

$$\begin{aligned} &= E(working|fem = 1, Survey = 0) - E(working|fem = 1, Survey = 1) \\ &= \beta_1 + \beta_3 \end{aligned}$$

**$\beta_1 + \beta_3$  represents the survey GAP within females/each education level/each region for examined financial sources.** A negative sign of  $\beta_1 + \beta_3$  indicates that the survey GAP has expectations greater than the reality.

Secondly the coefficient interpretation for the differences between gender for each survey,

*Males and 2007 Survey (expectations):*

$$E(\text{working}|fem = 0, \text{Survey} = 0) = c$$

*Females and 2007 Survey (expectations):*

$$E(\text{working}|fem = 1, \text{Survey} = 0) = c + \beta_2$$

Differences between males' and females' *expectations* with *working* as financial source at old age:

$$\begin{aligned} &= E(\text{working}|fem = 0, \text{Survey} = 0) - E(\text{working}|fem = 1, \text{Survey} = 0) \\ &= \beta_2 \end{aligned}$$

**$\beta_2$  represents the differences between expectations of males and females for examined financial sources.** A negative sign of  $\beta_2$  indicates that males' expectations were greater than females on the examined financial source.

*Males and 2017 Survey (reality):*

$$E(\text{working}|fem = 0, \text{Survey} = 1) = c + \beta_1$$

*Females and 2017 Survey (reality):*

$$E(\text{working}|fem = 1, \text{Survey} = 1) = c + \beta_1 + \beta_2 + \beta_3$$

Differences between males' and females' *reality* with *working* as financial source at old age:

$$= E(\text{working}|fem = 0, \text{Survey} = 1) - E(\text{working}|fem = 1, \text{Survey} = 1)$$

$$= \beta_2 + \beta_3$$

$\beta_2 + \beta_3$  represents the differences between reality of males and females for examined financial sources. A negative sign of  $\beta_2 + \beta_3$  indicates that males' reality was greater than females' on the examined financial source.

The interpretation of coefficients from OLS dummy regression of the third set of models on males and females are same across different education levels (*Gender-Education Interaction Model*) and regions (*Gender-Region Interaction Model*). The example of calculation below is from *Gender-Region Interaction Model* with  $Reg_{bi}$  specified as Bangkok and  $Source_{ai}$  specified as working:

Given the OLS dummy regression:

$$\begin{aligned} working_i = & c + \beta_1 Survey_i + \beta_2 Fem_i + \beta_3 (Fem_i \times Survey_i) + \beta_4 Bangkok_i \\ & + \beta_5 (Bangkok_i \times Survey_i) + \beta_6 (Bangkok_i \times Fem_i) \\ & + \beta_7 (Bangkok_i \times Fem_i \times Survey_i) \end{aligned}$$

First the coefficient interpretation for survey GAP within gender,

*Males, 2007 Survey (expectations), in Bangkok:*

$$E(working | fem = 0, Survey = 0, bangkok = 1) = c + \beta_4$$

*Males, 2017 Survey (reality), in Bangkok:*

$$E(working | fem = 0, Survey = 1, bangkok = 1) = c + \beta_1 + \beta_4 + \beta_5$$

Survey GAP within *males in Bangkok* with *working* as financial source at old age:

$$= E(working | fem = 0, Survey = 0, bangkok = 1) - E(working | fem = 0, Survey = 1, bangkok = 1)$$

$$= \beta_1 + \beta_5$$

$\beta_1 + \beta_5$  represents the survey GAP within males with specified education level/living in specified region for examined financial sources. A negative sign of  $\beta_1 + \beta_5$  indicates that the survey GAP has expectations greater than the reality.

*Females, 2007 Survey (expectations), in Bangkok:*

$$E(\text{working} | \text{fem} = 1, \text{Survey} = 0, \text{bangkok} = 1) = c + \beta_2 + \beta_4 + \beta_6$$

*Females, 2017 Survey (reality), in Bangkok:*

$$\begin{aligned} E(\text{working} | \text{fem} = 1, \text{Survey} = 1, \text{bangkok} = 1) \\ = c + \beta_1 + \beta_2 + \beta_3 + \beta_4 + \beta_5 + \beta_6 + \beta_7 \end{aligned}$$

Survey GAP within *females in Bangkok* with *working* as financial source at old age:

$$\begin{aligned} &= E(\text{working} | \text{fem} = 1, \text{Survey} = 0, \text{bangkok} = 1) - E(\text{working} | \text{fem} = 1, \text{Survey} = 1, \text{bangkok} = 1) \\ &= \beta_1 + \beta_3 + \beta_5 + \beta_7 \end{aligned}$$

$\beta_1 + \beta_3 + \beta_5 + \beta_7$  represents the survey GAP within females with specified education level/living in specified region for examined financial sources. A

negative sign of  $\beta_1 + \beta_3 + \beta_5 + \beta_7$  indicates that the survey GAP has expectations greater than the reality.

*Males, 2007 Survey (expectations), outside Bangkok:*

$$E(\text{working} | \text{fem} = 0, \text{Survey} = 0, \text{bangkok} = 0) = c$$

*Males, 2017 Survey (reality), outside Bangkok:*

$$E(\text{working} | \text{fem} = 0, \text{Survey} = 1, \text{bangkok} = 0) = c + \beta_1$$

Survey GAP within *males outside Bangkok* with *working* as financial source at old age:

$$= E(\text{working} | \text{fem} = 0, \text{Survey} = 0, \text{bangkok} = 0) - E(\text{working} | \text{fem} = 0, \text{Survey} = 1, \text{bangkok} = 0)$$

$$= \beta_1$$

**$\beta_1$  represents the survey GAP within males without specified education level/living outside specified region for examined financial sources.** A negative sign of  $\beta_1$  indicates that the survey GAP has expectations greater than the reality.

*Females, 2007 Survey (expectations), outside Bangkok:*

$$E(\text{working} | \text{fem} = 1, \text{Survey} = 0, \text{bangkok} = 0) = c + \beta_2$$

*Females, 2017 Survey (reality), outside Bangkok:*

$$E(\text{working} | \text{fem} = 1, \text{Survey} = 1, \text{bangkok} = 0) = c + \beta_1 + \beta_2 + \beta_3$$

Survey GAP within *females outside Bangkok* with *working* as financial source at old age:

$$= E(\text{working} | \text{fem} = 1, \text{Survey} = 0, \text{bangkok} = 0) - E(\text{working} | \text{fem} = 1, \text{Survey} = 1, \text{bangkok} = 0)$$

$$= \beta_1 + \beta_3$$

**$\beta_1 + \beta_3$  represents the survey GAP within females without specified education level/living outside specified region for examined financial sources.** A negative sign of  $\beta_1 + \beta_3$  indicates that the survey GAP has expectations greater than the reality.

Secondly the coefficient interpretation for the differences between gender for each survey,

*Males, 2007 Survey (expectations), in Bangkok:*

$$E(\text{working} | \text{fem} = 0, \text{Survey} = 0, \text{bangkok} = 1) = c + \beta_4$$

*Females, 2007 Survey (expectations), in Bangkok:*

$$E(\text{working} | \text{fem} = 1, \text{Survey} = 0, \text{bangkok} = 1) = c + \beta_2 + \beta_4 + \beta_6$$

Differences between males' and females' *expectations* with *working* as financial source at old age *in Bangkok*:

$$\begin{aligned} &= E(\text{working} | \text{fem} = 0, \text{Survey} = 0, \text{bangkok} = 1) - E(\text{working} | \text{fem} = 1, \text{Survey} = 0, \text{bangkok} = 1) \\ &= \beta_2 + \beta_6 \end{aligned}$$

**$\beta_2 + \beta_6$  represents the differences between expectations of males and females with specified education level/living in specified region for examined financial sources.**

A negative sign of  $\beta_2 + \beta_6$  indicates that males' expectations were greater than females on the examined financial source.

*Males, 2017 Survey (reality), in Bangkok:*

$$E(\text{working} | \text{fem} = 0, \text{Survey} = 1, \text{bangkok} = 1) = c + \beta_1 + \beta_4 + \beta_5$$

*Females, 2017 Survey (reality), in Bangkok:*

$$\begin{aligned} &E(\text{working} | \text{fem} = 1, \text{Survey} = 1, \text{bangkok} = 1) \\ &= c + \beta_1 + \beta_2 + \beta_3 + \beta_4 + \beta_5 + \beta_6 + \beta_7 \end{aligned}$$

Differences between males' and females' *reality* with *working* as financial source at old age *in Bangkok*:

$$\begin{aligned} &= E(\text{working} | \text{fem} = 0, \text{Survey} = 1, \text{bangkok} = 1) - E(\text{working} | \text{fem} = 1, \text{Survey} = 1, \text{bangkok} = 1) \\ &= \beta_2 + \beta_3 + \beta_6 + \beta_7 \end{aligned}$$

**$\beta_2 + \beta_3 + \beta_6 + \beta_7$  represents the differences between reality of males and females with specified education level/living in specified region for examined financial sources.** A negative sign of  $\beta_2 + \beta_3 + \beta_6 + \beta_7$  indicates that males' reality were greater than females on the examined financial source.



*Males, 2007 Survey (expectations), outside Bangkok:*

$$E(\text{working} | \text{fem} = 0, \text{Survey} = 0, \text{bangkok} = 0) = c$$

*Females, 2007 Survey (expectations), outside Bangkok:*

$$E(\text{working} | \text{fem} = 1, \text{Survey} = 0, \text{bangkok} = 0) = c + \beta_2$$

Differences between males' and females' *expectations* with *working* as financial source at old age *outside Bangkok*:

$$= E(\text{working} | \text{fem} = 0, \text{Survey} = 0, \text{bangkok} = 0) - E(\text{working} | \text{fem} = 1, \text{Survey} = 0, \text{bangkok} = 0)$$

$$= \beta_2$$

**$\beta_2$  represents the differences between expectations of males and females without specified education level/living outside specified region for examined financial sources.** A negative sign of  $\beta_2$  indicates that males' expectations were greater than females on the examined financial source.

*Males, 2017 Survey (reality), outside Bangkok:*

$$E(\text{working} | \text{fem} = 0, \text{Survey} = 1, \text{bangkok} = 0) = c + \beta_1$$

*Females, 2017 Survey (reality), outside Bangkok:*

$$E(\text{working} | \text{fem} = 1, \text{Survey} = 1, \text{bangkok} = 0) = c + \beta_1 + \beta_2 + \beta_3$$

Differences between males' and females' *reality* with *working* as financial source at old age *outside Bangkok*:

$$= E(\text{working} | \text{fem} = 0, \text{Survey} = 1, \text{bangkok} = 0) - E(\text{working} | \text{fem} = 1, \text{Survey} = 1, \text{bangkok} = 0)$$

$$= \beta_2 + \beta_3$$

**$\beta_2 + \beta_3$  represents the differences between reality of males and females without specified education level/living outside specified region for examined financial sources.** A

negative sign of  $\beta_2 + \beta_3$  indicates that males' reality was greater than females on the examined financial source.

Table 1. Summary of coefficient interpretation representations from each model.

| Model                                   | Coefficient(s)                          | Representation   |
|---|---|--|
| Base Model                              | $\beta_1$                               | GAP  |
| Regression by Gender Model              | $\beta_1$                               | GAP within males   |
|   | $\beta_1 + \beta_3$                     | Gap within females   |
|   | $\beta_2$                               | Difference between gender expectations                                   |
|   | $\beta_2 + \beta_3$                     | Difference between gender reality  |
| Regression by Education Model           | $\beta_1 + \beta_3$                     | Gap with specified education level                                       |
| Regression by Region Model              | $\beta_1 + \beta_3$                     | Gap living in specified region   |
| Gender-Education Interaction Model      | $\beta_1 + \beta_5$                     | Gap within males with specified education level                          |
|   | $\beta_1 + \beta_3 + \beta_5 + \beta_7$ | Gap within females with specified education level                        |
|   | $\beta_1$                               | Gap within males without specified education level                       |
|   | $\beta_1 + \beta_3$                     | Gap within females without specified education level                     |
|   | $\beta_2 + \beta_6$                     | Difference between gender expectations with specified education level    |
|   | $\beta_2 + \beta_3 + \beta_6 + \beta_7$ | Difference between gender reality with specified education level         |
|   | $\beta_2$                               | Difference between gender expectations without specified education level |
|   | $\beta_2 + \beta_3$                     | Difference between gender reality without specified education level      |
|   | Gender-Region Interaction Model         | $\beta_1 + \beta_5$  |
| $\beta_1 + \beta_3 + \beta_5 + \beta_7$ |   | Gap within females living in specified region                            |
| $\beta_1$                               |   | Gap within males living outside specified region                         |
| $\beta_1 + \beta_3$                     |   | Gap within females living outside specified region                       |
| $\beta_2 + \beta_6$                     |   | Difference between gender expectations living in specified region        |
| $\beta_2 + \beta_3 + \beta_6 + \beta_7$ |   | Difference between gender reality living in specified region             |
| $\beta_2$                               |   | Difference between gender expectations living outside specified region   |
| $\beta_2 + \beta_3$                     |   | Difference between gender reality living outside specified region        |

(negative coefficient for “within” implies reality is lower than expectations; negative coefficient for “between” gender implies females have lower expectation/reality compared to males)

### 5.3 Hypothesis

The first set of hypotheses surrounds the idea of differences among financial sources between older males and females. Given that UNFPA (2011) and Fujioka & Thangphet (2009) indicated that there is a higher probability of elderly males receiving their finances from working and further tying to pension, it is predicted that the reality-expectations gap will be smaller for males than for females:

*Hypothesis 1.1: The reality-expectations gap of working as an elderly financial source will be smaller for males than for females.*

*Hypothesis 1.2: The reality-expectations gap of pension as an elderly financial source will be smaller for males than for females.*

Given that Masud et al. (2008) and Knodel et al. (2013b) indicated that there is a higher probability of elderly females receiving their finances from children and family members, it is predicted that the reality-expectations gap will be smaller for females than for males:

*Hypothesis 1.3: The reality-expectations gap of children as an elderly financial source will be smaller for females than for males.*

*Hypothesis 1.4: The reality-expectations gap of spouse as an elderly financial source will be smaller for females than for males.*

*Hypothesis 1.5: The reality-expectations gap of relatives as an elderly financial source will be smaller for females than for males.*

The second set of hypotheses surrounds the idea of male and female financial sources at old age when examined across regions and education. Given that Knodel (2014) indicated that it is common for children migrant workers to provide remittance to their rural elders and with greater probability of filial responsibilities towards mothers as cited by Silverstein et al. (2006), it is predicted that the reality-expectations gap for children as a financial source will be smaller for females living in rural regions than for females living in Bangkok, or for males living elsewhere:

***Hypothesis 2.1:*** *The reality-expectations gap of children as an elderly financial source will be smaller for females living in rural regions than for females or males living in other regions.*

Given that Giles et al. (2015). indicated that rural males are more likely to work at old age, it is predicted that the reality-expectations gap for working as a financial source will be smaller for males living outside of Bangkok than for males living in Bangkok, or for females living elsewhere:

***Hypothesis 2.2:*** *The reality-expectations gap of working as an elderly financial source will be smaller for males living outside Bangkok than for males or females living in other regions.*

Given that Knodel & Chayovan (2008) indicated that it is more likely for individuals living in the urban areas to receive pension and with less number of females working at old age, it is predicted that the reality-expectations gap for pension as a financial source will be larger for females living in Bangkok than for females living outside of Bangkok, or for males living elsewhere:

***Hypothesis 2.3:*** *The reality-expectations gap of pension as an elderly financial source will be larger for females living inside Bangkok than for males or females living in other regions.*

Given that Theerawanviwat (2014) indicated that highly educated parents are unlikely to receive financial support from their children and with educational attainment higher among older males than females, it is predicted that the reality-expectations gap for children as a financial source will be larger for males with higher education than their male or female counterparts:

***Hypothesis 2.4:*** *The reality-expectations gap of children as an elderly financial source will be larger for males with higher education than for male or female counterparts.*

Given that Giles et al. (2015) indicated that highly educated elders are unlikely to continue to working beyond retirement and with lower number of elderly females in the workforce than elderly males, it is predicted that the reality-expectations for working as a financial source will be larger for females with higher education than their male or female counterparts:

***Hypothesis 2.5:*** *The reality-expectations gap of working as an elderly financial source will be larger for females with higher education than for male or female counterparts.*

## **6. Empirical Results and Discussion**

Table 2. shows the survey GAP results of the OLS dummy regression Base Model on examined financial sources at old age for all respondents regardless of

gender. The coefficients of the GAP between surveys in Base Model were all statistically significant at the 5% level. In exception of elderly financial support from the government, all other examined financial sources were negatively related with the GAP. This indicates that proportions of reality from elderly respondents in Survey 2017 was less than the proportions of expectations from non-elderly respondents in Survey 2007 for savings, pension, children, spouse, relatives, and working as financial support at old age. For government support, the direction of the GAP was in reverse or in other words reality from elderly respondents in Survey 2017 was greater than what was expected from non-elderly respondents in Survey 2007. This is confirmed by the proportions between expectations and reality of the two surveys in the data summary, as among financial sources at old age, government support had greater proportions of elder respondents receiving financial support in reality than what was expected from non-elders. This we believe was largely due to the Thai government introducing the 500 Thai Baht universal pension scheme for the elderly in 2009 which was two years later of when expectations of non-elderly respondents were surveyed in 2007. Specifically, the 500 Baht universal pension scheme is eligible to all elderly Thais who are not in elderly public facilities or do not currently receive income permanently (Sakunphanit and Suwanrada, 2011).

Overall, the largest survey GAP in Base Model was observed in government support, as indicated in the largest magnitude of the survey GAP coefficient of 0.3454 which was statistically significant at the 5% level. The second largest survey GAP was found in financial support from personal savings and followed by relatives, spouse, working, children, and pension with a magnitude of 0.3198, 0.2903, 0.2773,

0.2109, 0.1395, and 0.0929 respectively which were all statistically significant at the 5% level.

From the results of Base Model, it was found that overall the largest GAP was found in government support of the elderly for all surveyed respondents. Government support was also found to be the only financial source that saw greater proportions of reality compared to expectations. The size and direction of the GAP for government as a financial source at old is largely due to the fact that the introduction of the 500 Thai Baht universal pension scheme for the elderly in 2009, the Thai government sought to directly address the financial security issues of the aging population. In the fiscal year 2010, approximately 77.5% of Thailand's elderly population were recipients for the 500 Baht pension (Sakunphanit and Suwanrada, 2011). And this is the reason, we believe, that reality in 2017 was much higher than expectations formed in 2007 regarding government support as a source of meeting the financial needs of the elderly.

Table 2. Base Model survey GAP results with standard errors of examined financial sources at old age.

|            | Savings     |        | Pension     |        | Children    |        | Spouse      |        | Relatives   |        | Government  |        | Working     |        |
|------------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|-------------|--------|
|            | Coefficient | SE     | Coefficient | SE     | Coefficient | SE     | Coefficient | SE     | Coefficient | SE     | Coefficient | SE     | Coefficient | SE     |
| Survey GAP | -0.3198***  | 0.0113 | -0.0929***  | 0.0063 | -0.1395***  | 0.0101 | -0.2773***  | 0.0109 | -0.2903***  | 0.0073 | 0.3454***   | 0.0092 | -0.2109***  | 0.0114 |
| Constant   | 0.7556      | 0.1686 |             |        | 0.8662      |        | 0.617       |        | 0.3898      |        | 0.47        |        | 0.7472      |        |
| N          | 24707       | 24707  | 24707       | 24707  | 24707       | 24707  | 24707       | 24707  | 24707       | 24707  | 24707       | 24707  | 24707       | 24707  |

\* $p < 0.10$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

Table 3. Regression by Gender, Regression by Education, and Regression by Region model results of survey GAP for examined financial sources at old age.

|                           | Savings     |       | Pension     |       | Children    |       | Spouse      |       | Relatives   |       | Government  |       | Working     |       |
|---------------------------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|-------------|-------|
|                           | Coefficient | SE    | Coefficient | SE    | Coefficient | SE    | Coefficient | SE    | Coefficient | SE    | Coefficient | SE    | Coefficient | SE    |
| <b>Gender</b>             |             |       |             |       |             |       |             |       |             |       |             |       |             |       |
| Male                      | -0.3194**   |       | -0.0929**   |       | -0.1633**   |       | -0.3105**   |       | -0.305**    |       | 0.3264**    |       | -0.1139**   |       |
| Female                    | -0.3187*    |       | -0.0908*    |       | -0.1213**   |       | -0.2483**   |       | -0.2793**   |       | 0.3592**    |       | -0.2858**   |       |
| <b>Region</b>             |             |       |             |       |             |       |             |       |             |       |             |       |             |       |
| Bangkok                   | -0.2779*    |       | -0.1684**   |       | -0.1583*    |       | -0.322*     |       | -0.3412**   |       | 0.2428**    |       | -0.4765**   |       |
| Central                   | -0.3558*    |       | -0.092*     |       | -0.1829**   |       | -0.2696*    |       | -0.3011*    |       | 0.4023**    |       | -0.2509**   |       |
| North                     | -0.3468*    |       | -0.0732**   |       | -0.1338**   |       | -0.2845*    |       | -0.2627**   |       | 0.2927**    |       | -0.1783**   |       |
| Northeast                 | -0.2456**   |       | -0.1043*    |       | -0.0926**   |       | -0.2783*    |       | -0.2398**   |       | 0.2865**    |       | -0.1399**   |       |
| South                     | -0.3263*    |       | -0.0322**   |       | -0.1868**   |       | -0.2667*    |       | -0.3713**   |       | 0.461**     |       | -0.2241*    |       |
| <b>Education</b>          |             |       |             |       |             |       |             |       |             |       |             |       |             |       |
| Primary and below         | -0.3451**   |       | -0.0892**   |       | -0.1189**   |       | -0.2821*    |       | -0.2870*    |       | 0.4064**    |       | -0.1827**   |       |
| Secondary and high school | -0.2067**   |       | -0.1204**   |       | -0.2189**   |       | -0.2567*    |       | -0.2778*    |       | 0.2339**    |       | -0.2649**   |       |
| University and higher     | -0.1960**   |       | -0.0943*    |       | -0.2877**   |       | -0.2642*    |       | -0.359**    |       | -0.2413**   |       | -0.4688**   |       |
| N                         | 24707       | 24707 | 24707       | 24707 | 24707       | 24707 | 24707       | 24707 | 24707       | 24707 | 24707       | 24707 | 24707       | 24707 |

\* *partial significance*, \*\* *full significance*



Table 3 shows the survey GAP results of the Regression by Gender, Regression by Education, and Regression by Region Models on examined financial sources at old age across gender, region, and education. In particular with the interpretation of coefficients in this set of models, the significance of such coefficients can be categorized into partial significance and full significance. Where, partial significance indicates that not all of the coefficients in the interpretation are significant at the 10% level, and full significance indicates that all of the coefficients in the interpretation are significant at the 10% level. From Table 3, it is observed that the survey GAP of male and female respondents when it came to savings as a means of meeting elderly financial needs was strikingly similar. The GAP of savings for male and female had a magnitude of 0.3194 and 0.3187 respectively with the GAP for males having full significance and the GAP for females having partial significance. Among examined regions, the largest savings GAP was found in the central and north regions, with a magnitude of 0.3558 and 0.3468 respectively. The smallest savings GAP was found in the Northeast region at 0.2456. Among education levels, the savings GAP increased in magnitude with decreasing levels of education with the survey GAP for respondents with university and higher education to be 1.8 times<sup>1</sup> larger than the survey GAP for respondents with primary and below education.

Similar to savings, the survey GAP for pension as a financial source at old age was also identical between males and females. The GAP of pension for males and females was 0.0929 and 0.0908 respectively with the GAP for males having full significance and the GAP for females having partial significance. Bangkok

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<sup>1</sup> The larger GAP was divided by the smaller GAP to find how many times a large GAP was larger than a small GAP.

respondents saw the largest GAP among regions indicating pension as a financial source, which was about 5 times larger than the smallest observed gap of Southern respondents.

As for elderly financial support from family, the survey GAP for children as a financial source at old age was about 1.3 times larger for males than for females. Specifically, the GAP of children support for both males and females was fully significant with a magnitude of 0.1633 and 0.1213 respectively. The south region saw the largest GAP from children's support which was about 2 times the smallest GAP found for the northeast region. Among education, the GAP from children's support increased in magnitude with respondent's education. The survey GAP for financial support from spouse and relatives at old age was similar for male respondents with a full significance magnitude of 0.3105 and 0.305 respectively. Compared to the GAP for males, female respondents' survey GAP on support from spouse and relatives were smaller (0.2483 spouse and 0.2793 relatives with full significance). The GAP for spouse as a financial source at old age was relatively similar among examined regions and among education levels. While, the GAP for relatives as a financial support was found to be largest in the South region which was about 1.5 times that of the gap in the Northeast region.

Compared to other examined financial sources, the survey GAP regarding government moved in the opposite direction with a positive coefficient. With the largest GAP among examined financial sources, the survey GAP for government support was slightly larger for female than male respondents. The magnitude for males was 0.3264 compared to 0.3592 for females (both fully significant). With greater numbers of elders receiving government support in reality, the GAP in the

South and Central was the largest among examined regions. Specifically, the GAP from Southern respondents was almost twice of the GAP for Bangkok. While, those with primary and below education saw a GAP that was about 1.7 times the GAP for higher educated respondents.

Lastly from Table 3, work as a source of meeting financial needs when elderly saw that the survey GAP for females was about 2.6 times larger than the survey GAP for males. The survey GAP of working for males and females had a magnitude of 0.1139 and 0.2858 with full significance respectively. The largest survey GAP for working found in Bangkok was about 3.4 times that of the smallest GAP found in the Northeast. Among education, the GAP from working at old age increased in magnitude with respondent's education. The survey GAP for those with university and higher education was about 2.6 times larger than the survey GAP for those with primary and below education.

Discussing on the results from Regression by Gender, Regression by Education, and Regression by Region Models, the survey GAP for government support was found to be one of the largest among examined financial sources. When compared between gender, the survey GAP for government support was slightly larger for female than male respondents. This may be because fewer elderly female has access to pension than the elderly male due to former engagement in formal employment (Ofstedal et al., 2004; Masud et al., 2008), resulting for elderly females to report proportionately slightly higher financial support from the government. According to the Survey of Older Persons in Thailand, 17% reported that they were very satisfied and 49% were satisfied with the government's elderly pension compared to 6% who reported that they not satisfied, while 11% never used the

elderly pension. Thus, this further give encouraging signs to the future of government allowance in Thailand.

For government support examined across regions, the smallest survey GAP found in Bangkok respondents suggest that lower proportions of Bangkok elders are receiving government support in reality when compared to outside Bangkok. Government support is well received among elders with lower education compared to those highly educated. Thus, reflecting the large GAP found in respondents with primary and below education. This further suggests that elders with higher education are either economically better off and are not in need of government allowance or are receiving sufficient finances from other sources, such as we seen in the results from pension and savings

Furthermore, results from Regression by Gender Model also interestingly found that the gap between expectations and reality when it comes to savings as a means of meeting elderly financial needs is strikingly similar for both males and females. This suggests that the literature on gender differences of expectation-formation may not apply in the Thai context. Afterall, Thailand is a bilateral and matrilineal society, and the economic role of Thai woman in the traditional family puts her in a different context from other patriarchal (Western and Asian) societies. Overall, Base Model found the survey GAP for savings to be second largest which was again reflected when examined separately among gender in Regression by Gender. Such significant GAP for savings at old age can be explained through behavioral finance literatures on why people never get to save enough, and our results confirms this in the Thai context. It is commonly well-known fact that education increases one's employment opportunity which may lead to accumulating better

savings. This was the case for the results found in this study as elders with higher education are reporting more savings as a financial source. On the contrary, those with lower education find themselves with lower proportions having savings at old age. Thus, reflecting the larger GAP among primary and below respondents compared to highly educated respondents. Such findings prove to show that lower educated respondents are poorly planning their personal savings beyond retirement years which could increase their financial vulnerability later in life.

Moreover, the differences in gaps attributed by Ofstedal et al. (2004) and Masud et al. (2008), due to gender wealth differences and the idea that males are more likely to be formally employed than females may not hold in the Thai context. Although married women tend to report somewhat lower personal income and wealth compared to men, among unmarried elderly persons, females and males are quite equal in terms of wealth (UNFPA, 2011). The Thai adult female has both a relatively favorable (economical) status and a high degree of autonomy and education. And besides, with unemployment rates consistently low (less than 1%) and with the importance of informal employment, any differences in savings between gender should be somewhat mitigated. This again is reflected in the strikingly similar GAP of men and women's gap between expectations and reality regarding pensions as a source of elderly finance. Pensions after all will be tied to formal and informal employment, of which we have little differences across gender. Looking at the overall picture from Base Model, pension also saw the smallest GAP among examined financial sources. As for working, we found that more elderly males worked than females in Thailand which brought the GAP between expectation and reality to about 2.6 times larger for females than for males. This is consistent with Fujioka and

Thangphet (2009) who argue that females traditionally are more inclined to stay at home and take care of household work, even the elderly. The results from male-female difference also supports this with a huge and significant difference between male and female elders working in reality.

The largest survey GAP for working found in Bangkok was about 3.4 times that of the smallest GAP found in the Northeast. This confirms that elders outside of Bangkok, especially in the Northeast region are more likely to continue working at old age. The findings align with previous evidence which suggests that among other factors including age, pension, and health, living in urban areas contributes to the reduction of the probability of elder's work retention (Sakai and Asaoka, 2007). Income inequality between elders residing in urban and rural areas as indicated by existing Thai statistics (UNFPA, 2011) may also contribute to proportions of those who continue to work beyond retirement. The proportion of elder workers in the northeast region of Thailand generally reflects the nature of agricultural work as majority of workers in this region are employed in this sector. As Knodel & Chayovan (2008) explains; rural elderly engaging in agriculture consider retirement as a gradual process and not subject to a prescribed retirement age. Since the characteristics of agricultural work requires a lot of heavy labor and physical effort, the number of household members is crucial for maintaining such careers. Therefore, it is known for northeastern elders to continue working in their older years if the number of household members is low. Given that there is evidence of migration of working adults to urban areas like Bangkok, this may be the case for many northeastern elders.

Among education, the GAP from working at old age increased in magnitude with respondent's education. This result suggests that much less numbers of highly educated elders are working in reality when compared to lower educated elders. These findings confirm the results of previous literature proving that Thai individuals with less education, who were heads of households and indebted were quite likely to continue working in old age (Adhikari et al., 2011).

Findings for pension as a financial source among region suggests that non-elderly respondents from Bangkok have the highest expectations compared to other regions. This is reflected in the gap between expectations and reality, where Bangkok respondents saw the largest expectations-reality gap among regions which was about 5 times larger than the smallest observed gap of Southern respondents. This supports previous evidence that suggests that urban areas elders are more likely to report pensions as a source of income (Knodel & Chayovan, 2008). This also correlates with the fact that many urban older persons stop working at retirement age. Withdrawal of urban elderly from work is correlated with access to a formal sector pensions (Giles et al., 2015). This shows that there is higher probability for elders residing in Bangkok to have previously worked in the formal sector, such as government civil service.

With most of the non-elderly respondents expecting their financial support from children at old age, the survey GAP for children was smaller in size compared to other financial sources. Although in the Thai family, children remain the most important source of income for the elderly of old age, we found that the financial support for the elderly from children was lower than expected, which reflects the declining fertility and reduced potential base for intergenerational transfers.

Moreover, the survey GAP for children support for men was about 1.3 times that of

women. This perhaps is because labor participation rates of elderly women are much lower than their male counterparts, so older women may have to rely more on children support. That notwithstanding, from the Thai societal and filial norm perspective, this aligns with previous findings about stronger filial obligations towards mothers (Silverstein et al., 2006) and such filial responsibilities can be beneficial in the Thai aging society with Thailand's elderly being predominantly female (UNFPA, 2011).

Among regions, the smallest GAP for children's support was observed in respondents from the Northeast. This suggests the high proportions of Northeastern elders receiving children support. Possibly the effect of working adults migrating to urban areas and sending remittances to family at home, may have explained for such high proportions in northeast. Knodel & Saengtienchai (2007) noted that elders in the northeast are substantially more likely to have a migrant child, especially one in Bangkok. In particular, the anticipation for northeastern parents was that their migrant children would be able to relieve the current economic hardships of their parents (Knodel & Saengtienchai, 2007). Previous studies indicated that elderly parents with lower education are more likely to receive monetary support from their children (Theerawanviwat, 2014). This is reflected in the trend of GAP from children's support increasing in magnitude with respondent's education.

Table 4 shows the results of difference between male and female for Survey 2007 (expectations) and Survey 2017 (reality) from Regression by Gender Model. As observed from Table 4, in survey 2007 the male-female differences are significant for financial support from pension, spouse, and working. This means that the expectations proportions of males and females are statistically different for pension, spouse, and



working as a mean of financial support at old age. While, examining the reality from Survey 2017 found that males and statistically different than females in terms of receiving elderly financial support from pension, children, spouse, relatives, government, and working. In particular, reality of receiving support from working saw the largest magnitude of male-female difference indicating that there is a huge difference between male and female elders working in reality. Expectations of working at old age was also largely different between male and females, especially among the magnitude for expectations from Survey 2007.



Table 4. Regression by Gender Model results of between male-female difference for examined financial sources at old age.

|                                   | Savings        |                | Pension        |                | Children       |                | Spouse         |                | Relatives      |                | Government     |                | Working        |                |
|-----------------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Male-<br>Female<br>Differenc<br>e | Survey<br>2007 | Survey<br>2017 | Survey<br>2007 | Survey<br>2017 | Survey<br>2007 | Survey<br>2017 | Survey<br>2007 | Survey<br>2017 | Survey<br>2007 | Survey<br>2017 | Survey<br>2007 | Survey<br>2017 | Survey<br>2007 | Survey<br>2017 |
|                                   | -0.0266        | -0.0258        | -0.0376**      | -0.0355*       | 0.0177         | 0.0597*        | -0.0389**      | 0.0223**       | 0.0137         | 0.0394*        | 0.0253         | 0.0581*        | -0.0623**      | -0.2341**      |
| N                                 | 24707          |                | 24707          |                | 24707          |                | 24707          |                | 24707          |                | 24707          |                | 24707          |                |

\**partial significance*, \*\* *full significance*



Table 5. Gender-Education Interaction and Gender-Region Interaction model results of survey GAP within gender across region and education.

| Region                      | Savings   |          | Pension   |           | Children  |           | Spouse    |           | Relatives |           | Government |           | Working   |           |
|-----------------------------|-----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|
|                             | Male      | Female   | Male      | Female    | Male      | Female    | Male      | Female    | Male      | Female    | Male       | Female    | Male      | Female    |
| Bangkok=1                   | -0.2216** | -0.3194* | -0.1462** | -0.1847*  | -0.1306*  | -0.1676*  | -0.3375*  | -0.3112*  | -0.3626** | -0.3271*  | 0.2180**   | 0.2390*   | -0.4154** | -0.5151*  |
| Bangkok=0                   | -0.3225** | -0.3116* | -0.0845** | -0.0747*  | -0.1714** | -0.1232** | -0.3130** | -0.2464** | -0.2993** | -0.2729** | 0.3290**   | 0.3617**  | -0.0970** | -0.2717** |
| Central=1                   | -0.3441*  | -0.3648* | -0.1232** | -0.068*   | -0.1796*  | -0.1858*  | -0.2937*  | -0.2512*  | -0.3270*  | -0.2816*  | 0.3853**   | 0.4153*   | -0.1873** | -0.2989*  |
| Central=0                   | -0.3066** | -0.2993* | -0.0864** | -0.0995*  | -0.1533** | -0.0952** | -0.3107** | -0.2441** | -0.2956** | -0.2769*  | 0.3118**   | 0.3398*   | -0.0872** | -0.2798** |
| North=1                     | -0.3605*  | -0.3277* | -0.0587** | -0.0848*  | -0.1553*  | -0.1183*  | -0.3145*  | -0.2531*  | -0.2669*  | -0.2669*  | 0.2791**   | 0.3020*   | -0.0817*  | -0.2485*  |
| North=0                     | -0.3044** | -0.3188* | -0.1054** | -0.0924*  | -0.1662** | -0.1229** | -0.3090** | -0.2486** | -0.3200** | -0.2828** | 0.3437**   | 0.3744*   | -0.1256** | -0.2981** |
| Northeast=1                 | -0.2417** | -0.2469* | -0.0996*  | -0.1060*  | -0.1208** | -0.0708*  | -0.3033*  | -0.2584*  | -0.2506** | -0.2330*  | 0.2764**   | 0.2914*   | -0.0135** | -0.2401*  |
| Northeast=0                 | -0.3487** | -0.3441* | -0.0901** | -0.0847*  | -0.1803** | -0.1418*  | -0.3133** | -0.2459** | -0.3259** | -0.2968** | 0.3449**   | 0.3822**  | -0.1523** | -0.3028** |
| South=1                     | -0.3514*  | -0.3038* | -0.0520** | -0.0144*  | -0.2670** | -0.1151*  | -0.3393*  | -0.2016*  | -0.4054** | -0.3409*  | 0.4450**   | 0.4754*   | -0.1211*  | -0.3164*  |
| South=0                     | -0.3140** | -0.3201* | -0.0997** | -0.1037*  | -0.1461** | -0.1230*  | -0.3056** | -0.2554** | -0.2882** | -0.2693*  | 0.3065**   | 0.3388*   | -0.1126** | -0.2803** |
| <b>Education</b>            |           |          |           |           |           |           |           |           |           |           |            |           |           |           |
| primary and below=1         | -0.3592** | -0.3327* | -0.0837*  | -0.0933*  | -0.1452** | -0.1016*  | -0.3107*  | -0.2597*  | -0.3052*  | -0.2741*  | 0.4000**   | 0.4101*   | -0.0611** | -0.2680** |
| primary and below=0         | -0.1720** | -0.2084* | -0.1013** | -0.0215** | -0.2457** | -0.2682*  | -0.3095** | -0.1823** | -0.3050** | -0.3098*  | 0.0520**   | 0.0096*   | -0.3090** | -0.4142** |
| secondary and high school=1 | -0.1791** | -0.253*  | -0.1204*  | -0.1214*  | -0.1984*  | -0.2531*  | -0.3024*  | -0.1792*  | -0.2316** | -0.3554** | 0.1849**   | 0.3180*   | -0.2347** | -0.3177*  |
| secondary and high school=0 | -0.3426** | -0.3219* | -0.0816** | -0.085*   | -0.1613** | -0.1128** | -0.3127** | -0.2549** | -0.3195** | -0.2716** | 0.3460**   | 0.3599*   | -0.0952** | -0.2856** |
| university and higher=1     | -0.2024** | -0.1895* | -0.1705** | -0.0188*  | -0.3271** | -0.2480*  | -0.3421*  | -0.1862*  | -0.4838** | -0.2349*  | -0.1771**  | -0.3050** | -0.4208** | -0.5155*  |
| university and higher=0     | -0.3321** | -0.3288* | -0.0967** | -0.0996*  | -0.1480** | -0.1111** | -0.3088** | -0.2522** | -0.2921** | -0.2819*  | 0.3707**   | 0.4059**  | -0.0862** | -0.2693** |
| N                           | 24707     | 24707    | 24707     | 24707     | 24707     | 24707     | 24707     | 24707     | 24707     | 24707     | 24707      | 24707     | 24707     | 24707     |

\* *partial significance*, \*\* *full significance*

Table 6. Gender-Education Interaction and Gender-Region Interaction model results of between male-female difference across region and education.

| Region                                    | Savings     |             | Pension     |             | Children    |             | Spouse      |             | Relatives   |             | Government  |             | Working     |             |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|   | Survey 2007 | Survey 2017 | Survey 2007 | Survey 2017 | Survey 2007 | Survey 2017 | Survey 2007 | Survey 2017 | Survey 2007 | Survey 2017 | Survey 2007 | Survey 2017 | Survey 2007 | Survey 2017 |
| Bangkok = 1                               | 0.0452      | -0.0525     | 0.0133*     | -0.0252*    | 0.0813      | 0.0643*     | -0.0004*    | 0.0259*     | 0.0147      | 0.0501*     | 0.0252      | 0.0662*     | -0.0877*    | -0.1874*    |
| Bangkok = 0                               | -0.0362     | -0.0253     | -0.0461**   | -0.0363*    | 0.012       | 0.0603*     | -0.0438**   | 0.0227**    | 0.0125      | 0.0389*     | 0.026       | 0.0587*     | -0.0600**   | -0.2348**   |
| Central = 1                               | -0.0033     | -0.024      | -0.1002*    | -0.0452*    | 0.0591      | 0.0529*     | -0.0347     | 0.0076*     | -0.001      | 0.0443      | 0.0399      | 0.0698      | -0.0779*    | -0.1895*    |
| Central = 0                               | -0.0315     | -0.0243     | -0.0193     | -0.0323     | 0.0065      | 0.0646*     | -0.0366     | 0.0299**    | 0.02        | 0.0387      | 0.0261      | 0.054       | -0.0570**   | -0.2496**   |
| North = 1                                 | -0.0553     | -0.0225     | -0.0026**   | -0.0287*    | 0.0172      | 0.0542*     | -0.0469     | 0.0143*     | 0.0369      | 0.0336*     | 0.0132*     | 0.0361      | -0.0720*    | -0.2389*    |
| North = 0                                 | -0.0122     | -0.0265     | -0.0510**   | -0.0379*    | 0.0186      | 0.0619*     | -0.03485    | 0.0255*     | 0.0043      | 0.0416*     | 0.0355*     | 0.0662      | -0.0595**   | -0.2320**   |
| Northeast = 1                             | -0.0264     | -0.0316     | -0.0288**   | -0.0353*    | 0.015       | 0.065       | 0.0080*     | 0.0529*     | 0.0274      | 0.0449*     | 0.0449      | 0.0600*     | -0.0355*    | -0.2621*    |
| Northeast = 0                             | -0.0283     | -0.0236     | -0.0411**   | -0.0356*    | 0.0197      | 0.0581      | -0.0567**   | 0.0106**    | 0.0084      | 0.0375*     | 0.0202      | 0.0449*     | -0.0726**   | -0.2231**   |
| South = 1                                 | -0.0531     | -0.0055     | -0.0744*    | -0.0368*    | -0.0677*    | 0.0841*     | -0.1171     | 0.0204*     | -0.0353     | 0.0291      | 0.0469      | 0.0773      | -0.0581*    | -0.2554*    |
| South = 0                                 | -0.0223     | -0.0283     | -0.0312**   | -0.0351*    | 0.0321      | 0.0552      | -0.02696    | 0.0231*     | 0.0217      | 0.0406      | 0.0222      | 0.0545      | -0.0631**   | -0.2308**   |
| Education = primary and below = 1         | -0.0372     | -0.0107     | 0.0026**    | -0.0069**   | 0.008       | 0.0495      | -0.0278*    | 0.0231*     | 0.0061      | 0.0372      | 0.0156      | 0.0258      | -0.0585*    | -0.2654*    |
| Education = primary and below = 0         | 0.047       | 0.0106      | -0.0481**   | 0.0315**    | 0.016       | -0.0083     | -0.1093**   | 0.0178**    | 0.0493      | 0.0445      | 0.0431      | 0.0007      | -0.0977**   | -0.2029**   |
| Education = secondary and high school = 1 | 0.0524      | -0.0218     | -0.1069*    | -0.1079*    | 0.0958      | 0.0411*     | -0.0845*    | 0.0385*     | 0.1845*     | 0.0607*     | 0.0136      | 0.1468*     | -0.1319*    | -0.2148*    |
| Education = secondary and high school = 0 | -0.0377     | -0.0171     | -0.0128     | -0.0166     | 0.0013      | 0.0498*     | -0.0381**   | 0.0196**    | -0.0107     | 0.0371*     | 0.0204      | 0.0343      | -0.0559**   | -0.2466**   |
| Education = university and higher = 1     | -0.0156     | -0.0026     | -0.0937*    | 0.0578*     | -0.1093*    | -0.0302*    | -0.1718     | -0.0159*    | -0.2187**   | 0.0301*     | 0.078       | -0.0498*    | -0.031*     | -0.1259*    |
| Education = university and higher = 0     | -0.0263     | -0.0231     | -0.0299**   | -0.0329*    | 0.0255      | 0.0624*     | -0.031      | 0.0255*     | 0.0296**    | 0.0398*     | 0.0217      | 0.0569*     | -0.0647**   | -0.2478**   |
| N   | 24707       | 24707       | 24707       | 24707       | 24707       | 24707       | 24707       | 24707       | 24707       | 24707       | 24707       | 24707       | 24707       | 24707       |

\* *partial significance*, \*\* *full significance*

Table 5 shows the survey GAP results for males and females from Gender-Education Interaction and Gender-Region Interaction models across region and education. Examining the survey GAP across region saw that a regional effect is present among male respondents expecting and receiving financial support from personal savings. Specifically, the savings GAP for males outside Bangkok was almost 1.5 times more than the savings GAP for males in Bangkok. While for female respondents, the survey GAP among those living inside and outside Bangkok were quite identical. Such similarities in GAP within females are also present in other examined regions, suggesting that proportion of female elders with savings as an elderly financial source may be similar across Thailand. When examined among education levels, the results indicate that both male and female respondents had prominent differences when comparing the survey GAP of different education levels. Specifically, both male and female respondents reported a larger GAP among those with primary and below education which was almost twice the GAP of those with higher education.

Regarding pensions as a financial source at old age, both male and female saw a larger GAP for respondents living in Bangkok as oppose to those living elsewhere. For males, the GAP inside Bangkok was about 1.7 times larger than the GAP for males living outside Bangkok. For females, the GAP inside Bangkok was almost 2.5 times larger than the GAP for females living outside Bangkok. However, in reality much lesser proportions of respondents living in Bangkok reported having pension as financial support at old age. The South and Northeast region also saw the smallest survey GAP when compared to other regions. The survey GAP for females living in the South was about 7 times less than the survey GAP for females living elsewhere.

While, the survey GAP for males living in the Northeast was about 1.8 times less than the survey GAP for males living elsewhere.

Elderly financial support from their adult children were prominently linked to regional differences in Thailand, especially in the Northeast. Among female respondents, the survey GAP for those living in the Northeast was about half of the survey GAP for those living elsewhere. This suggests that elderly females in the Northeast are indeed receiving much of what was expected from their children. However, the Central and South region also reported the largest survey GAP indicating that reality of children support fell short for many elders in those regions. The survey GAP for males in the South was about 1.8 times larger than the survey GAP for males living elsewhere. The survey GAP for females in the Central region was almost 2 times larger than the survey GAP for females living elsewhere. When observed across education, the survey GAP was definitely larger for highly educated individuals. With highly educated males and females reporting a survey GAP that was about twice that of those with lower education. Thus, indicating that elderly parents with higher education are less likely to receive financial support from their children.

Regarding financial support from other family members, spouse as a financial source at old age was not much different across region for both male and female respondents. However, when examined across education, female respondents saw a slightly larger survey GAP among those with lower education. Specifically, the survey GAP of spouse's support for females with primary and below education was about 1.4 times larger than for females with higher education. While, financial support from relatives were not much different across region for both male and female respondents. Across different education levels, male respondents saw a larger survey

GAP for those with university and higher education, which was about 1.7 times that of males with lower education.

Gender-Region Interaction Model results for financial support from the government found that the smallest survey GAP for both males and females were reported among respondents living in Bangkok with a GAP of around 1.5 times smaller than for respondents living elsewhere. While, the largest survey GAP for both males and females were found among respondents from the South. Specifically, the survey GAP of government support for those living in the South was around 1.4 times larger than for those living elsewhere. Government support at old age was found to be prominently linked with both male's and female's educational attainment. Specifically, the survey GAP for respondents with primary and below education was about 7 times larger than the GAP for highly educated males and about 42 times larger than the GAP for highly educated females.

Lastly, when examining the results of working from Gender-Region Interaction Model, we find that the survey GAP for respondents in Bangkok are prominently larger than the survey GAP for respondents living elsewhere. Among males, the survey GAP for respondents living in Bangkok was about 4 times larger than for those living elsewhere. Male respondents living in the Central region also reported a survey GAP that was about 2 times larger than for males living elsewhere. Among females, the survey GAP for respondents living in Bangkok was almost 2 times larger than for female respondents from elsewhere. When examined across education levels, the survey GAP for respondents with lower education were smaller than for highly educated respondents with the GAP of lower educated males being much smaller than the GAP of lower educated females. The survey GAP for males

with higher education was about 5 times larger than males with primary and below education. The survey GAP for females with higher education was about 1.5 times larger than females with primary and below education. While, the survey GAP for males with secondary and high school was about 2.5 times larger than males with other levels of education. Highly educated males with university and higher education reported their GAP to be of 4.9 times that of lower educated males. While, for highly educated females with university and higher education, their survey GAP was about 1.9 times larger than the GAP for lower educated females.

Discussing on the results of Gender-Education Interaction and Gender-Region Interaction models, the GAP for savings as a financial source within females were quite similar across examined regions. Thus, suggesting that personal savings for females do not vary across different regions in Thailand. This reflects the identical role of women in both urban and rural areas, where urbanization might have played a role in increasing economic independence among Thai females. In particular, with female consisting of a large percentage among worker migrants moving from rural to Bangkok area (Tantiwiramanond, 1995). When examined among education levels, both male and female respondents reported a larger GAP among those with primary and below education which was almost twice the GAP of those with higher education. Such results across education further suggests that having finances at old age met by personal savings is importantly linked to an individual's educational attainment regardless of their gender.

Looking at the largest survey GAP for pension found that the larger survey GAP in Bangkok for females was almost 2.5 times larger than the survey GAP for non-Bangkok females. Thus, suggesting that proportions of individuals expecting to



be financially supported by pension are higher in those living in Bangkok, with more females compared to males expecting from pension. This provides future insights on greater proportions of females being part of the formal workforce than males in Bangkok.

Elderly financial support from their adult children were prominently linked to regional differences in Thailand with the survey GAP for females living in the Northeast was about half of the survey GAP for those living elsewhere. This confirms the important role of elderly women in the Northeastern household, especially given that there is evidence of Northeastern migration of working adults to urban areas for remittance purposes. Among educational attainment, the survey GAP was definitely larger for highly educated individuals. Therefore, regardless of gender, elderly parents with higher education are less likely to receive financial support from their children.

Government's support at old age was found to be prominently linked with both male's and female's educational attainment. Specifically, the GAP was larger for lower educated respondents than higher educated respondents. Reflecting on the magnitude of the GAP, the effect of education was proven to be stronger for females than for males. Thus, suggesting that greater proportions of lower educated females are receiving government allowance at old age. While, the GAP for working at old age confirms that Bangkok elders are less likely to continue working beyond retirement regardless of their gender. Interestingly, we found that expectations and reality of working for males in the Central region are also seeing a large GAP, further suggesting that older males in the Central are also less likely to part of the workforce. An individual's educational attainment is prominently linked to their employment at old age, especially more so in males than females. This is reflected in the larger GAP

of working among male respondents having higher education. In other words, highly educated males are more likely to be removed from the Thai workforce than their female counterparts. This is interesting to see given historical statistics on higher labour participation rates among elder males than females.

Table 6 shows the results of male-female differences from Gender-Education Interaction and Gender-Region Interaction models across region and education. Among surveyed expectations from non-elderly respondents in 2007 Survey, males and females had statistically different expectations for pension, children, spouse, relatives, government, and working as financial support at old age. In particular, difference between male's and female's expectations from children, spouse, relatives, and government are statistically different for respondents in certain region and education level. Only respondents from the south and those with university and higher education reported statistical difference among gender expectations from children's support. Only respondents from Bangkok, Northeast and those with primary and below, secondary and high school education reported statistical difference among gender expectations from spouse's support. Only respondents with secondary and high school, and university and higher education reported statistical difference among gender expectations from relative's support. Only respondents from the North region reported statistical difference among gender expectations from government's support. While, support from pension and working at old age, was statistically different among male and females from all examined regions and education levels.

The reality of receiving elderly financial support as surveyed in 2017 Survey indicated that male and female elders were statistically different in receiving support from pension, children, spouse, relatives, government, and working. While support

from pension, spouse, and working were statistically different for elders from all examined regions and education levels, support from children, relatives, and government saw statistical difference among gender only for those in certain region and education level. Only respondents from Bangkok, Central, North, and South and those with secondary and high school, and university and higher education reported statistical difference among gender in reality from children's support. Only respondents from Bangkok, North, and Northeast and those with secondary and high school, and university and higher education reported statistical difference among gender in reality from relative's support. Only respondents from Bangkok, Northeast, and those with secondary and high school, university and higher education reported statistical difference among gender in reality from government's support.

Among examined financial support at old age in Table 6, the largest male-female difference was found in the reality of working at old age, especially among respondents from the Northeast and those with primary and below education. While, the smallest male-female difference was found in the expectations of receiving pension at old age, especially among respondents from the North and those with primary and below education.

Given the empirical results of the OLS dummy regression models, we further discuss validity of the stated hypotheses of this study. Beginning with the first set of hypotheses on the idea of differences among financial sources at old age between males and females. For Hypothesis 1.1 and 1.2, it was predicted that the reality-expectations gap of working and pension will be smaller for males than for females. The results from Regression by Gender Model finds that the working survey GAP for males was about 2.6 times smaller than the survey GAP for females. As for pension,

the results from Regression by Gender Model finds that the survey GAP for pension as a financial source at old age was identical between males and females. As a result, Hypothesis 1.1 was confirmed by the study's results, but Hypothesis 1.2 was not supported by the study's results. The similarities between survey GAP for pension among gender may indicate that the general idea that males are more likely to be formally employed than females may not hold in the Thai context. For Hypothesis 1.3, 1.4, and 1.5, it was predicted that the reality-expectations gap of children, spouse, and relatives will be smaller for females than for males. The results from Regression by Gender Model finds that the survey GAP for children as a financial source at old age was about 1.3 times larger for males than for females. Thus, confirming the stated Hypothesis 1.3. As for spouse and relatives, the results from Regression by Gender Model finds that the magnitude of the survey GAP for was smaller than the survey GAP for males. This also supports the stated Hypothesis 1.4 and 1.5.

The second set of hypotheses was on the predictions of elderly financial support of males and females when examined across regions and education levels. For Hypothesis 2.1, it was predicted that the reality-expectations gap for children as a financial source will be smaller for females living outside of Bangkok than for females living in Bangkok, or for males living elsewhere. The results from Gender-Region Interaction Model finds that among female respondents, the survey GAP for those living in the Northeast was about half of the survey GAP for those living elsewhere. Therefore, the study result's supports Hypothesis 2.1. For Hypothesis 2.2, it was predicted that the reality-expectations gap of working as an elderly financial source will be smaller for males living outside Bangkok than for males or females living in other regions. This is supported given that the results from Gender-Region

Interaction Model found that the survey GAP for males living in Bangkok was about 4 times larger than for males living outside of Bangkok. For Hypothesis 2.3, it was predicted that the reality-expectations gap of pension as an elderly financial source will be larger for females living inside Bangkok than for males or females living in other regions. For females, it was found that the GAP inside Bangkok was almost 2.5 times larger than the GAP for females living outside Bangkok.

For Hypothesis 2.4, it was predicted that the reality-expectations gap of children as an elderly financial source will be larger for males with higher education than for male or female counterparts. Results found that highly educated males and females reporting a survey GAP that was about twice that of those with lower education with the magnitude for highly educated males and females at 0.3271 and 0.2480 respectively. Lastly, Hypothesis 2.5 predicted that the reality-expectations gap of working as an elderly financial source will be larger for females with higher education than for male or female counterparts. It was found that among highly educated females with university and higher education, their survey GAP was about 1.9 times larger than the GAP for lower educated females. Comparing between highly educated males and females, the survey GAP magnitude of university and higher females were indeed greater than their male counterparts (females 0.5155, males 0.4208).

## **7. Conclusion and Recommendations**

### **7.1 Conclusion and Policy Recommendations**

This study examines the expectations and reality of Thai elderly financial needs from a gender perspective through financial support at old age from personal

savings, pension, children, spouse, relatives, government, and working. Using two nationally represented surveys, the study identified a cohort of older persons through surveying non-elderly respondents aged 50 to 59 in 2007 and surveying elderly respondents aged 60 to 69 in 2017. Given that the two surveys constitute randomized respondents, further potential endogeneity is mitigated by fixing the cohort for analysis. The gap between surveys, representing the reality-expectations gap of elderly financial support were determined for both males and females in Thailand. We further investigated the effect of region and educational attainment on the survey gap across male and females. The methodology employed in this study are three models of OLS dummy regression models with two-way and three-way interaction variables.

In exception of government support, we found that expectations to meeting financial needs when elderly from savings, pension, children, married partners, relatives, and by working at old age were typically higher than what was happening in reality for both male and female respondents. This is due to the introduction of the 500 Thai Baht universal pension scheme for the elderly in 2009, where the Thai government sought to directly address the financial security issues of the aging population. Interestingly the regression found that there were similar gaps between males and females for savings and pension as an elderly financial source. This further suggests that gender wealth differences and the idea that males are more likely to be formally employed than females, may not hold in the Thai context. While working and children are commonly well-known sources for financing elders, the reality was less than what was expected for non-elderly respondents. Thus, confirming the decline in fertility rates and intergenerational ties in the Thai household. When compared to males, older females are less likely to continue working beyond

retirement causing for the gap for females to be almost three times larger than the gap for males. Undoubtedly, the results indicate that children support and working are linked to regional and educational differences. The role of female in the Northeast stood out with much of them receiving children support, given that the survey gap of children support for females living in the Northeast was about half of those living elsewhere. While, highly educated elders are less likely to receive support from their children with the survey gap for males and females with university education to be twice that of lower educated respondents. When it came to working in rural versus urban areas, the results confirms previous findings of elder workers working in rural industries, especially agriculture. Specifically, the greater proportions of rural males are working in reality making the gap for males living in Bangkok being four time larger than for males living outside Bangkok.

With Thailand emerging into an aging society, more government policies that are geared towards supporting the aging population will be much needed. In the context of this study's objectives on financial needs of elderly, it will be important for such policies to help close the gap on expectations and reality of financial sources of elderly in order to ensure better financial planning in their elder years.

In terms support from children, we see that Thai elders cannot continue relying only on intergenerational transfers from their adult children given the large reality-expectation gaps across most regions. Thus, indicating the transition or switch from traditional filial responsibilities to current ones in Thailand's society, where many Thai elders will be left to finance themselves independently either through working or savings. However, other elders who undergo financial hardships will rely heavily on public and government allowance. As a result of lower support from

children and family members, there will be more importance attached to government financial support in the future, especially for elderly men.

A closer examination of gender inequality among elders in the workforce may also be needed given that more older males continue to work when compared to older females. Further investigation on the topic of gender inequality among Thai elders in the workforce will definitely allow policy makers to better understand and develop the right policies to help vulnerable elderly women to be economically independent. In overall, policies ensuring gender equality in the workplace can be improved and expanding career opportunities for financially vulnerable elderly women would prove to be beneficial for the Thai society.

Moreover, with both older males and females falling short of their personal savings in their elder years there is a need for further public education programs to encourage savings, especially for individuals nearing retirement. The subtle changes in the savings and consumption behavior of the Thai population suggest policy measures to encourage savings, for example, through mutual funds from an early age that would help improve the financial security for Thai elderly.

Lastly, since 1982 when Thailand established its first National Elderly Council in response to the United Nations Assembly that recognized elderly rights with respect to care, involvement, autonomy and self-satisfaction (Jitapunkul and Wivatvanit, 2008), various measures have been put in place, such as the 2009 universal 500 Baht old-age pension, but there is still much more space for improvement. Any progress however will have to come with caution, as public-sector transfers are still very low and financing the elderly should not be allowed to threaten fiscal sustainability if the current system is to remain sustainable. Suwanrada and



Leetrakul (2014) for example suggest that the old age allowance although beneficial to the elderly and overall economy should seek further sources of revenue in preparation as Thai moves from ageing to “Superaged Society”, where the Thai population above 65 years will soon account for more than 25% of population by 2040.

## 7.2 Limitations and Future Study

There are several possible limitations that should be noted in the present study. First, the study’s empirical results on interpreted coefficients from all other models except for the base model was limited to providing its significance; indicating only either full significance, partial significance, or no significance. Specifically, to provide the exact p-value in the coefficient’s significance we would need to further run numerous models using the bootstrap method to find the standard error of each interpreted coefficient. However, given that most of the presented coefficients were significant, either partial or full, the current results were sufficient enough for drawing relevant conclusions.

Other possible limitations include time varying factors that cannot be controlled for which may be present in the survey respondents. On the contrary, confounding variables from individual heterogeneity that do not vary over time were controlled through fixed effects from taking the difference between survey years of the studied cohort. When examining the external key macroeconomic variables in Thailand, such factors did not have much variation and was consistent over the studied time period. For example, real GDP growth averaged about 3.2% for the year 2007 to 2017 (World Bank, 2020), while CPI inflation and unemployment rate

remained low at about 1%. Over the same period, farm incomes and tourism steadily increased. Proportions of employment in the informal sector was consistent, ranging between 60% to 55% of Thais employed in the informal sector (NSO, 2008; NSO, 2017).

Future relevant studies can be further researched in order to improve financial planning of Thai elders in the long term. In the context of the current study, the gap between reality and expectations of elderly financial support gives important implications on the financial preparedness of Thai older persons. Specifically, given that reality of finances was not being met by expectations, it is evidently implied that such individuals were lacking in financial preparation or planning. Therefore, to confirm that such gaps are significantly associated with financial preparedness, future empirical research will be needed to test the association.

## REFERENCES



จุฬาลงกรณ์มหาวิทยาลัย  
**CHULALONGKORN UNIVERSITY**

- Adhikari, R., Soonthornhdhada, K., & Haseen, F. (2011). Labor force participation in later life: Evidence from a cross-sectional study in Thailand. *BMC geriatrics*, 11(1), 15.
- Basten, S., Mutarak, R., & Pothisiri, W. (2014). “The persistence of parent repayment” and the anticipation of filial obligations of care in two Thai Provinces. *Asian Social Work and Policy Review*, 8(2), 109-122.
- Chamrathirong, A., Archavanitkul, K., Richter, K., Guest, P., & Thongthai, V. (1995). National migration survey of Thailand. *Publication/Mahidol University, Institute for Population and Social Research; no. 188*.
- Chansarn, S. (2013). Economic preparation for retirement of population aged 50–59 years old in Thailand. *Procedia-Social and Behavioral Sciences*, 91, 640-647.
- Chant, S., & Radcliffe, S. A. (1992). “Migration and development: the importance of gender”, in *Chant, ed. Gender and Migration in Developing Countries* (London and New York, Belhaven Press).
- Chittinandana, D., Kulnartsiri, N., Pinthong, J., & Sawaengsuksant, P. (2017). Aging Population: Global Perspectives [PowerPoint Slides]. *Bank of Thailand*.  
[https://www.bot.or.th/Thai/ResearchAndPublications/DocLib\\_/AgingPopulation.pdf](https://www.bot.or.th/Thai/ResearchAndPublications/DocLib_/AgingPopulation.pdf)
- Curran, S. R., Garip, F., Chung, C. Y., & Tangchonlatip, K. (2005). Gendered migrant social capital: Evidence from Thailand. *Social Forces*, 84(1), 225-255.
- Fujioka, R., & Thangphet, S. (2009). Decent work for older persons in Thailand. International Labour Organization (ILO).
- Giles, J., Hu Y., & Huang, Y. (2015). Understanding the Retirement Decision in Aging East Asia. Background paper for the East Asia and Pacific regional report on aging, World Bank, Washington, DC.
- Havanon, N., Knodel, J., & Sittitrai, W. (1992). The impact of family size on wealth accumulation in rural Thailand. *Population Studies*, 46(1), 37-51.
- Jackson, R., & Peter, T. (2015). “From Challenge to Opportunity: Wave 2 of the East Asia Retirement Survey.” Global Aging Institute, Alexandria, VA.
- Jitapunkul, S. and Wivatvanit, S. 2008. National Policies and Programs for the Aging Population in Thailand, *Ageing International*, 33, 62-74.
- Kim, S., & Lee, J. W. (2007). Demographic changes, saving, and current account in East Asia. *Asian Economic Papers*, 6(2), 22-53.

- Knodel, J. (2014). Is intergenerational solidarity really on the decline? Cautionary evidence from Thailand. *Asian Population Studies*, 10(2), 176-194.
- Knodel, J., & Chayovan, N. (2008). Older persons in Thailand: a demographic, social and economic profile. *Ageing international*, 33(1-4), 3-14.
- Knodel, J., Kespichayawattana, J., Wiwatwanich, S., & Saengtienchai, C. (2013a). The future of family support for Thai elderly: Views of the populace. *Journal of Population and Social Studies*, 21(2), 110-132.
- Knodel, J. E., Rūpfōlō, W. P., & Chayovan, N. (2013b). The changing well-being of Thai elderly: An update from the 2011 survey of older persons in Thailand. *Population Studies Center*, University of Michigan, Institute for Social Research.
- Knodel, J., & Saengtienchai, C. (2007). Rural parents with urban children: social and economic implications of migration for the rural elderly in Thailand. *Population, Space and place*, 13(3), 193-210.
- Kosiyanon, L. (1974). The Behavior of Household Saving in Thailand. Ph.D. Dissertation, University of Oregon.
- Mason, K.O. (2001). Gender and family systems in the fertility transition. *Global Fertility Transition, Population and Development Review*, 27(Suppl), 160–176
- Masud, J., Haron, S. A., & Gikonyo, L. W. (2008). Gender differences in income sources of the elderly in Peninsular Malaysia. *Journal of Family and Economic Issues*, 29(4), 623-633.
- National Economic and Social Development Board (2007). Population projections for Thailand 2000– 2030, Office of the National Economic and Social Development Board, October 2007.
- National Economic and Social Development Board. (2008). The study on saving promotion for employed persons group. Research Report under the Umbrella Project “A Study of Implementation of Moving Forward on the Strategic Development in the tenth National Economic and Social Development Plan”, National Economic and Social Development Board and Chula Unisearch, Chulalongkorn University.
- National Economic and Social Development Board. (2009). National income of Thailand 2007. Office of National Economic and Social Development Board.
- National Statistical Office (NSO). (2007). Survey on knowledge and attitudes on elderly issues, 2007. Bangkok: National Statistical Office (in Thai).
- National Statistical Office (NSO). (2017) Survey of the Older Persons in Thailand, 2017. Bangkok: National Statistical Office (in Thai).

- National Statistical Office (NSO). (2008). The informal employment survey, 2007. Bangkok: National Statistical Office (in Thai).
- National Statistical Office (NSO). (2017). The informal employment survey, 2017. Bangkok: National Statistical Office (in Thai).
- Ofstedal, M. B., Reidy, E., & Knodel, J. (2004). Gender differences in economic support and well-being of older Asians. *Journal of Cross-Cultural Gerontology*, 19(3), 165-201.
- Office of the National Economic and Social Development Council (NESDC). (2019). .1 Poverty line by region and district 1988 – 2018 (in Thai).
- Pootrakool, K., Ariyapruchya, K., & Sodsrichai, T. (2005). Long-term Saving in Thailand: Are we saving enough and what are the risks? (No. 2005-03).
- Rattanamongkolgul, D., Sritanyarat, W., & Manderson, L. (2012). Preparing for aging among older villagers in northeastern Thailand. *Nursing & health sciences*, 14(4), 446-451.
- Sakai, H. & Asaoka, H. (2007). Factors affecting labor force participation in Japan: empirical study of labor supply of the elderly and females. In Hamada, K. & Kato, H. (Eds.), *Ageing and the Labor Market in Japan: Problems and Policies*. Cheltenham: Edward Elgar, 24-56.
- Sakunphanit, T., & Suwanrada, W. (2011). 500 baht universal pension scheme, Excerpt from *Sharing Innovative Experiences, Volume 18: Successful Social Protection Floor Experiences, ILO - SU/SSC (UNDP) - National experts*, 2011, 401-415.
- Silverstein, M., Gans, D., & Yang, F. M. (2006). Intergenerational support to aging parents: The role of norms and needs. *Journal of family Issues*, 27(8), 1068-1084.
- Singhanetra-Renard, A., & Prabhudhanitisarn, N. (1992). Changing Socio-Economic Roles of Thai Women and Their Migration. In: Chant Sylvia., editor. *Gender and Migration in Developing Countries*. Belhaven Press, 154–173.
- Suppakitjarak, N., & Krishnamra, P. (2015). Household saving behavior and determinants of the forms of saving and investment in Thailand. *Journal of Economics, Business and Management*, 3(3), 326-330.
- Suwanrada, W. (2008). Poverty and financial security of the elderly in Thailand. *Ageing International*, 33(1-4), 50-61.
- Suwanrada, W., & Leetrakul. P. (2014). Promoting older people's rights and income security by building organizational capacity in Thailand. A report by the Foundation

for Older Persons' Development in collaboration with HelpAge International, funded by the European Union (in Thai).

Tantiwiranond, D. (1995). Gender and Development in Thailand. Paper presented to the Southeast Asian Studies Seminar; December; University of Washington, Seattle, Washington.

Tengumnuay, M. (1981). Household Saving Behavior in Thailand. Master's thesis, Faculty of Economics, Thammasat University.

Termprasertsakul, S., & Kulsiri, P. (2009). Demography, Perceived Risks, Desired Benefits, And Saving Behavior Of Thai Consumers. *International Business & Economics Research Journal (IBER)*, 8(7).

Theerawanviwat, D. (2014). Intergenerational transfers and family structure: Evidence from Thailand. *Ageing International*, 39(4), 327-347.

UNFPA. (2011). Impact of demographic change in Thailand. United Nations Population Fund (UNFPA) Bangkok, Thailand.

Witvorapong, N. (2015). The relationship between upstream intergenerational transfers and wealth of older adults: evidence from Thailand. *Journal of Population Research*, 32(3-4), 215-242.

World Bank (2015). Urbanization in Thailand is dominated by the Bangkok urban area. (2015, January 26). Retrieved from <https://www.worldbank.org/en/news/feature/2015/01/26/urbanization-in-thailand-is-dominated-by-the-bangkok-urban-area>

World Bank. (2016a). Thailand economic monitor: aging society and economy - June 2016 (English). Washington, D.C.: World Bank Group. <http://documents.worldbank.org/curated/en/830261469638312246/Thailand-economic-monitor-aging-society-and-economy-June-2016>

World Bank. (2016b). Live Long and Prosper: Aging in East Asia and Pacific. World Bank East Asia and Pacific Regional Report; Washington, DC. © World Bank. <https://openknowledge.worldbank.org/handle/10986/23133> License: CC BY 3.0 IGO. World Bank, World Development Indicator (2020). GDP growth (annual %). Retrieved from <https://databank.worldbank.org/reports.aspx?source=2&series=NY.GDP.MKTP.KD.ZG&country=THA#>

Yoddumnern-Attig, B. (1992). Thai Family Structure and Organization: Changing Roles and Duties in Historical Perspective. In: Yodumnern-Attig Bencha, Richter Kerry, Soonthorndhada Amara, Sethaput Chanya, Pramualrathana Anthony.,

editors. *Changing Roles and Statuses of Women in Thailand. Institute for Population and Social Research, Mahidol University*, 8–24.

Yoon, Y., Witvorapong, N., & Pothisiri, W. (2017). Perceptions Towards the Elderly Among the Thai Working-Age Population: A Structural Equation Modeling Analysis. *International Journal of Economics & Management*, 11.





## APPENDIX

Appendix 1. Original STATA output of the Base Model.

| working   | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|-----------|-----------|-----------|--------|-------|----------------------|-----------|
| survey    | -.2109311 | .011428   | -18.46 | 0.000 | -.2333308            | -.1885315 |
| _cons     | .747296   | .0109475  | 68.26  | 0.000 | .7258382             | .7687538  |
| children  | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| survey    | -.1395058 | .0101364  | -13.76 | 0.000 | -.1593737            | -.1196379 |
| _cons     | .8662734  | .0097102  | 89.21  | 0.000 | .8472408             | .8853059  |
| govt      | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| survey    | .3454094  | .0092191  | 37.47  | 0.000 | .3273395             | .3634793  |
| _cons     | .4700098  | .0088314  | 53.22  | 0.000 | .4526997             | .48732    |
| pension   | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| survey    | -.0929926 | .0063688  | -14.60 | 0.000 | -.1054759            | -.0805093 |
| _cons     | .1686332  | .006101   | 27.64  | 0.000 | .1566748             | .1805916  |
| savings   | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| survey    | -.3198933 | .0113594  | -28.16 | 0.000 | -.3421584            | -.2976282 |
| _cons     | .7556539  | .0108818  | 69.44  | 0.000 | .734325              | .7769828  |
| spouse    | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| survey    | -.2773116 | .0109868  | -25.24 | 0.000 | -.2988464            | -.2557769 |
| _cons     | .6170108  | .0105248  | 58.62  | 0.000 | .5963815             | .6376401  |
| relatives | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| survey    | -.2903265 | .0073868  | -39.30 | 0.000 | -.304805             | -.2758479 |
| _cons     | .3898722  | .0070762  | 55.10  | 0.000 | .3760024             | .403742   |

## Appendix 2. Original STATA output of the Regression by Gender Model.

| working | Coef.     | Std. Err. | t     | P> t  | [95% Conf. Interval] |           |
|---------|-----------|-----------|-------|-------|----------------------|-----------|
| female  | -.0623213 | .0213472  | -2.92 | 0.004 | -.1041632            | -.0204794 |
| survey  | -.1138929 | .0161484  | -7.05 | 0.000 | -.1455447            | -.082241  |
| fxs     | -.1718502 | .022293   | -7.71 | 0.000 | -.2155457            | -.1281546 |
| _cons   | .7798354  | .0154251  | 50.56 | 0.000 | .7496012             | .8100696  |

| children | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|----------|-----------|-----------|--------|-------|----------------------|-----------|
| female   | .0177687  | .0193987  | 0.92   | 0.360 | -.020254             | .0557914  |
| survey   | -.1633057 | .0146744  | -11.13 | 0.000 | -.1920685            | -.1345429 |
| fxs      | .0420084  | .0202581  | 2.07   | 0.038 | .0023012             | .0817155  |
| _cons    | .8569959  | .0140172  | 61.14  | 0.000 | .8295214             | .8844704  |

| govt   | Coef.    | Std. Err. | t     | P> t  | [95% Conf. Interval] |          |
|--------|----------|-----------|-------|-------|----------------------|----------|
| female | .0253191 | .0176374  | 1.44  | 0.151 | -.0092512            | .0598894 |
| survey | .3264626 | .013342   | 24.47 | 0.000 | .3003114             | .3526138 |
| fxs    | .0328119 | .0184187  | 1.78  | 0.075 | -.0032899            | .0689138 |
| _cons  | .4567901 | .0127444  | 35.84 | 0.000 | .4318102             | .48177   |

| pension | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|---------|-----------|-----------|--------|-------|----------------------|-----------|
| female  | -.0376125 | .0121891  | -3.09  | 0.002 | -.0615038            | -.0137211 |
| survey  | -.0929818 | .0092206  | -10.08 | 0.000 | -.1110547            | -.0749089 |
| fxs     | .0021027  | .0127291  | 0.17   | 0.869 | -.0228471            | .0270524  |
| _cons   | .1882716  | .0088076  | 21.38  | 0.000 | .1710082             | .205535   |

| savings | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|---------|-----------|-----------|--------|-------|----------------------|-----------|
| female  | -.0266095 | .0217782  | -1.22  | 0.222 | -.0692961            | .0160772  |
| survey  | -.3194634 | .0164744  | -19.39 | 0.000 | -.3517543            | -.2871725 |
| fxs     | .0007245  | .022743   | 0.03   | 0.975 | -.0438532            | .0453022  |
| _cons   | .7695473  | .0157365  | 48.90  | 0.000 | .7387028             | .8003919  |

| spouse | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |          |
|--------|-----------|-----------|--------|-------|----------------------|----------|
| female | -.0399316 | .0210643  | -1.90  | 0.058 | -.081219             | .0013557 |
| survey | -.3105173 | .0159344  | -19.49 | 0.000 | -.3417497            | -.279285 |
| fxs    | .0622621  | .0219975  | 2.83   | 0.005 | .0191457             | .1053785 |
| _cons  | .6378601  | .0152207  | 41.91  | 0.000 | .6080266             | .6676935 |

| relatives | Coef.    | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|-----------|----------|-----------|--------|-------|----------------------|-----------|
| female    | .0137058 | .014142   | 0.97   | 0.332 | -.0140134            | .041425   |
| survey    | -.305003 | .0106979  | -28.51 | 0.000 | -.3259716            | -.2840344 |
| fxs       | .02575   | .0147685  | 1.74   | 0.081 | -.0031972            | .0546972  |
| _cons     | .382716  | .0102188  | 37.45  | 0.000 | .3626867             | .4027454  |

### Appendix 3. Original STATA output of the Regression by Region Model.

| working | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|---------|-----------|-----------|--------|-------|----------------------|-----------|
| bangkok | .0392831  | .0353605  | 1.11   | 0.267 | -.0300255            | .1085917  |
| survey  | -.1954998 | .0119979  | -16.29 | 0.000 | -.2190163            | -.1719832 |
| bkkxs   | -.2810364 | .0386021  | -7.28  | 0.000 | -.3566989            | -.2053739 |
| _cons   | .7431243  | .0115231  | 64.49  | 0.000 | .7205384             | .7657103  |

| children | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|----------|-----------|-----------|--------|-------|----------------------|-----------|
| bangkok  | -.0938302 | .0314744  | -2.98  | 0.003 | -.155522             | -.0321385 |
| survey   | -.1444525 | .0106793  | -13.53 | 0.000 | -.1653846            | -.1235203 |
| bkkxs    | -.0139019 | .0343598  | -0.40  | 0.686 | -.0812493            | .0534454  |
| _cons    | .8762376  | .0102567  | 85.43  | 0.000 | .8561338             | .8963414  |

| govt    | Coef.     | Std. Err. | t     | P> t  | [95% Conf. Interval] |           |
|---------|-----------|-----------|-------|-------|----------------------|-----------|
| bangkok | -.0389622 | .0285889  | -1.36 | 0.173 | -.0949982            | .0170738  |
| survey  | .3479833  | .0097003  | 35.87 | 0.000 | .3289702             | .3669964  |
| bkkxs   | -.1051382 | .0312098  | -3.37 | 0.001 | -.1663113            | -.0439651 |
| _cons   | .4741474  | .0093164  | 50.89 | 0.000 | .4558867             | .4924082  |

| pension | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|---------|-----------|-----------|--------|-------|----------------------|-----------|
| bangkok | .1376513  | .0197712  | 6.96   | 0.000 | .0988986             | .176404   |
| survey  | -.0806935 | .0067084  | -12.03 | 0.000 | -.0938423            | -.0675446 |
| bkkxs   | -.0878671 | .0215837  | -4.07  | 0.000 | -.1301725            | -.0455618 |
| _cons   | .1540154  | .0064429  | 23.90  | 0.000 | .1413869             | .1666439  |

| savings | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|---------|-----------|-----------|--------|-------|----------------------|-----------|
| bangkok | .06619    | .0352857  | 1.88   | 0.061 | -.0029722            | .1353521  |
| survey  | -.3178065 | .0119725  | -26.54 | 0.000 | -.3412734            | -.2943397 |
| bkkxs   | .0399235  | .0385206  | 1.04   | 0.300 | -.0355791            | .1154261  |
| _cons   | .7486249  | .0114987  | 65.10  | 0.000 | .7260866             | .7711631  |

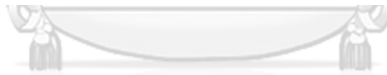
| spouse    | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|-----------|-----------|-----------|--------|-------|----------------------|-----------|
| bangkok   | -.0428585 | .0341387  | -1.26  | 0.209 | -.1097724            | .0240555  |
| survey    | -.2778049 | .0115833  | -23.98 | 0.000 | -.300509             | -.2551009 |
| bkkxs     | -.04427   | .0372684  | -1.19  | 0.235 | -.1173183            | .0287783  |
| _cons     | .6215622  | .011125   | 55.87  | 0.000 | .5997565             | .6433678  |
| relatives | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| bangkok   | .0558764  | .0229664  | 2.43   | 0.015 | .0108608             | .100892   |
| survey    | -.2843409 | .0077926  | -36.49 | 0.000 | -.2996147            | -.269067  |
| bkkxs     | -.0569891 | .0250719  | -2.27  | 0.023 | -.1061315            | -.0078467 |
| _cons     | .3839384  | .0074842  | 51.30  | 0.000 | .3692689             | .3986079  |
| working   | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| central   | -.0112245 | .0255574  | -0.44  | 0.661 | -.0613185            | .0388695  |
| survey    | -.1949129 | .0131225  | -14.85 | 0.000 | -.2206338            | -.169192  |
| centralxs | -.0560693 | .0265809  | -2.11  | 0.035 | -.1081694            | -.0039692 |
| _cons     | .75       | .0125441  | 59.79  | 0.000 | .7254128             | .7745872  |
| children  | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| central   | -.028159  | .0226186  | -1.24  | 0.213 | -.0724929            | .0161748  |
| survey    | -.1212696 | .0116136  | -10.44 | 0.000 | -.144033             | -.0985063 |
| centralxs | -.0617704 | .0235244  | -2.63  | 0.009 | -.1078796            | -.0156611 |
| _cons     | .873057   | .0111017  | 78.64  | 0.000 | .851297              | .894817   |
| govt      | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| central   | -.092228  | .0206405  | -4.47  | 0.000 | -.1326847            | -.0517713 |
| survey    | .3281814  | .0105979  | 30.97  | 0.000 | .3074088             | .348954   |
| centralxs | .0742916  | .0214671  | 3.46   | 0.001 | .0322148             | .1163684  |
| _cons     | .492228   | .0101308  | 48.59  | 0.000 | .472371              | .5120849  |
| pension   | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| central   | .0198134  | .0142585  | 1.39   | 0.165 | -.0081341            | .0477609  |
| survey    | -.0943826 | .0073211  | -12.89 | 0.000 | -.1087323            | -.0800328 |
| centralxs | .0023388  | .0148295  | 0.16   | 0.875 | -.0267279            | .0314054  |
| _cons     | .1638601  | .0069984  | 23.41  | 0.000 | .1501429             | .1775773  |

| savings   | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|-----------|-----------|-----------|--------|-------|----------------------|-----------|
| central   | -.0410542 | .0253617  | -1.62  | 0.106 | -.0907648            | .0086563  |
| survey    | -.3038881 | .013022   | -23.34 | 0.000 | -.3294121            | -.2783641 |
| centralxs | -.0520221 | .0263774  | -1.97  | 0.049 | -.1037234            | -.0003209 |
| _cons     | .765544   | .0124481  | 61.50  | 0.000 | .7411451             | .789943   |
| spouse    | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| central   | -.086933  | .0245408  | -3.54  | 0.000 | -.1350345            | -.0388315 |
| survey    | -.275778  | .0126005  | -21.89 | 0.000 | -.3004758            | -.2510802 |
| centralxs | .0061463  | .0255236  | 0.24   | 0.810 | -.0438814            | .056174   |
| _cons     | .6379534  | .0120451  | 52.96  | 0.000 | .6143442             | .6615626  |
| relatives | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| central   | -.0296738 | .0165148  | -1.80  | 0.072 | -.0620439            | .0026963  |
| survey    | -.2845857 | .0084796  | -33.56 | 0.000 | -.3012061            | -.2679652 |
| centralxs | -.0166548 | .0171762  | -0.97  | 0.332 | -.0503211            | .0170116  |
| _cons     | .3970207  | .0081058  | 48.98  | 0.000 | .3811328             | .4129086  |
| working   | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| north     | -.0004706 | .0255834  | -0.02  | 0.985 | -.0506156            | .0496745  |
| survey    | -.222565  | .0131244  | -16.96 | 0.000 | -.2482896            | -.1968404 |
| northxs   | .0442307  | .0266434  | 1.66   | 0.097 | -.0079921            | .0964534  |
| _cons     | .7474093  | .0125569  | 59.52  | 0.000 | .7227971             | .7720216  |
| children  | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| north     | .0094798  | .0227045  | 0.42   | 0.676 | -.0350223            | .0539818  |
| survey    | -.1418273 | .0116475  | -12.18 | 0.000 | -.164657             | -.1189976 |
| northxs   | .0080128  | .0236452  | 0.34   | 0.735 | -.0383332            | .0543587  |
| _cons     | .8639896  | .0111438  | 77.53  | 0.000 | .8421471             | .8858322  |
| govt      | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| north     | .0932775  | .0206372  | 4.52   | 0.000 | .0528272             | .1337277  |
| survey    | .3614291  | .010587   | 34.14  | 0.000 | .340678              | .3821802  |
| northxs   | -.0687724 | .0214923  | -3.20  | 0.001 | -.1108986            | -.0266462 |
| _cons     | .4475389  | .0101292  | 44.18  | 0.000 | .4276851             | .4673927  |

| pension     | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|-------------|-----------|-----------|--------|-------|----------------------|-----------|
| north       | -.0312678 | .0142657  | -2.19  | 0.028 | -.0592295            | -.0033062 |
| survey      | -.0991184 | .0073184  | -13.54 | 0.000 | -.1134628            | -.084774  |
| northxs     | .0259242  | .0148568  | 1.74   | 0.081 | -.0031959            | .0550444  |
| _cons       | .1761658  | .0070019  | 25.16  | 0.000 | .1624417             | .18989    |
| savings     | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| north       | .0799276  | .0254228  | 3.14   | 0.002 | .0300973             | .1297579  |
| survey      | -.3126681 | .013042   | -23.97 | 0.000 | -.3382312            | -.287105  |
| northxs     | -.034233  | .0264762  | -1.29  | 0.196 | -.086128             | .0176619  |
| _cons       | .736399   | .012478   | 59.02  | 0.000 | .7119412             | .7608567  |
| spouse      | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| north       | .0448028  | .0245984  | 1.82   | 0.069 | -.0034116            | .0930172  |
| survey      | -.2760572 | .0126191  | -21.88 | 0.000 | -.3007913            | -.251323  |
| northxs     | -.0085702 | .0256176  | -0.33  | 0.738 | -.0587822            | .0416418  |
| _cons       | .6062176  | .0120734  | 50.21  | 0.000 | .582553              | .6298822  |
| relatives   | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| north       | -.0296738 | .0165463  | -1.79  | 0.073 | -.0621055            | .002758   |
| survey      | -.2993196 | .0084883  | -35.26 | 0.000 | -.3159572            | -.282682  |
| northxs     | .0366803  | .0172319  | 2.13   | 0.033 | .0029048             | .0704558  |
| _cons       | .3970207  | .0081213  | 48.89  | 0.000 | .3811026             | .4129389  |
| working     | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| northeast   | -.0339494 | .0246946  | -1.37  | 0.169 | -.0823522            | .0144535  |
| survey      | -.2378279 | .0133398  | -17.83 | 0.000 | -.2639747            | -.2116811 |
| northeastxs | .0979688  | .0257524  | 3.80   | 0.000 | .0474925             | .148445   |
| _cons       | .7563758  | .012771   | 59.23  | 0.000 | .7313439             | .7814078  |
| children    | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| northeast   | .0595909  | .0217686  | 2.74   | 0.006 | .0169232             | .1022586  |
| survey      | -.1584698 | .0117592  | -13.48 | 0.000 | -.1815185            | -.135421  |
| northeastxs | .0658175  | .0227011  | 2.90   | 0.004 | .021322              | .1103129  |
| _cons       | .8503356  | .0112578  | 75.53  | 0.000 | .8282696             | .8724016  |
| govt        | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| northeast   | .1287678  | .0199081  | 6.47   | 0.000 | .0897467             | .1677888  |
| survey      | .3661774  | .0107542  | 34.05  | 0.000 | .3450985             | .3872562  |
| northeastxs | -.079644  | .0207609  | -3.84  | 0.000 | -.1203366            | -.0389514 |
| _cons       | .4355705  | .0102956  | 42.31  | 0.000 | .4153904             | .4557506  |

| pension     | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|-------------|-----------|-----------|--------|-------|----------------------|-----------|
| northeast   | -.0194137 | .0137625  | -1.41  | 0.158 | -.0463891            | .0075616  |
| survey      | -.0883277 | .0074344  | -11.88 | 0.000 | -.1028996            | -.0737559 |
| northeastxs | -.0160048 | .0143521  | -1.12  | 0.265 | -.0441357            | .0121261  |
| _cons       | .1738255  | .0071174  | 24.42  | 0.000 | .159875              | .187776   |
| savings     | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| northeast   | -.100565  | .024577   | -4.09  | 0.000 | -.1487374            | -.0523927 |
| survey      | -.3469945 | .0132763  | -26.14 | 0.000 | -.3730168            | -.3209722 |
| northeastxs | .1013008  | .0256298  | 3.95   | 0.000 | .0510649             | .1515367  |
| _cons       | .7825503  | .0127102  | 61.57  | 0.000 | .7576376             | .8074631  |
| spouse      | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| northeast   | .0460373  | .023757   | 1.94   | 0.053 | -.0005279            | .0926025  |
| survey      | -.2776186 | .0128334  | -21.63 | 0.000 | -.3027728            | -.2524644 |
| northeastxs | -.000692  | .0247747  | -0.03  | 0.978 | -.0492519            | .047868   |
| _cons       | .604698   | .0122862  | 49.22  | 0.000 | .5806164             | .6287796  |
| relatives   | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| northeast   | -.0152833 | .0159441  | -0.96  | 0.338 | -.0465348            | .0159682  |
| survey      | -.309562  | .0086129  | -35.94 | 0.000 | -.3264438            | -.2926802 |
| northeastxs | .0697128  | .0166271  | 4.19   | 0.000 | .0371226             | .102303   |
| _cons       | .3939597  | .0082457  | 47.78  | 0.000 | .3777977             | .4101217  |
| working     | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| south       | .0409336  | .0311287  | 1.31   | 0.189 | -.0200806            | .1019478  |
| survey      | -.208365  | .0123478  | -16.87 | 0.000 | -.2325675            | -.1841625 |
| southxs     | -.0158621 | .0325858  | -0.49  | 0.626 | -.0797323            | .0480081  |
| _cons       | .7413793  | .0118348  | 62.64  | 0.000 | .7181825             | .7645762  |
| children    | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| south       | .0052311  | .0275963  | 0.19   | 0.850 | -.0488594            | .0593216  |
| survey      | -.1321262 | .0109466  | -12.07 | 0.000 | -.1535823            | -.1106702 |
| southxs     | -.0547937 | .0288881  | -1.90  | 0.058 | -.1114161            | .0018287  |
| _cons       | .8655172  | .0104918  | 82.49  | 0.000 | .8449527             | .8860818  |
| govt        | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| south       | -.1756744 | .0250777  | -7.01  | 0.000 | -.2248283            | -.1265205 |
| survey      | .3253481  | .0099476  | 32.71  | 0.000 | .3058503             | .3448459  |
| southxs     | .1357821  | .0262516  | 5.17   | 0.000 | .0843274             | .1872368  |
| _cons       | .4954023  | .0095343  | 51.96  | 0.000 | .4767146             | .51409    |

| pension   | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|-----------|-----------|-----------|--------|-------|----------------------|-----------|
| south     | -.0579639 | .017345   | -3.34  | 0.001 | -.0919612            | -.0239666 |
| survey    | -.103092  | .0068802  | -14.98 | 0.000 | -.1165777            | -.0896063 |
| southxs   | .0708431  | .0181569  | 3.90   | 0.000 | .0352544             | .1064318  |
| _cons     | .1770115  | .0065944  | 26.84  | 0.000 | .1640861             | .1899369  |
| savings   | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| south     | .0510439  | .0309328  | 1.65   | 0.099 | -.0095863            | .111674   |
| survey    | -.3182499 | .0122701  | -25.94 | 0.000 | -.3423               | -.2941998 |
| southxs   | -.0081325 | .0323807  | -0.25  | 0.802 | -.0716007            | .0553356  |
| _cons     | .7482759  | .0117603  | 63.63  | 0.000 | .725225              | .7713267  |
| spouse    | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| south     | .0222613  | .0299234  | 0.74   | 0.457 | -.0363903            | .0809129  |
| survey    | -.278661  | .0118697  | -23.48 | 0.000 | -.3019263            | -.2553957 |
| southxs   | .0119135  | .0313241  | 0.38   | 0.704 | -.0494835            | .0733105  |
| _cons     | .6137931  | .0113765  | 53.95  | 0.000 | .5914945             | .6360917  |
| relatives | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| south     | .0690945  | .0201128  | 3.44   | 0.001 | .0296723             | .1085167  |
| survey    | -.2769476 | .0079781  | -34.71 | 0.000 | -.2925852            | -.26131   |
| southxs   | -.0944742 | .0210542  | -4.49  | 0.000 | -.1357417            | -.0532067 |
| _cons     | .3798851  | .0076466  | 49.68  | 0.000 | .3648972             | .3948729  |



#### Appendix 4. Original STATA output of Regression by Education Model

| working         | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|-----------------|-----------|-----------|--------|-------|----------------------|-----------|
| primaryandbelow | .0340465  | .0278283  | 1.22   | 0.221 | -.0204986            | .0885915  |
| survey          | -.3552684 | .0263327  | -13.49 | 0.000 | -.406882             | -.3036547 |
| primaryxs       | .1725215  | .0291539  | 5.92   | 0.000 | .1153782             | .2296649  |
| _cons           | .7195767  | .0251096  | 28.66  | 0.000 | .6703603             | .7687931  |
| children        | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| primaryandbelow | .1054463  | .0244694  | 4.31   | 0.000 | .0574848             | .1534078  |
| survey          | -.2540241 | .0231543  | -10.97 | 0.000 | -.299408             | -.2086402 |
| primaryxs       | .1351125  | .025635   | 5.27   | 0.000 | .0848663             | .1853586  |
| _cons           | .7804233  | .0220789  | 35.35  | 0.000 | .7371473             | .8236993  |



| govt                   | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|------------------------|-----------|-----------|--------|-------|----------------------|-----------|
| primaryandbelow        | .0606453  | .0209217  | 2.90   | 0.004 | .0196375             | .101653   |
| survey                 | .0344865  | .0197973  | 1.74   | 0.082 | -.0043174            | .0732904  |
| primaryxs              | .3719219  | .0219183  | 16.97  | 0.000 | .3289608             | .4148831  |
| _cons                  | .4206349  | .0188778  | 22.28  | 0.000 | .3836333             | .4576365  |
| pension                | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| primaryandbelow        | -.390758  | .0130132  | -30.03 | 0.000 | -.4162647            | -.3652513 |
| survey                 | -.0678179 | .0123139  | -5.51  | 0.000 | -.0919538            | -.043682  |
| primaryxs              | -.0214187 | .0136331  | -1.57  | 0.116 | -.0481404            | .005303   |
| _cons                  | .4867725  | .0117419  | 41.46  | 0.000 | .4637576             | .5097874  |
| savings                | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| primaryandbelow        | -.062917  | .0276088  | -2.28  | 0.023 | -.1170319            | -.008802  |
| survey                 | -.1870261 | .026125   | -7.16  | 0.000 | -.2382328            | -.1358195 |
| primaryxs              | -.1581002 | .028924   | -5.47  | 0.000 | -.2147929            | -.1014074 |
| _cons                  | .8068783  | .0249116  | 32.39  | 0.000 | .75805               | .8557066  |
| spouse                 | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| primaryandbelow        | .0299919  | .0270579  | 1.11   | 0.268 | -.0230432            | .0830271  |
| survey                 | -.2565313 | .0256038  | -10.02 | 0.000 | -.3067162            | -.2063465 |
| primaryxs              | -.0256243 | .0283468  | -0.90  | 0.366 | -.0811858            | .0299372  |
| _cons                  | .5925926  | .0244146  | 24.27  | 0.000 | .5447386             | .6404466  |
| relatives              | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| primaryandbelow        | -.0020416 | .0181891  | -0.11  | 0.911 | -.0376933            | .03361    |
| survey                 | -.3065291 | .0172115  | -17.81 | 0.000 | -.3402648            | -.2727935 |
| primaryxs              | .0194986  | .0190555  | 1.02   | 0.306 | -.0178513            | .0568486  |
| _cons                  | .3915344  | .0164121  | 23.86  | 0.000 | .3593656             | .4237032  |
| working                | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| secondaryandhighschool | -.022     | .0333083  | -0.66  | 0.509 | -.0872862            | .0432862  |
| survey                 | -.2059454 | .0121744  | -16.92 | 0.000 | -.2298081            | -.1820828 |
| secondaryxs            | -.0589798 | .0351324  | -1.68  | 0.093 | -.1278415            | .0098819  |
| _cons                  | .75       | .0116774  | 64.23  | 0.000 | .7271116             | .7728884  |
| children               | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| secondaryandhighschool | -.0755605 | .0294132  | -2.57  | 0.010 | -.1332123            | -.0179088 |
| survey                 | -.133504  | .0107508  | -12.42 | 0.000 | -.1545762            | -.1124318 |
| secondaryxs            | -.0854463 | .0310241  | -2.75  | 0.006 | -.1462554            | -.0246372 |
| _cons                  | .8755605  | .0103119  | 84.91  | 0.000 | .8553487             | .8957724  |

| govt                   | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|------------------------|-----------|-----------|--------|-------|----------------------|-----------|
| secondaryandhighschool | -.0798206 | .0266238  | -3.00  | 0.003 | -.132005             | -.0276363 |
| survey                 | .3546336  | .0097312  | 36.44  | 0.000 | .3355598             | .3737074  |
| secondaryxs            | -.1206345 | .0280819  | -4.30  | 0.000 | -.1756768            | -.0655922 |
| _cons                  | .4798206  | .0093339  | 51.41  | 0.000 | .4615255             | .4981157  |
| pension                | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| secondaryandhighschool | .1908206  | .0183097  | 10.42  | 0.000 | .1549326             | .2267087  |
| survey                 | -.0842145 | .0066923  | -12.58 | 0.000 | -.0973318            | -.0710971 |
| secondaryxs            | -.0362723 | .0193124  | -1.88  | 0.060 | -.0741258            | .0015812  |
| _cons                  | .1451794  | .0064191  | 22.62  | 0.000 | .1325975             | .1577612  |
| savings                | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| secondaryandhighschool | -.0041659 | .0330641  | -0.13  | 0.900 | -.0689735            | .0606417  |
| survey                 | -.3318969 | .0120852  | -27.46 | 0.000 | -.3555846            | -.3082092 |
| secondaryxs            | .1251826  | .0348749  | 3.59   | 0.000 | .0568257             | .1935394  |
| _cons                  | .7561659  | .0115918  | 65.23  | 0.000 | .7334453             | .7788866  |
| spouse                 | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| secondaryandhighschool | -.0421973 | .0320535  | -1.32  | 0.188 | -.1050241            | .0206295  |
| survey                 | -.2807743 | .0117158  | -23.97 | 0.000 | -.303738             | -.2578106 |
| secondaryxs            | .0240442  | .033809   | 0.71   | 0.477 | -.0422234            | .0903117  |
| _cons                  | .6221973  | .0112375  | 55.37  | 0.000 | .6001711             | .6442235  |
| relatives              | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| secondaryandhighschool | -.0249372 | .0215512  | -1.16  | 0.247 | -.0671789            | .0173045  |
| survey                 | -.2924012 | .0078772  | -37.12 | 0.000 | -.3078408            | -.2769615 |
| secondaryxs            | .014508   | .0227315  | 0.64   | 0.523 | -.0300471            | .0590631  |
| _cons                  | .3929372  | .0075556  | 52.01  | 0.000 | .3781279             | .4077466  |
| working                | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| universityandhigher    | -.0471373 | .0444765  | -1.06  | 0.289 | -.1343139            | .0400393  |
| survey                 | -.1904182 | .0116518  | -16.34 | 0.000 | -.2132564            | -.16758   |
| universityxs           | -.278456  | .0462013  | -6.03  | 0.000 | -.3690132            | -.1878988 |
| _cons                  | .7502623  | .0111573  | 67.24  | 0.000 | .7283933             | .7721314  |
| children               | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| universityandhigher    | -.132419  | .0394236  | -3.36  | 0.001 | -.2096917            | -.0551463 |
| survey                 | -.1266742 | .0103281  | -12.27 | 0.000 | -.1469178            | -.1064306 |
| universityxs           | -.1610791 | .0409525  | -3.93  | 0.000 | -.2413483            | -.0808098 |
| _cons                  | .8746065  | .0098898  | 88.44  | 0.000 | .855222              | .8939911  |

| govt                | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
|---------------------|-----------|-----------|--------|-------|----------------------|-----------|
| universityandhigher | -.0096816 | .0333403  | -0.29  | 0.772 | -.0750306            | .0556674  |
| survey              | .3911073  | .0087344  | 44.78  | 0.000 | .3739874             | .4082272  |
| universityxs        | -.6324729 | .0346332  | -18.26 | 0.000 | -.7003561            | -.5645898 |
| _cons               | .4706191  | .0083637  | 56.27  | 0.000 | .4542257             | .4870125  |
| pension             | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| universityandhigher | .6537579  | .0197939  | 33.03  | 0.000 | .6149606             | .6925552  |
| survey              | -.0993526 | .0051855  | -19.16 | 0.000 | -.1095165            | -.0891886 |
| universityxs        | .0049527  | .0205615  | 0.24   | 0.810 | -.0353491            | .0452546  |
| _cons               | .1274921  | .0049655  | 25.68  | 0.000 | .1177595             | .1372248  |
| savings             | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| universityandhigher | .1690468  | .0442678  | 3.82   | 0.000 | .0822792             | .2558143  |
| survey              | -.3311931 | .0115971  | -28.56 | 0.000 | -.3539242            | -.3084621 |
| universityxs        | .1351734  | .0459845  | 2.94   | 0.003 | .0450411             | .2253058  |
| _cons               | .7450157  | .011105   | 67.09  | 0.000 | .7232493             | .7667822  |
| spouse              | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| universityandhigher | .0001885  | .0433416  | 0.00   | 0.997 | -.0847636            | .0851407  |
| survey              | -.2783261 | .0113545  | -24.51 | 0.000 | -.3005815            | -.2560706 |
| universityxs        | .0140438  | .0450224  | 0.31   | 0.755 | -.0742028            | .1022903  |
| _cons               | .616999   | .0108726  | 56.75  | 0.000 | .5956879             | .63831    |
| relatives           | Coef.     | Std. Err. | t      | P> t  | [95% Conf. Interval] |           |
| universityandhigher | .0508263  | .0291345  | 1.74   | 0.081 | -.006279             | .1079317  |
| survey              | -.2854758 | .0076325  | -37.40 | 0.000 | -.3004361            | -.2705156 |
| universityxs        | -.0737367 | .0302643  | -2.44  | 0.015 | -.1330566            | -.0144168 |
| _cons               | .3866737  | .0073086  | 52.91  | 0.000 | .3723483             | .4009991  |

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#### Appendix 5. Original STATA output of the Gender-Region Interaction Model.

| working  | Coef.    | P>t   | working     | Coef.    | P>t   | working   | Coef.    | P>t   |
|----------|----------|-------|-------------|----------|-------|-----------|----------|-------|
| bangkok  | 0.057349 | 0.267 | central     | 0.004072 | 0.913 | north     | 0.001275 | 0.971 |
| female   | -0.0601  | 0.007 | female      | -0.05701 | 0.02  | female    | -0.05954 | 0.015 |
| survey   | -0.09707 | 0     | survey      | -0.08722 | 0     | survey    | -0.12564 | 0     |
| bkkxfem  | -0.02768 | 0.69  | centralxfem | -0.02097 | 0.676 | northxfem | -0.01253 | 0.802 |
| bkkxs    | -0.31841 | 0     | centralxs   | -0.10014 | 0.01  | northxs   | 0.043873 | 0.229 |
| fxs      | -0.17471 | 0     | fxs         | -0.19267 | 0     | fxs       | -0.17248 | 0     |
| fxsxbkk  | 0.075061 | 0.322 | fxsxcntral  | 0.08112  | 0.12  | fxsxnorth | 0.005647 | 0.914 |
| children | Coef.    | P>t   | children    | Coef.    | P>t   | children  | Coef.    | P>t   |
| bangkok  | -0.13317 | 0.005 | central     | -0.05842 | 0.084 | north     | 0.011452 | 0.718 |
| female   | 0.012029 | 0.557 | female      | 0.006539 | 0.768 | female    | 0.018664 | 0.403 |
| survey   | -0.1715  | 0     | survey      | -0.15331 | 0     | survey    | -0.16623 | 0     |

|           |          |       |             |          |       |           |          |       |
|-----------|----------|-------|-------------|----------|-------|-----------|----------|-------|
| bkkxfem   | 0.069311 | 0.273 | centralxfem | 0.052644 | 0.247 | northxfem | -0.00144 | 0.975 |
| bkkxs     | 0.020862 | 0.687 | centralxs   | -0.0263  | 0.455 | northxs   | 0.010916 | 0.742 |
| fxs       | 0.048283 | 0.024 | fxs         | 0.058076 | 0.012 | fxs       | 0.043311 | 0.063 |
| fxsxbkk   | -0.06527 | 0.345 | fxsxcentral | -0.06429 | 0.174 | fxsxnorth | -0.00633 | 0.894 |
| govt      | Coef.    | P>t   | govt        | Coef.    | P>t   | govt      | Coef.    | P>t   |
| bangkok   | -0.03961 | 0.355 | central     | -0.10159 | 0.001 | north     | 0.106245 | 0     |
| female    | 0.026055 | 0.161 | female      | 0.026155 | 0.196 | female    | 0.035572 | 0.079 |
| survey    | 0.329062 | 0     | survey      | 0.311848 | 0     | survey    | 0.343744 | 0     |
| bkkxfem   | -0.00083 | 0.989 | centralxfem | 0.013753 | 0.74  | northxfem | -0.02236 | 0.588 |
| bkkxs     | -0.11103 | 0.018 | centralxs   | 0.073487 | 0.022 | northxs   | -0.06464 | 0.032 |
| fxs       | 0.032691 | 0.092 | fxs         | 0.027959 | 0.186 | fxs       | 0.030708 | 0.147 |
| fxsxbkk   | 0.008314 | 0.895 | fxsxcentral | 0.002031 | 0.962 | fxsxnorth | -0.00773 | 0.857 |
| pension   | Coef.    | P>t   | pension     | Coef.    | P>t   | pension   | Coef.    | P>t   |
| bangkok   | 0.106331 | 0     | central     | 0.066882 | 0.002 | north     | -0.0575  | 0.004 |
| female    | -0.0461  | 0     | female      | -0.01935 | 0.166 | female    | -0.05101 | 0     |
| survey    | -0.0845  | 0     | survey      | -0.08649 | 0     | survey    | -0.10549 | 0     |
| bkkxfem   | 0.059415 | 0.135 | centralxfem | -0.08093 | 0.005 | northxfem | 0.048332 | 0.09  |
| bkkxs     | -0.06178 | 0.057 | centralxs   | -0.03671 | 0.098 | northxs   | 0.046753 | 0.025 |
| fxs       | 0.009752 | 0.467 | fxs         | -0.01302 | 0.373 | fxs       | 0.013027 | 0.374 |
| fxsxbkk   | -0.04827 | 0.266 | fxsxcentral | 0.068078 | 0.022 | fxsxnorth | -0.03915 | 0.188 |
| savings   | Coef.    | P>t   | savings     | Coef.    | P>t   | savings   | Coef.    | P>t   |
| bangkok   | 0.022085 | 0.677 | central     | -0.05516 | 0.146 | north     | 0.09933  | 0.005 |
| female    | -0.03625 | 0.115 | female      | -0.03158 | 0.205 | female    | -0.01221 | 0.626 |
| survey    | -0.32259 | 0     | survey      | -0.30662 | 0     | survey    | -0.30447 | 0     |
| bkkxfem   | 0.081489 | 0.251 | centralxfem | 0.028185 | 0.581 | northxfem | -0.04314 | 0.397 |
| bkkxs     | 0.100931 | 0.083 | centralxs   | -0.03753 | 0.342 | northxs   | -0.0561  | 0.131 |
| fxs       | 0.010907 | 0.649 | fxs         | 0.007264 | 0.78  | fxs       | -0.01437 | 0.583 |
| fxsxbkk   | -0.10866 | 0.162 | fxsxcentral | -0.02792 | 0.599 | fxsxnorth | 0.047161 | 0.374 |
| spouse    | Coef.    | P>t   | spouse      | Coef.    | P>t   | spouse    | Coef.    | P>t   |
| bangkok   | -0.06529 | 0.202 | central     | -0.08582 | 0.02  | north     | 0.048077 | 0.162 |
| female    | -0.04382 | 0.049 | female      | -0.03668 | 0.128 | female    | -0.03486 | 0.15  |
| survey    | -0.31304 | 0     | survey      | -0.31078 | 0     | survey    | -0.30906 | 0     |
| bkkxfem   | 0.043382 | 0.528 | centralxfem | 0.001898 | 0.969 | northxfem | -0.01213 | 0.806 |
| bkkxs     | -0.02453 | 0.663 | centralxs   | 0.017071 | 0.655 | northxs   | -0.00548 | 0.879 |
| fxs       | 0.066578 | 0.004 | fxs         | 0.066611 | 0.008 | fxs       | 0.060433 | 0.017 |
| fxsxbkk   | -0.04021 | 0.592 | fxsxcentral | -0.02419 | 0.638 | fxsxnorth | 0.000946 | 0.985 |
| relatives | Coef.    | P>t   | relatives   | Coef.    | P>t   | relatives | Coef.    | P>t   |
| bangkok   | 0.054156 | 0.116 | central     | -0.01892 | 0.444 | north     | -0.04466 | 0.053 |
| female    | 0.012588 | 0.4   | female      | 0.020046 | 0.216 | female    | 0.004376 | 0.788 |

|         |          |       |             |          |       |           |          |       |
|---------|----------|-------|-------------|----------|-------|-----------|----------|-------|
| survey  | -0.29932 | 0     | survey      | -0.2956  | 0     | survey    | -0.32009 | 0     |
| bkkxfem | 0.002115 | 0.963 | centralxfem | -0.02106 | 0.526 | northxfem | 0.032581 | 0.325 |
| bkkxs   | -0.0633  | 0.094 | centralxs   | -0.03148 | 0.221 | northxs   | 0.056409 | 0.02  |
| fxs     | 0.026372 | 0.09  | fxs         | 0.018683 | 0.27  | fxs       | 0.037227 | 0.029 |
| fxsxbkk | 0.009123 | 0.857 | fxsxcntral  | 0.026733 | 0.439 | fxsxnorth | -0.04049 | 0.24  |

| working       | Coef.    | P>t   | working   | Coef.    | P>t   |
|---------------|----------|-------|-----------|----------|-------|
| northeast     | -0.05402 | 0.118 | south     | 0.03864  | 0.38  |
| female        | -0.07268 | 0.004 | female    | -0.06317 | 0.006 |
| survey        | -0.1524  | 0     | survey    | -0.11263 | 0     |
| northeastxfem | 0.037113 | 0.441 | southxfem | 0.005063 | 0.934 |
| northeastxs   | 0.138843 | 0     | southxs   | -0.0085  | 0.854 |
| fxs           | -0.15049 | 0     | fxs       | -0.16771 | 0     |
| fxsxnortheast | -0.07607 | 0.13  | fxsxsouth | -0.02761 | 0.664 |

| children      | Coef.    | P>t   | children  | Coef.    | P>t   |
|---------------|----------|-------|-----------|----------|-------|
| northeast     | 0.062312 | 0.046 | south     | 0.057735 | 0.149 |
| female        | 0.019751 | 0.38  | female    | 0.032187 | 0.125 |
| survey        | -0.18031 | 0     | survey    | -0.14612 | 0     |
| northeastxfem | -0.00474 | 0.913 | southxfem | -0.09995 | 0.07  |
| northeastxs   | 0.059484 | 0.068 | southxs   | -0.12094 | 0.004 |
| fxs           | 0.038418 | 0.102 | fxs       | 0.023025 | 0.293 |
| fxsxnortheast | 0.011608 | 0.798 | fxsxsouth | 0.128905 | 0.026 |

| govt          | Coef.    | P>t   | govt      | Coef.    | P>t   |
|---------------|----------|-------|-----------|----------|-------|
| northeast     | 0.116424 | 0     | south     | -0.18883 | 0     |
| female        | 0.020224 | 0.326 | female    | 0.02227  | 0.242 |
| survey        | 0.344913 | 0     | survey    | 0.30657  | 0     |
| northeastxfem | 0.024754 | 0.533 | southxfem | 0.024701 | 0.622 |
| northeastxs   | -0.06847 | 0.022 | southxs   | 0.138508 | 0     |
| fxs           | 0.037349 | 0.082 | fxs       | 0.032255 | 0.105 |
| fxsxnortheast | -0.02232 | 0.59  | fxsxsouth | -0.00188 | 0.971 |

| pension       | Coef.    | P>t   | pension   | Coef.    | P>t   |
|---------------|----------|-------|-----------|----------|-------|
| northeast     | -0.02629 | 0.183 | south     | -0.035   | 0.164 |
| female        | -0.04113 | 0.004 | female    | -0.0312  | 0.018 |
| survey        | -0.09019 | 0     | survey    | -0.09979 | 0     |
| northeastxfem | 0.012246 | 0.656 | southxfem | -0.0432  | 0.213 |
| northeastxs   | -0.00942 | 0.648 | southxs   | 0.047732 | 0.07  |
| fxs           | 0.005439 | 0.714 | fxs       | -0.00391 | 0.776 |
| fxsxnortheast | -0.0119  | 0.678 | fxsxsouth | 0.041516 | 0.253 |

| savings   | Coef.    | P>t   | savings | Coef.    | P>t   |
|-----------|----------|-------|---------|----------|-------|
| northeast | -0.10196 | 0.004 | south   | 0.067434 | 0.133 |

|               |          |       |           |          |       |
|---------------|----------|-------|-----------|----------|-------|
| female        | -0.02832 | 0.266 | female    | -0.02231 | 0.343 |
| survey        | -0.34879 | 0     | survey    | -0.31407 | 0     |
| northeastxfem | 0.001894 | 0.969 | southxfem | -0.03084 | 0.619 |
| northeastxs   | 0.107041 | 0.004 | southxs   | -0.03738 | 0.427 |
| fxs           | 0.004665 | 0.861 | fxs       | -0.00606 | 0.805 |
| fxsxnortheast | -0.0099  | 0.847 | fxsxsouth | 0.053611 | 0.408 |

| spouse        | Coef.    | P>t   | spouse    | Coef.    | P>t   |
|---------------|----------|-------|-----------|----------|-------|
| northeast     | 0.012056 | 0.724 | south     | 0.069991 | 0.107 |
| female        | -0.05675 | 0.021 | female    | -0.02697 | 0.236 |
| survey        | -0.31338 | 0     | survey    | -0.30563 | 0     |
| northeastxfem | 0.064815 | 0.173 | southxfem | -0.09023 | 0.132 |
| northeastxs   | 0.009986 | 0.78  | southxs   | -0.03372 | 0.459 |
| fxs           | 0.067402 | 0.009 | fxs       | 0.050143 | 0.035 |
| fxsxnortheast | -0.02248 | 0.65  | fxsxsouth | 0.087549 | 0.163 |

| relatives     | Coef.    | P>t   | relatives | Coef.    | P>t   |
|---------------|----------|-------|-----------|----------|-------|
| northeast     | -0.02486 | 0.277 | south     | 0.099079 | 0.001 |
| female        | 0.008441 | 0.609 | female    | 0.02175  | 0.155 |
| survey        | -0.32591 | 0     | survey    | -0.28828 | 0     |
| northeastxfem | 0.018984 | 0.551 | southxfem | -0.05712 | 0.156 |
| northeastxs   | 0.075305 | 0.002 | southxs   | -0.11715 | 0     |
| fxs           | 0.029079 | 0.091 | fxs       | 0.018929 | 0.235 |
| fxsxnortheast | -0.01156 | 0.728 | fxsxsouth | 0.045551 | 0.279 |

#### Appendix 6. Original STATA output of the Gender-Education Interaction Model.

| working<br>primaryandbe~<br>w | Coef.    | P>t  | working<br>secondaryand~<br>w | Coef.    | P>t  | working<br>universityan~r<br>m | Coef.    | P>t  |
|-------------------------------|----------|------|-------------------------------|----------|------|--------------------------------|----------|------|
|                               | 0.02543  | 0.48 |                               | -0.0033  | 0.93 |                                | -0.06539 | 0.28 |
|                               | 8        | 2    |                               | 1        | 7    |                                | 5        |      |
|                               |          | 0.04 |                               |          | 0.01 |                                |          | 0.00 |
| female                        | -0.09776 | 8    | female                        | -0.05591 | 4    | female                         | -0.0647  | 3    |
| survey                        | -0.30907 | 0    | survey                        | -0.09526 | 0    | survey                         | -0.08624 | 0    |
|                               | 0.03921  | 0.47 |                               |          | 0.25 | universityxfe                  | 0.03345  | 0.69 |
| primaryxfem                   | 3        | 3    | secondaryxfem                 | -0.076   | 5    | m                              | 2        | 9    |
|                               | 0.24791  |      |                               |          | 0.00 |                                |          |      |
| primaryxs                     | 8        | 0    | secondaryxs                   | -0.1395  | 2    | universityxs                   | -0.33461 | 0    |
|                               |          | 0.04 |                               |          |      |                                |          |      |
| fxs                           | -0.1052  | 2    | fxs                           | -0.19038 | 0    | fxs                            | -0.18311 | 0    |
|                               |          | 0.07 |                               |          | 0.12 |                                | 0.08837  | 0.32 |
| fxsxprimary                   | -0.10172 | 5    | fxsxsecondary                 | 0.10743  | 7    | fxsxuniversity                 | 3        | 5    |

| children<br>primaryandbe~<br>w | Coef.    | P>t  | children<br>secondaryand~<br>w | Coef.    | P>t  | children<br>universityan~r<br>m | Coef.    | P>t  |
|--------------------------------|----------|------|--------------------------------|----------|------|---------------------------------|----------|------|
|                                | 0.10773  | 0.00 |                                | -0.11052 | 0.00 |                                 | -0.06436 | 0.24 |
|                                | 6        | 1    |                                | 4        | 4    |                                 | 8        |      |
|                                | 0.01605  |      |                                | 0.00131  | 0.94 |                                 |          | 0.19 |
| female                         | 3        | 0.72 | female                         | 4        | 9    | female                          | 0.02554  | 6    |
| survey                         | -0.24377 | 0    | survey                         | -0.16134 | 0    | survey                          | -0.1481  | 0    |
|                                |          | 0.87 |                                |          | 0.11 | universityxfe                   |          | 0.08 |
| primaryxfem                    | -0.00804 | 1    | secondaryxfem                  | 0.09457  | 8    | m                               | -0.13492 | 6    |

|                               |                   |             |                               |                   |             |                           |                   |             |
|-------------------------------|-------------------|-------------|-------------------------------|-------------------|-------------|---------------------------|-------------------|-------------|
| primaryxs                     | 0.10056           | 0.00        | secondaryxs                   | -0.03713          | 0.35        | universityxs              | -0.17906          | 0.00        |
| fxs                           | -0.02443          | 0.60        | fxs                           | 0.04854           | 0.02        | fxs                       | 0.03692           | 0.07        |
| fxsxprimary                   | 0.06598           | 0.20        | fxsxsecondary                 | -0.10323          | 0.10        | fxsxuniversity            | 0.04220           | 0.60        |
| govt<br>primaryandbe~<br>w    | Coef.<br>0.06998  | P>t<br>0.01 | govt<br>secondaryand~<br>l    | Coef.<br>-0.07381 | P>t<br>0.03 | govt<br>universityan~r    | Coef.<br>-0.03738 | P>t<br>0.42 |
| female                        | 0.04314           | 0.26        | female                        | 0.02045           | 0.27        | female                    | 0.02171           | 0.19        |
| survey                        | 0.05208           | 0.04        | survey                        | 0.34606           | 0.90        | survey                    | 0.37075           | 0.00        |
| primaryxfem                   | -0.02745          | 0.51        | secondaryxfem                 | -0.00675          | 0.2         | universityxfe<br>m        | 0.05641           | 0.39        |
| primaryxs                     | 0.34793           | 0           | secondaryxs                   | -0.16114          | 0           | universityxs              | -0.54788          | 0           |
| fxs                           | -0.04239          | 0.29        | fxs                           | 0.01389           | 0.47        | fxs                       | 0.03522           | 0.04        |
| fxsxprimary                   | 0.05256           | 0.23        | fxsxsecondary                 | 0.11926           | 0.03        | fxsxuniversity            | -0.16318          | 0.01        |
| pension<br>primaryandbe~<br>w | Coef.<br>-0.41225 | P>t<br>0    | pension<br>secondaryand~<br>l | Coef.<br>0.22364  | P>t<br>0    | pension<br>universityan~r | Coef.<br>0.68495  | P>t<br>0    |
| female                        | -0.04819          | 0.04        | female                        | -0.01283          | 0.31        | female                    | -0.02995          | 0.00        |
| survey                        | -0.10134          | 0           | survey                        | -0.08166          | 0           | survey                    | -0.0967           | 0           |
| primaryxfem                   | 0.05088           | 0.05        | secondaryxfem                 | -0.09415          | 0.01        | universityxfe<br>m        | -0.0638           | 0.10        |
| primaryxs                     | 0.01760           | 0.33        | secondaryxs                   | -0.0388           | 0.11        | universityxs              | -0.07382          | 0.01        |
| fxs                           | 0.07978           | 0.00        | fxs                           | -0.00379          | 0.77        | fxs                       | -0.00296          | 0.77        |
| fxsxprimary                   | -0.08944          | 0.00        | fxsxsecondary                 | 0.00279           | 0.94        | fxsxuniversity            | 0.15460           | 0.05        |
| savings<br>primaryandbe~<br>w | Coef.<br>-0.02302 | P>t<br>0.53 | savings<br>secondaryand~<br>l | Coef.<br>-0.0442  | P>t<br>0.3  | savings<br>universityan~r | Coef.<br>0.16306  | P>t<br>0.00 |
| female                        | 0.04706           | 0.35        | female                        | -0.03778          | 0.10        | female                    | -0.02635          | 0.23        |
| survey                        | -0.17202          | 0           | survey                        | -0.34261          | 0           | survey                    | -0.33211          | 0           |
| primaryxfem                   | -0.08431          | 0.13        | secondaryxfem                 | 0.09024           | 0.18        | universityxfe<br>m        | 0.01072           | 0.90        |
| primaryxs                     | -0.18722          | 0           | secondaryxs                   | 0.16347           | 0.04        | universityxs              | 0.12964           | 0.04        |
| fxs                           | -0.03645          | 0.49        | fxs                           | 0.02065           | 0.39        | fxs                       | 0.00322           | 0.88        |
| fxsxprimary                   | 0.06290           | 0.28        | fxsxsecondary                 | -0.09498          | 0.18        | fxsxuniversity            | 0.00969           | 0.91        |
| spouse<br>primaryandbe~<br>w  | Coef.<br>-0.00019 | P>t<br>0.99 | spouse<br>secondaryand~<br>l  | Coef.<br>-0.03148 | P>t<br>0.44 | spouse<br>universityan~r  | Coef.<br>0.06986  | P>t<br>0.25 |
| female                        | -0.10935          | 0.02        | female                        | -0.0382           | 0.09        | female                    | -0.03106          | 0.15        |
| survey                        | -0.3096           | 0           | survey                        | -0.31277          | 0           | survey                    | -0.30883          | 0           |

|                                 |                          |                   |                                 |                          |               |                                       |                                  |                       |
|---------------------------------|--------------------------|-------------------|---------------------------------|--------------------------|---------------|---------------------------------------|----------------------------------|-----------------------|
| primaryxfem                     | 0.08147<br>5             | 0.13<br>7         | secondaryxfem                   | -0.04639<br>3            | 0.48<br>3     | universityxfem                        | -0.14082<br>4                    | 0.10<br>4             |
| primaryxs                       | -0.00117<br>6            | 0.97<br>6         | secondaryxs                     | 0.01035<br>3             | 0.81<br>2     | universityxs                          | -0.03335<br>1                    | 0.60<br>1             |
| fxs                             | 0.12723<br>4             | 0.01<br>4         | fxs                             | 0.05783<br>3             | 0.01<br>4     | fxs                                   | 0.05663<br>3                     | 0.01<br>3             |
| fxsxprimary                     | -0.07624<br>4            | 0.18<br>4         | fxsxsecondary                   | 0.06530<br>7             | 0.34<br>9     | fxsxuniversity                        | 0.09934<br>2                     | 0.27<br>2             |
| relatives<br>primaryandbe~<br>w | Coef.<br>0.01511<br>1    | P>t<br>0.53<br>5  | relatives<br>secondaryand~<br>l | Coef.<br>-0.09941<br>1   | P>t<br>0<br>8 | relatives<br>universityan~r<br>female | Coef.<br>0.17573<br>0.02965<br>6 | P>t<br>0<br>0.04<br>2 |
| female                          | 0.04934<br>1             | 0.13<br>8         | female                          | -0.01074<br>8            | 0.47<br>8     | female                                | 0.29216<br>6                     | 0<br>2                |
| survey                          | -0.30508<br>0            | 0<br>0            | survey                          | -0.31951<br>0.19525<br>2 | 0<br>0        | survey<br>universityxfem<br>m         | -0.29216<br>-0.24841<br>0        | 0<br>0<br>0           |
| primaryxfem                     | -0.04323<br>0.99         | 0.24<br>0.99      | secondaryxfem                   | 0.08784<br>1             | 0.00<br>3     | universityxs                          | -0.19168<br>0.01021              | 0<br>0.50             |
| primaryxs                       | -0.00016<br>5            | 0.89<br>0.35      | secondaryxs                     | 0.04788<br>4             | 0.00<br>2     | fxs                                   | 0.23871<br>6                     | 0<br>3                |
| fxs                             | -0.00481<br>0.03593<br>8 | 0.89<br>0.35<br>1 | fxs                             | -0.17163<br>0            | 0<br>0        | fxsxuniversity                        | 0.23871<br>6                     | 0<br>0                |



Appendix 7. Welch t-test on differences in proportions of expectations and reality of financial sources at old age across male and females with standard errors from bootstrap resampling.

| Financial source at old age | Male  |       |       | Female |       |       | t-stat    |
|-----------------------------|-------|-------|-------|--------|-------|-------|-----------|
|                             | %     | SE    | N     | %      | SE    | N     |           |
| <b>Expectations</b>         |       |       |       |        |       |       |           |
| Working                     | 77.98 | 1.324 | 972   | 71.75  | 1.366 | 1062  | 3.27***   |
| Children                    | 85.7  | 1.129 | 972   | 87.48  | 1.024 | 1062  | -1.16     |
| Government                  | 45.68 | 1.593 | 972   | 48.21  | 1.537 | 1062  | -1.14     |
| Savings                     | 76.95 | 1.353 | 972   | 74.29  | 1.34  | 1062  | 1.39      |
| Pension                     | 18.83 | 1.259 | 972   | 15.07  | 1.09  | 1062  | 2.25**    |
| Spouse                      | 63.79 | 1.527 | 972   | 59.79  | 1.479 | 1062  | 1.87*     |
| Relatives                   | 38.27 | 1.553 | 972   | 39.64  | 1.501 | 1062  | -0.63     |
| <b>Reality</b>              |       |       |       |        |       |       |           |
| Working                     | 66.59 | 0.464 | 10127 | 43.18  | 0.443 | 12546 | 36.43***  |
| Children                    | 69.37 | 0.455 | 10127 | 75.35  | 0.387 | 12546 | -9.99***  |
| Government                  | 78.33 | 0.408 | 10127 | 84.14  | 0.329 | 12546 | -11.08*** |
| Savings                     | 45.01 | 0.487 | 10127 | 42.42  | 0.441 | 12546 | 3.93***   |
| Pension                     | 9.53  | 0.291 | 10127 | 5.98   | 0.213 | 12546 | 9.83***   |
| Spouse                      | 32.73 | 0.462 | 10127 | 34.97  | 0.428 | 12546 | -3.54***  |
| Relatives                   | 7.77  | 0.266 | 10127 | 11.72  | 0.289 | 12546 | -10.05*** |

\*  $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$

Appendix 8. Chi-squared test on differences in proportions of expectations and reality of financial sources at old age across regions with standard errors from bootstrap resampling.

| Financial source at old age | Bangkok |       |      | Central |       |      | North   |       |      | Northeast |       |      | South  |       |      | chi squared |
|-----------------------------|---------|-------|------|---------|-------|------|---------|-------|------|-----------|-------|------|--------|-------|------|-------------|
|                             | %       | SE    | N    | %       | SE    | N    | %       | SE    | N    | %         | SE    | N    | %      | SE    | N    |             |
| <b>Expectations</b>         |         |       |      |         |       |      |         |       |      |           |       |      |        |       |      |             |
| Working                     | 78.24   | 2.761 | 216  | 73.877  | 1.988 | 490  | 74.693  | 1.971 | 490  | 72.242    | 1.912 | 544  | 78.231 | 2.42  | 294  | 0.382       |
| Children                    | 78.24   | 2.817 | 216  | 84.489  | 1.638 | 490  | 87.3469 | 1.518 | 490  | 90.992    | 1.209 | 544  | 87.074 | 1.922 | 294  | 1.047       |
| Government                  | 43.518  | 3.353 | 216  | 40      | 2.207 | 490  | 54.081  | 2.242 | 490  | 56.433    | 2.12  | 544  | 31.972 | 2.7   | 294  | 9.068*      |
| Savings                     | 81.481  | 2.639 | 216  | 72.448  | 2.036 | 490  | 81.632  | 1.768 | 490  | 68.198    | 1.989 | 544  | 79.931 | 2.305 | 294  | 1.928       |
| Pension                     | 29.166  | 3.063 | 216  | 18.367  | 1.735 | 490  | 14.489  | 1.592 | 490  | 15.441    | 1.558 | 544  | 11.904 | 1.902 | 294  | 10.113**    |
| Spouse                      | 57.87   | 3.409 | 216  | 55.102  | 2.244 | 490  | 65.102  | 2.15  | 490  | 65.073    | 2.033 | 544  | 63.605 | 2.791 | 294  | 1.371       |
| Relatives                   | 43.981  | 3.344 | 216  | 36.734  | 2.162 | 490  | 36.734  | 2.182 | 490  | 37.867    | 2.076 | 544  | 44.897 | 2.877 | 294  | 1.64        |
| <b>Reality</b>              |         |       |      |         |       |      |         |       |      |           |       |      |        |       |      |             |
| Working                     | 30.587  | 1.409 | 1056 | 48.779  | 0.628 | 6308 | 56.86   | 0.638 | 5969 | 58.256    | 0.621 | 6310 | 55.808 | 0.895 | 3030 | 10.533**    |
| Children                    | 62.405  | 1.476 | 1056 | 66.185  | 0.591 | 6308 | 73.965  | 0.564 | 5969 | 81.727    | 0.487 | 6310 | 68.382 | 0.839 | 3030 | 3.213       |
| Government                  | 67.803  | 1.437 | 1056 | 80.247  | 0.503 | 6308 | 83.347  | 0.481 | 5969 | 85.087    | 0.45  | 6310 | 78.085 | 0.754 | 3030 | 2.327       |
| Savings                     | 53.693  | 1.533 | 1056 | 36.857  | 0.612 | 6308 | 46.942  | 0.646 | 5969 | 43.629    | 0.623 | 6310 | 47.293 | 0.899 | 3030 | 3.293       |
| Pension                     | 12.31   | 1.011 | 1056 | 9.162   | 0.36  | 6308 | 7.17    | 0.333 | 5969 | 5.007     | 0.275 | 6310 | 8.679  | 0.508 | 3030 | 3.419       |
| Spouse                      | 25.662  | 1.342 | 1056 | 28.138  | 0.567 | 6308 | 36.639  | 0.617 | 5969 | 37.242    | 0.598 | 6310 | 36.93  | 0.865 | 3030 | 3.77        |
| Relatives                   | 9.848   | 0.919 | 1056 | 6.61    | 0.31  | 6308 | 10.47   | 0.398 | 5969 | 13.882    | 0.438 | 6310 | 7.755  | 0.483 | 3030 | 3.236       |

\*  $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$

Appendix 9. Chi-squared test on differences in proportions of expectations and reality of financial sources at old age across education level with standard errors from bootstrap resampling.

| Financial source at old age | No Education |           |          | High school or lower |            |           | Certificate/diploma |           |         | Bachelor or higher |           |          | chi squared |
|-----------------------------|--------------|-----------|----------|----------------------|------------|-----------|---------------------|-----------|---------|--------------------|-----------|----------|-------------|
|                             | %            | SE        | N        | %                    | SE         | N         | %                   | SE        | N       | %                  | SE        | N        |             |
| <b>Expectations</b>         |              |           |          |                      |            |           |                     |           |         |                    |           |          |             |
| <b>Working</b>              | 68.29<br>2   | 4.19<br>6 | 123      | 75.34<br>8           | 1.034      | 1724      | 79.66<br>1          | 5.19<br>4 | 59      | 70.31<br>2         | 3.99<br>6 | 128      | 1.0711      |
| <b>Children</b>             | 84.55<br>2   | 3.25<br>5 | 123      | 88.22<br>5           | 0.772      | 1724      | 71.18<br>6          | 5.93<br>3 | 59      | 74.21<br>8         | 3.89<br>2 | 128      | 2.497       |
| <b>Government</b>           | 43.90<br>2   | 4.44<br>9 | 123      | 47.73<br>7           | 1.205      | 1724      | 33.89<br>8          | 6.22<br>7 | 59      | 46.09<br>3         | 4.39<br>4 | 128      | 2.694       |
| <b>Savings</b>              | 66.66<br>6   | 4.28<br>3 | 123      | 75.11<br>6           | 1.037      | 1724      | 72.88<br>1          | 5.86<br>9 | 59      | 91.40<br>6         | 2.49<br>6 | 128      | 4.363       |
| <b>Pension</b>              | 4.065        | 1.76<br>1 | 123      | 12.52<br>9           | 0.793      | 1724      | 37.28<br>8          | 6.29<br>2 | 59      | 78.12<br>5         | 3.65<br>2 | 128      | 100.326**   |
| <b>Spouse</b>               | 52.03<br>2   | 4.49<br>2 | 123      | 62.64<br>5           | 1.161      | 1724      | 54.23<br>7          | 6.41<br>2 | 59      | 61.71<br>8         | 4.27<br>3 | 128      | 1.469       |
| <b>Relatives</b>            | 43.08<br>9   | 4.45<br>5 | 123      | 38.57<br>3           | 1.168      | 1724      | 32.20<br>3          | 6.03<br>3 | 59      | 43.75<br>7         | 4.35<br>7 | 128      | 2.157       |
| <b>Reality</b>              |              |           |          |                      |            |           |                     |           |         |                    |           |          |             |
| <b>Working</b>              | 45.38<br>6   | 1.3       | 147<br>4 | 57.10<br>6           | 0.353      | 1922<br>9 | 38.20<br>8          | 2.67<br>2 | 33<br>5 | 23.42<br>5         | 1.04<br>8 | 163<br>5 | 14.508**    |
| <b>Children</b>             | 77.95<br>1   | 1.08<br>6 | 147<br>4 | 74.99<br>6           | 0.312      | 1922<br>9 | 49.25<br>3          | 2.74<br>3 | 33<br>5 | 45.44<br>3         | 1.22<br>6 | 163<br>5 | 13.889**    |
| <b>Government</b>           | 86.49<br>9   | 0.88<br>4 | 147<br>4 | 86.82<br>1           | 0.244      | 1922<br>9 | 47.46<br>2          | 2.74<br>1 | 33<br>5 | 21.95<br>7         | 1.02<br>7 | 163<br>5 | 49.833**    |
| <b>Savings</b>              | 28.9         | 1.18<br>4 | 147<br>4 | 41.98<br>3           | 0.353      | 1922<br>9 | 61.79<br>1          | 2.65<br>5 | 33<br>5 | 71.80<br>4         | 1.12<br>2 | 163<br>5 | 21.888**    |
| <b>Pension</b>              | 0.271        | 0.13<br>1 | 147<br>4 | 2.402                | 0.108      | 1922<br>9 | 37.61<br>1          | 2.65<br>5 | 33<br>5 | 68.68<br>5         | 1.16<br>3 | 163<br>5 | 116.344**   |
| <b>Spouse</b>               | 30.12<br>2   | 1.20<br>2 | 147<br>4 | 34.17<br>7           | 0.34       | 1922<br>9 | 32.53<br>7          | 2.55<br>2 | 33<br>5 | 35.29<br>9         | 1.16<br>9 | 163<br>5 | 0.457       |
| <b>Relatives</b>            | 10.65<br>1   | 0.80<br>6 | 147<br>4 | 10.11<br>4           | 0.220<br>6 | 1922<br>9 | 8.059               | 1.49<br>2 | 33<br>5 | 7.828              | 0.65<br>5 | 163<br>5 | 0.667       |

\*  $p < 0.10$  \*\*  $p < 0.05$  \*\*\*  $p < 0.01$

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