Productive Aging in Developing Southeast Asia:
Comparative analyses between Myanmar, Vietnam and Thailand

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Abstract

Alarmist views regarding the burden that elderly pose for family and society are prevalent; yet, such views are not warranted. We examine prevalence and differentials in productive aging in developing Southeast Asia focusing on the roles of educational attainment and gender. Analyzing recent aging surveys, we assess three dimensions of productive aging (economic activity, assistance to family members, caregiving). Results suggest that elders make important contributions to their families–consistent with Southeast Asia's prevailing norm of reciprocity in intergenerational support. Education is an important factor influencing productive aging. For example, elderly Thais with some educational attainment are more likely than those without education to be economically active and in turn financially assist their children. We find gender differences in productive aging consistent with the traditional division of labor. Our cross-country comparison indicates that societal contexts e.g., economic development have important implications for the extent of productive engagement among elderly with different levels of educational attainment. We discuss policy implications of our empirical findings.

Keywords: Older persons' contribution, intergenerational exchanges, human capital, gender, Southeast Asia

1. Introduction

Reciprocity relationships between adult children and elderly parents are the social norm in Southeast Asia (Croll, 2006; Knodel and Teerawichitchainan, forthcoming). Children have filial responsibilities to support aging parents who in turn reciprocate by providing various assistance to their children, including grandchild care, housework, and sometimes monetary support. Rapid social and technological change are likely to impact norms and perceptions about older persons. Given their advanced age, frailty, relatively low education, and out-of-date skills, elders may be increasingly perceived as burdensome to family and society. Evidence from Thailand, for instance, reveals that negative public attitudes towards older persons increased between 2007 and 2011 (Prachuabmoh et al., 2013).

To address such negative perceptions, the Word Health Organization (WHO) has promoted the concepts of active and productive aging. Viewing older persons as resources rather than a burden, the active aging concept refers to the process of optimizing opportunities for physical and mental health and social participation to enhance quality of life in old age (WHO, 2002). Likewise, the concept of productive aging focuses on social and economic activities that elders engage, including both paid work and unpaid activities (e.g., caregiving, volunteering) (Hank, 2011; Morrow-Howell and Mui, 2013; Peng and Fei, 2012). Recently, a framework on later-life productive engagement was proposed by Morrow-Howell and Wang (2013) as an extension of the earlier concepts and placed a greater emphasis on cross-cultural contexts. Productive engagement is determined not only by individual capacity (sociodemographic, health, and educational factors) but also by institutional capacity (physical environment, economic development, and government policies) (Sherraden et al., 2001). The extent an older person engages in productive activities depends on the interplay of these determinants and varies across socio-cultural

contexts. Productive engagement is expected to result in multiple positive ends such as offsetting fiscal strains of population aging and maintaining the health and economic security of older adults (Gonzales et al., 2015).

Across developing Southeast Asia, rapid population aging has increasingly raised concerns among policy makers. At present, population aged 60 and older accounts for approximately 10% of the region's total population and is projected to double by mid-century. In countries like Thailand (Southeast Asia's second most aged country after Singapore), more than one third of the population is expected to be at least age 60 by 2050. While an alarmist view concerning economic and healthcare burden of a larger older population is common, such a view is not necessarily warranted. Alarmists tend to dismiss the reciprocity nature of Asia's intergenerational support systems and ignore variations in human capital and individual capacity in old-age productive engagement. In addition, they often neglect the fact that the sociodemographic composition of Southeast Asia's older-aged population is changing, especially its educational composition. The changing educational composition of older-aged population may have important implications for the types and extent of older persons' engagement in productive activities (Morrow-Howell et al., 2017).

Research on productive aging is emerging in developing settings; yet, comparative studies remain rare. A number of research questions remain largely unanswered, including 1) to what extent do older persons in Southeast Asia engage in paid and unpaid productive activities?, 2) how is human capital such as educational attainment associated with productive engagement in old age?, 3) how does productive aging vary by gender?, and 4) what are some of the institutional capacity factors that enhance productive aging? This study fills in the research gaps by examining prevalence and differentials in later-life

productive engagement across three Southeast Asian countries with a focus on educational attainment and gender. Based on analyses of recent aging surveys in Myanmar, Vietnam and Thailand, we examine three major dimensions of productive engagement among persons aged 60 and above, including their economic activity, assistance to family members (financial support for adult children and contribution to housework), and caregiving (grandchild care and care for adult household members). The three countries share commonalities and differences in demographic trajectories, economic development, and government policies, thus permitting an examination of how societal and institutional differences have enabling or hampering effects on productive aging (Arber and Timonen, 2012).

2. Country profiles

Myanmar, Vietnam, and Thailand are characterized by a combination of similarities and differences. While they share common cultural underpinnings of old-age support and are similar in some key demographic aspects, they contrast sharply in economic development and differ in the timing and extent of fertility decline and population aging.

Across the three countries, family members, particularly adult children, have traditionally played a predominant role in providing support for older members. Reciprocity in intergenerational transfers is common. While parents are responsible for the welfare of children as they grow up, adult children have filial obligations to provide support for aging parents. Evidence shows widespread material support to parents by adult children (Knodel, Teerawichitchainan, Prachuabmoh and Pothisiri, 2015; Knodel and Teerawichitchainan, 2017; Vietnam Women's Union, 2012). Moreover, when frailty sets in, children, especially daughters, commonly provide personal care (Knodel, Teerawichitchainan and Pothisiri,

2018; Teerawichitchainan and Knodel, 2018). Although intergenerational coresidence is declining at least in Thailand and Vietnam due to lower fertility and increased migration, a majority of elders in all three countries still coreside with or live nearby their adult children (Knodel et al., 2015; World Bank, 2016).

[TABLE 1 ABOUT HERE]

According to Table 1, Vietnam's 2015 population size is 93 million, Thailand 68 million, and Myanmar 54 million. All experienced rapid fertility transition during the past half century with decline fastest in Thailand followed by Vietnam and Myanmar. Thailand's total fertility rates (TFR) decreased from above 6 children per woman in the early 1960s to 1.5 by 2015, while TFR in Myanmar decreased from 6.4 to 2.3 during this period. Furthermore, the proportion of over-60 population in Thailand reached 15% in 2015, while it was 10% in Vietnam and under 10% in Myanmar. Life expectancy at birth is above 74 in Vietnam and Thailand, while only 66 years in Myanmar. Thailand is by far most economically advanced and Myanmar clearly least developed. Thailand, for example, was ranked the highest among all three countries regarding Human Development Index, per-capita GDP, percentages of paved main roads, and urban-dwelling population.

At present, policies in the three countries presuppose the primacy of family care for older persons (World Bank, 2016). Government policies for old-age welfare are most advanced in Thailand and least developed in Myanmar (Williamson, 2015). Thailand not only has universal healthcare coverage but also old-age allowance program with universal coverage for persons 60 and older. Additionally, the three countries vary regarding the legal retirement age. In Vietnam, men officially retire at age 60 and women age 55. Meanwhile, retirement age in Thailand (for government officers) and Myanmar is 60 for both genders.

In sum, the above-mentioned commonalities and differences in cultural underpinnings, economic development, demographic trends, and policies make the three countries suitable for examining how societal contexts may affect the extent to which older adults of different educational attainment are able to contribute to family and society.

3. Data

We analyze three nationally representative samples of persons aged 60 and older. Data come from the 2012 Myanmar Aging Survey (MAS), the 2011 Survey of Older Persons in Thailand (SOPT), and the 2011 Vietnam Aging Survey (VNAS). The MAS sponsored by HelpAge International interviewed 4,080 persons 60 and older throughout Myanmar except for Kachin State which represents only 3% of Myanmar's total population (Department of Population, 2014). The multistage sampling involved first a selection of 60 townships and then 150 rural villages and 90 urban wards within them. The VNAS sample consisted of persons aged 50 and over, including 2,789 at least aged 60 living in 200 communes representative of Vietnam's six regions. The SOPT is the fourth in a series of Thai government surveys of persons 50 and older. Our analysis is limited to 34,173 persons 60 and older. Results are weighted according to survey designs to be nationally representative (for details about survey methodologies, see Myanmar Survey Research, 2012; NSO, 2012; Vietnam Women's Union, 2012).

4. Methods

4.1 Variable measurements

Harmonizing variables to maximize comparability across surveys usually poses a significant challenge (Angel, 2013; Teerawichitchainan and Knodel, 2015). Despite our

efforts to address the comparability issues, some measures are not constructed from identical information because of differences in questions and response categories in each survey. To the extent possible we harmonized the variables to minimize their impact on the findings. However, results need to be cautiously interpreted due to remaining differences in certain measurements.

4.1.1. Indicators of productive aging

We incorporate three dimensions of productive aging as dependent variables. The first dimension is older person's economic activity measured as a dichotomous variable indicating whether the respondent worked during the past year. The second dimension measures older persons' economic and non-economic assistance to family members. First, we consider whether the respondent provided money to any children during the past year. The Myanmar and Vietnam surveys contained child-specific information; however, the Thai survey asked globally whether the respondent gave money to any coresident or non-coresident children. Further, we incorporate a dichotomous variable indicating whether the respondent contributed some effort to any household chores. In Myanmar and Vietnam, respondents were asked if they contributed to any housework (excluding watching house). Thai respondents were probed about specific chores including cooking, laundering, and house-cleaning.

The last dimension of productive aging measures the roles of older persons in caregiving, including grandchild care and care provision for adult household members. Regarding grandchild care, for Myanmar, the variable is dichotomous indicating whether the respondent presently cares for grandchildren of any age. For Thailand and Vietnam, the variable indicates whether the respondent cared for any grandchildren under age 10 during

the past year. Lastly, in all three surveys, respondents were asked if they regularly provided care for adult household members that need personal care.

4.1.2. Sociodemographic characteristics

To understand the roles of human capital in enabling productive aging, our analyses primarily focus on examining associations between educational attainment and productive aging indicators. As our key independent variable, education is incorporated as a categorical variable indicating whether the respondent had no education, some primary, complete primary, or beyond primary education. We also incorporate additional sociodemographic characteristics as control variables, including gender, age, marital status, number of children, residence location, and functional limitations. Location of residence indicates whether the respondent lives in urban or rural areas. Functional limitation index is constructed by aggregating the respondent's replies to questions regarding functional ability, including walking 200-300 meters, lifting 5 kilograms, squatting, walking up and down stairs, and hand grasp. Higher index scores suggest worse functional limitations. To provide a metric common across countries, we convert the index scores into percentiles relative to the sample of all adults 60 and over in each survey.

4.2 Analytic approach

First, we employ descriptive statistics to describe sample characteristics and differentials in educational attainment across successive cohorts of older persons in the three countries. We then examine prevalence and the associations between education and productive aging indicators. For each country, we show both unadjusted and adjusted proportions of older persons engaging in each productive aging activity. For unadjusted

estimates, we present proportions of elders in each educational category who are involved in each type of productive activity, without controlling sociodemographic characteristics. Furthermore, we calculate adjusted proportions (i.e., predicted probabilities of being involved in a productive aging activity among older persons) based on binary logistic regression models that control for sociodemographic characteristics described in Section 4.1.2. Complete results from binary logistic regression models are shown in the appendix. When interpreting bivariate and multivariate results, we investigate the similarities and differences as well as the magnitude of the associations between education and old-age productive activities across the three settings. The three-country comparison serves to contextualize our empirical findings.

Our analytic samples generally refer to persons aged 60 and above, although in certain analyses we restrict the analytic samples to varying subsets of older persons. Analyses of financial support for adult children are limited to respondents with at least one living child. We also restrict the samples to older persons not living alone, when examining provision of household chores and care for adult household members. To examine older person's grandchild care, it is impossible to limit all three samples to persons with grandchildren, given the lack of such information in the Thai survey. Samples are thus restricted to elders with living children when dealing with grandchild care.

5. Results

5.1 Sample description

Table 2 compares sociodemographic characteristics of the three survey samples. Women comprise over half of each country sample ranging narrowly around 56%-57%. Across all three countries, proportions of those in their 60s are higher than other age

groups. Over half of each sample are currently married. The percentage of widowed is highest in Myanmar (39%), while the percentage of divorced/separated and never-married persons is highest in Thailand (11%). Average number of children is higher in Vietnam and Myanmar than in Thailand, reflecting Thailand's earlier fertility reduction. Furthermore, over two-thirds of elders in each country live in rural areas. Given the functional limitation index has been converted to percentiles, the mean percentiles are 50 for all three countries.

[TABLES 2 AND 3 ABOUT HERE]

Additionally, results from Table 2 indicate that educational attainment is remarkably lower among Myanmar elderly than their Thai and Vietnamese counterparts. Proportions of older persons without education are highest in Myanmar (22%). Only one-third of Myanmar elders completed primary schooling and beyond, compared to half in Vietnam and over four-fifths in Thailand. Table 3 further describes trends in educational attainment across age groups for older persons in the three countries. Overall, results show that educational attainment increased consistently across successive cohorts of older people in Southeast Asia. In all three countries, percentages without education are much lower among those in their 60s compared to those in their 70s and above. Findings further suggest that educational opportunities beyond primary schooling expanded rather swiftly in Vietnam. About 46% of Vietnamese elders in their 60s had beyond primary education, compared to only 13% among the oldest age group. Although three quarters of elderly Thais in their 60s completed primary education, just 13% of them had more than primary education. The observed variations in educational attainment within and across age groups may have some important implications for understanding factors promoting and hindering productive engagement in later life.

5.2 Prevalence and differentials in productive aging

5.2.1 Economic activity

Table 4 shows that economic activity is not uncommon for people beyond age 60 in developing Southeast Asia. Between 30% and 43% of older persons in the three countries engaged in some economic activities during prior year. Some variations are found across educational categories. Unadjusted results suggest that across all three countries proportions who reported working are lowest among elders with no education. Such proportions by and large increase with each category of educational attainment, with some exception for elders who had beyond primary education.

[TABLE 4 ABOUT HERE]

Once sociodemographic characteristics such as age, gender, location of residence, and physical functioning are controlled, previously observed educational gradients in later-life economic activities largely disappear, particularly for the case of Myanmar and Vietnam. In general, differences in proportions working between uneducated elders and those with some years of primary education become smaller and statistically insignificant. An exception is Thailand. Adjusted results show that elderly Thais with some or complete primary schooling are significantly more likely to work than their uneducated counterparts.

One of the most striking findings across all three countries is that older adults with beyond primary education are significantly less likely to work compared to their counterparts with lower educational attainment. This is possibly because better educated elders tended to work in formal sectors that imposes mandatory retirement age (see Table 1). Exploratory results suggest that most older workers worked in informal sectors, particularly in the agricultural sector. In addition to retirement age requirement, it is also plausible that better educated elderly tend to receive pension, thus providing them

economic security in older years without having to work. For instance, we find that nearly half (48%) of Thai elders with beyond primary education received pension, compared to 2%-3% among those with complete primary schooling or less.

Comparing later-life economic activity across three countries, it is clear that Thai and Vietnamese older persons are more likely to engage in economic activities than those in Myanmar even after controlling for factors such as age and physical health. This pattern is roughly consistent across all educational categories. One plausible explanation is that Thailand's and Vietnam's relatively higher levels of economic development provide greater opportunities for older adults to remain economically productive. A larger and more vibrant economy and government policies to promote labor force participation among older populations are likely to result in more job creations, including employment opportunities for older persons (HelpAge International, 2017). Furthermore, an access to affordable technology such as rice threshers and trackers in rice farming are likely to enable farm workers in Thailand and Vietnam to continue farming into old age (Rigg et al., 2018).

5.2.2 Assistance to family members

This study examines two aspects of how older persons assist their family members, namely financial provision to adult children and assistance with household chores. First, our analysis reveals that monetary provision to grown children is not widely practiced by aging parents in developing Southeast Asia. Among older persons with at least one living child, giving money to children accounts for only 15% in Vietnam and Thailand and moderately higher (22%) in Myanmar.

[TABLE 5 ABOUT HERE]

Unadjusted results show educational gradients in financial provision among elderly parents in Vietnam and Thailand and to some extent in Myanmar. However, once sociodemographic characteristics are controlled, adjusted results show that the gradients disappear for Vietnam and to a large extent for Thailand. Predicted proportions of Vietnamese elders giving money to children are not significantly different across educational categories. For Thailand, only elders with beyond primary education provide money to grown children at a significantly greater extent (25%) than their counterparts with lower educational attainment (12%-13%). Only for Myanmar do educational gradients remain intact after sociodemographic variables are introduced. All else equal, 12% of Myanmar elderly without education provide money to their children compared to 17% among those with some primary schooling and nearly a quarter among those with complete and beyond primary education.

In general, assisting grown children by parents providing cash, while not a widespread practice in Southeast Asia, is more common in Myanmar than in Vietnam and Thailand. Furthermore, results suggest that enhanced human capital measured by educational attainment is positively related to probability of providing financial assistance to children in Myanmar and to some extent, Thailand. Reasons for cross-country differences are unaccounted for in our analysis. Nevertheless, diagnostic analysis indicates that the amount of money provided by parents to grown children tends to be small. Past evidence additionally shows that parental monetary support to adult children is negatively associated with psychological wellbeing of older Thais (Teerawichitchainan et al., 2015). In the Thai context, being supported financially by one's adult children is likely to bring "face" to older persons as it demonstrates filial piety and increases their social status. In contrast, if Thai

elderly parents need to provide financially for grown children, it could have detrimental impacts on their psychological wellbeing.

In addition to financial support, older persons also help their family out non-monetarily. Results indicate that it is typical for elderly across Southeast Asia to contribute at least some efforts to household chores. Among elders who do not live alone, proportions contributing to housework range from 59% in Myanmar to 74% in Thailand and 82% in Vietnam. A significant minority of them reported being the main person doing household chores (21% in Myanmar, 45% Vietnam, and 40% Thailand). Unadjusted results in Table 5 show gradient relationships between education and housework contribution in Vietnam and Thailand. That is, significantly higher proportions of elders with complete and beyond primary schooling contribute to household chores, compared to those with less than primary education. After controlling for sociodemographic characteristics, the observed gradients remain (especially for Thailand), although differences across educational attainment categories reduce to a certain extent. Approximately 90% of elderly Thais with beyond primary education are estimated to assist their family in household chores, compared to 84% of those without education. Unlike Thailand and Vietnam, we do not observe any significant educational gradients in Myanmar before and after controlling for sociodemographic characteristics.

In sum, increased educational attainment is positively related to elders' contribution to housework in Thailand and to some extent Vietnam but not in Myanmar. The educational gradients are persistent even with consideration of variations in physical functioning. Additionally, proportions contributing to household chores are higher in Thailand and Vietnam than Myanmar. This is consistent across all educational categories. Cross-country differences are perhaps explained by the fact that households in more-developed Thailand

and Vietnam tend to have more modern amenities and appliances which may in turn allow their elders to perform household chores with greater ease. Furthermore, an average household size that older persons live in is larger in Myanmar (4.71) than in Thailand (3.63) and Vietnam (4.18). Since it is culturally appropriate and indicates a sign of respect for young members (e.g., adult children, grandchildren) to take up household chores, this likely frees up Myanmar elders from household chores.

Across the three countries, when assisting family members, older persons are much more likely to contribute to household chores than to provide money to adult children. That is, older persons' assistance in kind is more prevalent than assistance in cash. Financial support refers specifically to cash. Since at least two thirds of elderly in the samples do not work, they tend to have limited cash. Even for those participating in the labor force, they are likely to work in informal sectors or have low-paid jobs. Analyses (not shown) suggest that Myanmar and Vietnamese elders contribute materially not by giving money to children but by sharing their assets such as their own home with other household members.

5.2.3 Caregiving

We examine two aspects of caregiving including grandchild care and care for adult household members who need personal care. Providing care for grandchildren is not uncommon across the three countries. Among elderly with at least one living child, over one-third of Myanmar elderly currently care for grandchildren. In Vietnam, 34% provided care for a grandchild under age 10 during the past year, while in Thailand only 28% did so. In all three countries, caring for adult household members is not as prevalent as caring for grandchildren. Among elderly not living alone, proportions providing care for other adults are 25% in Myanmar and just 15% in Vietnam and Thailand.

[TABLE 6 ABOUT HERE]

Regarding association between educational attainment and caregiving, empirical findings show no consistent patterns. For Myanmar, unadjusted and adjusted results reveal no significant educational gradients in caregiving, regardless of types of care recipients (grandchildren, adult household members). That is, elders without education are as likely as their better-educated counterparts to engage in caregiving. This is however not the case for Vietnam. Both unadjusted and adjusted results indicate that elderly Vietnamese with beyond primary schooling are significantly more likely than others to care for grandchildren under age 10. After sociodemographic characteristics are introduced, differences across educational attainment categories remain, although declining modestly. Regarding caregiving for household members, the educational gradients do not demonstrate a linear pattern. Only Vietnamese elders with complete primary education are significantly more likely to provide informal care compared to their uneducated counterparts.

For Thailand, elders with at least some years of education are less likely than their uneducated counterparts to provide care for young grandchildren. This finding still holds even after sociodemographic characteristics such as health and work status are considered. The opposite is true however when examining educational differentials in care provision for adult household members. While the differences across educational attainment are not especially large, elders with complete and beyond primary education demonstrate significantly greater likelihood of care provision than those with less educational attainment. This is perhaps because they possess more knowledge about caring for adults with care needs.

Providing care for grandchildren reflects the contribution of older person to their family by raising and socializing their grandchildren. As such, it represents substitute care

for adult children and provides opportunities for them to fully participate in the labor market. Cross-country comparison of older persons' provision of grandchild care should be interpreted with caution because variable measurement for Myanmar differs from that for Vietnam and Thailand. Nevertheless, clearly Thai elders are less likely than Vietnamese older persons to care for under-10 grandchildren, especially among elderly Thais with beyond primary education. Thailand's earlier fertility decline likely explains the observed pattern. Furthermore, it is plausible that adult children of better-educated elderly tend to be well-educated themselves and thus more likely to have a small number of children. Results (not shown) suggest that better-educated older Thais tend to have a smaller number of grandchildren whom they can provide care for.

Furthermore, results indicate that greater percentages of Myanmar elders provide informal care for adult household members compared to their Vietnamese and Thai counterparts. Myanmar's much lower life expectancy (Table 1) suggests that Myanmar's population is relatively less healthy than the other two countries. This perhaps create greater demands for personal care. A recent study shows that provision of care for frail older persons is done almost exclusively by family members in the context of Myanmar (Teerawichitchainan and Knodel, 2018). Family networks appear to be very strong. It is perhaps rare for caregiving to be outsourced to non-family members.

5.3 Gender differences in productive aging

To deepen our understanding about variations in productive aging, we further examine gender differences in the three dimensions of productive aging. Table 7 presents adjusted proportions of productive aging separately for elderly men and women across the three countries. Like our earlier analyses, adjusted results are derived from binary logistic

regressions that control for sociodemographic characteristics including educational attainment.

[TABLE 7 ABOUT HERE]

Results show significant gender differentials in later-life productive engagement that follow quite closely to the norms and expectations about gender roles. Holding all other variables in the model at their means, proportions of having worked last year are significantly higher for older men than older women in all three countries. Results further show significant gender differences in predicted probabilities of providing money to children in Vietnam and Thailand, but not in Myanmar. This may be because elderly men are more likely than their female counterparts to participate in economically productive work and thus are better able to support their children financially. Meanwhile, female elders demonstrate greater predicted probabilities of contributing to household chores than males. These findings reflect the dominance of attitudes regarding gender division of labor among the older generations in Southeast Asia that consider men as breadwinner and women as homemaker.

Gender differences in caregiving also exist but in general are relatively modest. Only in Thailand is the gender difference statistically significant regarding provision of grandchild care, with women having higher probability of helping with grandchildren. Similarly, we find that predicted probabilities of caregiving for adult household members are significantly higher for women than for men in Thailand and Vietnam but not Myanmar. In sum, adjusted proportions of older men and women who perform specific dimensions of productive aging confirm gender differences in some productive aging indicators. The direction of the differences depends on the specific task being considered.

6. Discussion and conclusion

There has been a great deal of attention on the burden that older persons pose for family and society. However, our study demonstrates that elders in Myanmar, Vietnam, and Thailand make important contributions to their families –consistent with the prevailing norm of reciprocity in intergenerational support. Across the three countries, assistance in household chores is the most common contribution that older persons make, followed by grandchild care, performance of economically productive work, and care for adult household members in need of personal care. Giving cash to adult children is the least prevalent, although not entirely rare. Empirical evidence (shown in appendix tables) further suggests that older persons who engage in economic activity tend to make other contributions to family by providing cash for grown children, doing housework, and caring for grandchildren and other family members. This relationship persists even after taking health status (i.e., physical functioning) into consideration. It is important not to overlook elders' non-economic contributions (e.g., doing household chores, grandchild care) because these activities are likely to reduce the burden of working-age household members, thus allowing them to become more economically productive. Further, older persons' contributions to household chores and care provision may also minimize monetary costs of hiring paid caregivers, as well as reduce anxiety concerning trustworthiness of paid caregivers.

Analyses of representative aging surveys indicate that education is one important factor influencing old-age productive engagement across all three countries. In general, elderly who have higher educational attainment (i.e., at least some years of primary education) are more likely to participate in the labor market and in turn are able to provide financial assistance to their children. Improved human capital as measured by educational

attainment thus likely increases an individual's lifetime capacity and income security. We find that across the three countries older persons who have moderate educational level (some primary or complete primary) tend to have higher chance of continuing working into old age, while those who have beyond primary school in all three countries tend not to be in the labor market. While the latter group of older persons is likely to have greater old-age financial security and to make other non-economic contributions to family, they represent untapped resources. Looking ahead, cohorts of Southeast Asia's older persons in the near-future will be better educated and likely in a better health (World Bank, 2016). This enhanced human capital can thus potentially increase older persons' capacity in later-life productive engagement (Morrow-Howell et al., 2017). This suggests that human capital investment is going to be very crucial for promoting productive aging. Myanmar, Vietnam, and Thailand urgently need to make more investment in life-long learning and training for their populations in order to ensure the well-being of the populations when they enter the late period of life.

Across the three countries, older women provide non-economic contributions to the household more than men. Meanwhile, older men provide economic contributions more than their female counterparts. This likely relates to men's relatively greater odds of working and the traditional gender division of labor which emphasizes the male-breadwinner, female-homemaker model. Results confirm previous findings on gender differences in specific dimensions of productive aging (Burr, Mutchler and Caro, 2007; Verbrugge and Chan, 2008). We also find that gender differences have significant influence on later-life productive engagement even among the countries with different economic development levels and socio-cultural settings. In the contexts of rapid technological change and expanding education and work opportunities for both men and women, further

comparative studies are needed to investigate if the gender gap in productive aging is closing.

Furthermore, our cross-country comparison suggests that societal contexts such as economic development and policies may have important influences on the extent of productive engagement among older persons with different levels of educational attainment. For instance, given different levels in economic development across the three countries, elderly Thais with moderate educational attainment (e.g., complete primary schooling) experience greater opportunities of engaging in economic activities than their counterparts in Vietnam and Myanmar. Moreover, since Thailand has undergone earlier and steeper fertility decline and hence more rapid population aging, this has led the Thai government to be more responsive to the major shift in age structure. It has formulated various policies to address the implications of population aging for labor shortage and welfare of older people. In this regard, the Thai government is more advanced compared to the Myanmar and Vietnam governments (Giang, 2011; Jitapankul and Wivatvanit, 2009; Knodel and Teerawichitchainan, 2017). Compared to Myanmar that implemented its national policy on aging only in 2017, Thailand has a concrete national plan since 2002. The plan called for a promotion of productive aging in both economic and non-economic dimensions. Recently, the Thai government has attempted to create opportunities for the elderly to continue their work by providing tax incentives for employers to hire older workers. It also revised laws and regulations regarding pension and social security benefits.

Older persons' economic and non-economic contributions to family and society nevertheless will decline with advanced age most likely due to increasing physical limitations (Biddlecom, Chayovan and Ofstedal, 2002; Sun, 2013). Thus, to prolong older

persons' ability to contribute to family and society, health promotion policies are also needed to facilitate longer and healthier lives with lower disability.

Importantly, while our study has shed considerable light on productive aging in developing Southeast Asia, clearly a more focused study based on longitudinal data examining both individual-level factors and institutional capacity that encourage and discourage older persons from making contributions to families and communities is needed to fully document the range and extent of older persons' productive engagement.

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Table 1
Socioeconomic and development indicators of the study countries

	Myanmar	Vietnam	Thailand
Total population, 2015 (in thousands)[a]	53,897	93,448	67,959
Total fertility rate, 1960-65[a]	6.1	6.42	6.13
Total fertility rate, 2010-15[a]	2.25	1.96	1.53
Life expectancy, 2010-2015	66.01	75.56	74.56
% aged 60+, 2015[a]	8.9	10.3	15.8
% in urban areas, 2015[b]	34.1	33.6	50.4
Human Development Index rank 2015	145	115	87
Gross domestic product per capita (PPP), International dollars, 2016[c]	5,953	6,422	16,835
% of paved main road	11.9 (2005)	47.6 (2007)	98.5 (2000)
Government level of concern about population aging , 2013[e]	minor	major	major
Retirement age	60	60 for men and 55 for women	60 for government officer (some professional occupations extend to 65 years old)

Sources:

a United Nations, 2015. World Population Prospects: The 2015 Revision. United Nations, New York.

b United Nations, 2014. World Urbanization Prospects: The 2014 Revision. United Nations, New York.

c International Monetary Fund, World Economic Outlook Database, October 2016.

d World Bank. World Development Indicators Data Bank.

e United Nations, 2013. World Population Policy.

Table 2
Socio-demographic characteristics of survey samples of persons aged 60 and older in Myanmar, Vietnam, and Thailand.

	Myanmar N=4,080 (unweighted)	Vietnam N=2,789 (unweighted)	Thailand N=34,173 (unweighted)
Gender (%)			
Male	46.0	43.0	44.1
Female	56.0	57.0	55.9
Age (%)			
60-69	51.8	45.5	57.8
70-79	33.9	31.3	32.0
80+	14.3	23.1	10.2
Marital status (%)			
Currently married	54.2	67.5	60.0
Widowed	39.4	26.6	28.8
Divorced/separated/never married	6.3	5.9	11.2
Number of children (%)			
None	6.8	4.7	6.4
One	7.0	3.5	8.8
Two	11.2	10.2	19.0
Three	13.9	13.7	21.2
Four or more	61.1	67.8	44.5
Mean number of children	4.27	4.69	3.51
Location of residence (%)			
Urban	31.4	32.9	33.5
Rural	68.6	67.1	66.5
Education (%)			
No education	22.1	18.5	11.8
Some primary	44.9	31.5	4.7
Complete primary	14.9	17.8	72.7
Beyond primary	18.1	32.3	10.8
Mean percentile of functional limitation index	50.01	50.02	50.00

Sources: 2012 Myanmar Aging Survey, 2011 Vietnam Aging Survey, 2011 Survey of Older Persons in Thailand.

Note: Results shown are based on weighted data.

Table 3.
Distribution of educational attainment by age groups in Myanmar, Vietnam, and Thailand.

	% No education	% Some primary	% Complete primary	% Beyond primary	*Unweighted number*
Myanmar					
Age 60-69	15.5	43.7	18.4	22.4	*1,960*
Age 70-79	27.2	46.2	11.9	14.7	*1,465*
Age 80+	33.8	46.0	9.6	10.6	*655*
Vietnam					
Age 60-69	11.4	22.7	19.6	46.3	*1,189*
Age 70-79	18.5	36.0	19.2	26.4	*819*
Age 80+	32.7	42.3	12.3	12.8	*781*
Thailand					
Age 60-69	7.8	3.2	75.8	13.3	*18,502*
Age 70-79	14.4	6.9	70.9	7.8	*11,010*
Age 80+	26.9	6.8	60.7	5.7	*4,661*

Sources: 2012 Myanmar Aging Survey, 2011 Vietnam Aging Survey, 2011 Survey of Older Persons in Thailand.

Table 4.

Unadjusted and adjusted proportions working in prior year among older persons aged 60 and over in Myanmar, Vietnam, and Thailand.

	No education	Some primary	Complete primary	Beyond primary
Myanmar				
Unadjusted	0.21	0.31	0.37	0.31
Adjusted[a,b]	0.25	0.23	0.26	**0.19**
Vietnam				
Unadjusted	0.30	0.37	0.42	0.43
Adjusted[a,b]	0.37	0.41	**0.31**	**0.26**
Thailand				
Unadjusted	0.27	0.35	0.48	0.30
Adjusted[a,b]	0.35	**0.40**	**0.42**	**0.18**

Sources: 2012 Myanmar Aging Survey, 2011 Vietnam Aging Survey, 2011 Survey of Older Persons in Thailand.

Notes:
a Adjusted proportions are calculated based on binary logistic regression models that control for gender, age, marital status, number of children, location of residence and functional limitation index (see Appendix Table 1)

b No education is treated as a reference category. Adjusted proportions that are significantly different from those of the reference category at $p \leq 0.05$ and beyond are shown in bold type.

Table 5.
Unadjusted and adjusted proportions providing assistance to family members among older persons aged 60 and over in Myanmar, Vietnam, and Thailand.

	No education	Some primary	Complete primary	Beyond primary
Financial provision for children[a]				
Myanmar				
Unadjusted	0.12	0.21	0.29	0.26
Adjusted[b,c]	0.12	**0.17**	**0.23**	**0.24**
Vietnam				
Unadjusted	0.09	0.11	0.18	0.21
Adjusted[b,c]	0.10	0.10	0.14	0.12
Thailand				
Unadjusted	0.12	0.12	0.15	0.25
Adjusted[b,c]	0.13	0.12	0.13	**0.25**
Household chores[d]				
Myanmar				
Unadjusted	0.60	0.56	0.64	0.60
Adjusted[b,c]	0.62	0.60	0.61	0.61
Vietnam				
Unadjusted	0.58	0.71	0.80	0.82
Adjusted[b,c]	0.78	0.82	**0.86**	0.84
Thailand				
Unadjusted	0.74	0.77	0.83	0.86
Adjusted[b,c]	0.84	0.84	**0.86**	**0.90**

Sources: 2012 Myanmar Aging Survey, 2011 Vietnam Aging Survey, 2011 Survey of Older Persons in Thailand.

Notes:
a The analysis of financial provision is restricted to older persons with at least one living child.

b Adjusted proportions are calculated based on binary logistic regression models that control for gender, age, marital status, number of children, location of residence, work status, and functional limitation index (see Appendix Tables 2 and 3)

c No education is treated as a reference category. Adjusted proportions that are significantly different from those of the reference category at $p \leq 0.05$ and beyond are shown in bold type.

d The analysis of financial provision is restricted to older persons who do not live alone.

Table 6.
Unadjusted and adjusted proportions of caregiving among older persons aged 60 and over in Myanmar, Vietnam, and Thailand.

	No education	Some primary	Complete primary	Beyond primary
Grandchild care[a]				
Myanmar (current care of any grandchild)				
Unadjusted	0.32	0.36	0.36	0.34
Adjusted[b,c]	0.34	0.36	0.35	0.32
Vietnam (care for grandchild<10, past year)				
Unadjusted	0.23	0.32	0.35	0.44
Adjusted[b,c]	0.28	**0.34**	0.31	**0.36**
Thailand (care for grandchild<10, past year)				
Unadjusted	0.27	0.23	0.31	0.21
Adjusted[b,c]	0.29	**0.24**	0.29	**0.22**
Care for adult household members[d]				
Myanmar				
Unadjusted	0.21	0.26	0.26	0.28
Adjusted[b,c]	0.23	0.25	0.22	0.25
Vietnam				
Unadjusted	0.10	0.14	0.20	0.16
Adjusted[b,c]	0.10	0.12	**0.17**	0.14
Thailand				
Unadjusted	0.09	0.09	0.12	0.13
Adjusted[b,c]	0.09	0.09	**0.11**	**0.12**

Sources: 2012 Myanmar Aging Survey, 2011 Vietnam Aging Survey, 2011 Survey of Older Persons in Thailand.

Notes:
a The analysis of financial provision is restricted to older persons with at least one living child.

b Adjusted proportions are calculated based on binary logistic regression models that control for gender, age, marital status, number of children, location of residence, work status, and functional limitation index (see Appendix Tables 4 and 5)

c No education is treated as a reference category. Adjusted proportions that are significantly different from those of the reference category at $p \leq 0.05$ and beyond are shown in bold type.

d The analysis of financial provision is restricted to older persons who do not live alone.

Table 7
Adjusted proportion of older men and women who performed specific indicators of productive aging in Myanmar, Vietnam, and Thailand.

Indicators of productive aging	Myanmar[a,b]		Vietnam[a,b]		Thailand[a,b]	
	Men	Women	Men	Women	Men	Women
Worked last year	**0.33**	**0.16**	**0.39**	**0.29**	**0.47**	**0.30**
Providing assistance to family members						
Financial support to children	0.19	0.18	**0.14**	**0.09**	**0.13**	**0.12**
Household chores	**0.38**	**0.78**	**0.74**	**0.87**	**0.69**	**0.88**
Caregiving						
Care for grandchildren[c]	0.32	0.34	0.23	0.25	**0.19**	**0.20**
Care for adult household members	0.23	0.25	**0.10**	**0.16**	**0.09**	**0.13**

Sources: 2012 Myanmar Aging Survey, 2011 Survey of Older Persons in Thailand, and 2011 Vietnam Aging Survey.

Notes:

a Adjusted proportion refers to predicted probabilities of specific indicator of productive aging which are derived from binary logistic regression analysis that controls for age, area, marital status, education, number of children, location of residence, index of functional limitation, and employment status. The last control variable (employment status) is included in all analyses except the analysis of whether the older person worked the year before.

b Male-female differences significant at the .05 level or beyond are shown in bold face.

c Refers to current care of grandchildren of any age in Myanmar and care of a grandchild under 10 in Thailand and Vietnam.

Appendix Table 1

Exponentiated coefficients (odds ratios) from binary logistic regression models predicting being economically active in prior year among older persons aged 60 and over in Myanmar, Vietnam, and Thailand.

	Myanmar				Vietnam				Thailand			
	Unadjusted model[a]		Adjusted model[a]		Unadjusted model[a]		Adjusted model[a]		Unadjusted model[a]		Adjusted model[a]	
Female (male=ref)	0.370	***	0.389	***	0.572	***	0.627	***	0.419	***	0.481	***
Age (60-69=ref)												
70-79	0.305	***	0.377	***	0.276	***	0.286	***	0.230	***	0.267	***
80+	0.080	***	0.163	***	0.063	***	0.080	***	0.045	***	0.078	***
Marital status (currently married=ref)												
Widowed	0.334	***	0.733	***	0.296	***	0.608	***	0.284	***	0.527	***
Divorced/separated/never married	0.823		0.614	*	0.949		0.467	**	0.484	***	0.618	***
Number of children (4+=ref)												
None	1.707	***	2.749	***	1.966	***	3.094	***	1.137	**	1.486	***
One	0.843		1.200		0.949		1.435		1.397	***	1.213	***
Two	1.182		1.336	*	1.131		1.031		1.691	***	1.276	***
Three	0.816		0.863		0.861		0.761	*	1.609	***	1.211	***
Urban (rural=ref)	0.567	***	0.602	***	0.451	***	0.401	***	0.551	***	0.577	***
Education (no education=ref)												
Some primary	1.697	***	0.883		1.381	***	1.164		1.432	***	1.277	**
Complete primary	2.195	***	1.057		1.651	***	0.751		2.462	***	1.371	***
Beyond primary	1.708	***	0.700	*	1.793	***	0.594	***	1.140	*	0.412	***
Functional limitation index	0.965	***	0.974	***	0.976	***	0.983	***	0.968	***	0.978	***
Unweighted N	4,080				2,789				34,173			
*p≤0.05; **p≤0.01; ***p≤0.001												

Sources: 2012 Myanmar Aging Survey, 2011 Vietnam Aging Survey, 2011 Survey of Older Persons in Thailand.

Notes: Results shown are based on weighted data.

a. Unadjusted models include one covariate (i.e., zero-order effect). Adjusted models incorporate all covariates.

Appendix Table 2

Exponentiated coefficients (odds ratios) from binary logistic regression models predicting provision of financial support to children among older persons aged 60 and over with at least one living child in Myanmar, Vietnam, and Thailand

	Myanmar				Vietnam				Thailand			
	Unadjusted model[a]		Adjusted model[a]		Unadjusted model[a]		Adjusted model[a]		Unadjusted model[a]		Adjusted model[a]	
Female (male=ref)	0.492	***	0.919		0.455	***	0.652	**	0.694	***	0.884	***
Age (60-69=ref)												
70-79	0.640	***	1.036		0.318	***	0.418	***	0.548	***	0.745	***
80+	0.267	***	0.706	*	0.154	***	0.272	***	0.430	***	0.742	***
Marital status (currently married=ref)												
Widowed	0.405	***	0.678	***	0.287	***	0.663		0.706	***	1.081	
Divorced/separated/never married	0.649		1.012		0.022		0.027		0.871		0.905	
Number of children (4+=ref)												
One	0.510	***	0.599	**	0.630		0.721		1.067		0.831	**
Two	0.642	***	0.595	***	1.611	**	1.130		1.192	***	0.858	***
Three	0.696	**	0.730	*	0.970		0.760		1.045		0.808	***
Urban (rural=ref)	0.672	***	0.672	***	1.187		1.348	*	1.102	**	1.117	**
Education (no education=ref)												
Some primary	2.098	***	1.605	***	1.234		1.045		1.063		0.977	
Complete primary	3.256	***	2.405	***	2.366	***	1.447		1.354	***	1.053	
Beyond primary	2.929	***	2.610	***	2.794	***	1.285		2.559	***	2.259	***
Work status (did not work=ref)	4.133	***	3.089	***	2.900	***	1.691	***	2.416	***	2.216	***
Functional limitation index	0.984	***	0.995	**	0.985	***	0.998		0.988	***	0.996	***
Unweighted N	3,821				2,698				31,589			

Sources: 2012 Myanmar Aging Survey, 2011 Vietnam Aging Survey, 2011 Survey of Older Persons in Thailand.

Notes: Results based on weighted data.

a Unadjusted models include one covariate (i.e., zero-order effect). Adjusted models incorporate all covariates.

Appendix Table 3

Exponentiated coefficients (odds ratios) from binary logistic regression models predicting contribution to household chores among older persons aged 60 and over who do not live alone in Myanmar, Vietnam and Thailand.

	Myanmar				Vietnam				Thailand			
	Unadjusted model[a]		Adjusted model[a]		Unadjusted model[a]		Adjusted model[a]		Unadjusted model[a]		Adjusted model[a]	
Female (male=ref)	2.389	***	5.951	***	0.875		2.291	***	1.686	***	3.208	***
Age (60-69=ref)												
70-79	0.360	***	0.530	***	0.526	***	1.309		0.465	***	0.763	***
80+	0.112	***	0.227	***	0.088	***	0.415	***	0.124	***	0.286	***
Marital status (currently married=ref)												
Widowed	0.629	***	0.559	***	0.254	***	0.394	***	0.568	***	0.719	***
Divorced/separated/never married	1.346		0.720		1.315		0.589		1.124		0.760	**
Number of children (4+=ref)												
None	1.472	**	1.085		3.143	**	3.214		1.624	***	1.257	*
One	1.035		1.199		0.882		1.435		1.566	***	1.193	**
Two	1.097		1.088		1.758	**	1.811	**	1.540	***	1.050	
Three	1.001		1.040		1.501	**	1.473	*	1.346	***	0.989	
Urban (rural=ref)	0.956		1.095		0.680	***	0.641	***	1.031		1.081	*
Education (no education=ref)												
Some primary	0.829	*	0.887		1.752	***	1.286		1.172	*	0.965	
Complete primary	1.188		0.958		2.940	***	1.760	**	1.633	***	1.120	*
Beyond primary	0.972		0.918		3.231	***	1.468		2.165	***	1.611	***
Work status (did not work=ref)	2.291	***	1.479	***	9.592	***	4.679	***	3.023	***	1.980	***
Functional limitation index	0.973	***	0.974	***	0.964	***	0.973	***	0.974	***	0.981	***
Unweighted N	3,804				2,528				30,761			

*p≤0.05; **p≤0.01; ***p≤0.001

Sources: 2012 Myanmar Aging Survey, 2011 Vietnam Aging Survey, 2011 Survey of Older Persons in Thailand.

Notes: Results shown are based on weighted data.

a Unadjusted models include one covariate (i.e., zero-order effect). Adjusted models incorporate all covariates.

Appendix Table 4

Exponentiated coefficients (odds ratios) from binary logistic regression models predicting provision of grandchild care among older persons aged 60 and over with at least one living child in Myanmar, Vietnam, and Thailand

	Myanmar (current care of any grandchild)				Vietnam (care of grandchild <10, past year)				Thailand (care of grandchild <10, past year)			
	Unadjusted model[a]		Adjusted model[a]		Unadjusted model[a]		Adjusted model[a]		Unadjusted model[a]		Adjusted model[a]	
Female (male=ref)	1.016		1.114		0.853		1.154		1.035		1.113	***
Age (60-69=ref)												
70-79	0.860	*	0.900		0.571	***	0.600	***	0.649	***	0.622	***
80+	0.442	***	0.501	***	0.158	***	0.188	***	0.300	***	0.297	***
Marital status (married=ref)												
Widowed	0.803	**	0.913		0.496	***	0.853		0.700	***	0.805	***
Divorced/separated/single	0.863		0.927		0.460		0.464	*	0.795	***	0.873	**
Living children (4+=ref)												
One	0.668	**	0.700	*	0.727	***	0.713		0.611	***	0.565	***
Two	0.990		1.007		1.101		0.810		0.778	***	0.693	***
Three	0.923		0.932		1.901	***	1.578	***	0.936	*	0.839	***
Urban (rural=ref)	0.986		1.058		1.052		1.021		0.674	***	0.760	***
Education (no education=ref)												
Some primary	1.173		1.103		1.583	***	1.375	*	0.809	**	0.746	***
Complete primary	1.200		1.054		1.817	***	1.173		1.181	***	0.979	
Beyond primary	1.080		0.922		2.662	***	1.486	**	0.722	***	0.670	***
Work status (did not work=ref)	1.111		0.907		1.500	***	0.825		1.338	***	0.926	***
Functional limitation index	0.993	***	0.996	**	0.987	**	0.995	**	0.992	***	0.997	***
Unweighted N	3,821				2,698				31,726			

*p≤0.05; **p≤0.01; ***p≤0.001

Sources: 2012 Myanmar Aging Survey, 2011 Vietnam Aging Survey, 2011 Survey of Older Persons in Thailand.

Notes: Results shown are based on weighted data.

a Unadjusted models include one covariate (i.e., zero-order effect). Adjusted models incorporate all covariates.

Appendix Table 5

Exponentiated coefficients (odds ratios) from binary logistic regression models predicting provision of care for adult household members among older persons aged 60 and over who do not live alone in Myanmar, Vietnam, and Thailand

	Myanmar				Vietnam				Thailand			
	Unadjusted model[a]		Adjusted model[a]		Unadjusted model[a]		Adjusted model[a]		Unadjusted model[a]		Adjusted model[a]	
Female (male=ref)	0.812	**	1.145		1.179		1.815	***	1.176	***	1.483	***
Age (60-69=ref)												
70-79	0.604	***	0.757	**	0.894		1.296		0.977		1.188	***
80+	0.287	***	0.471	***	0.343	***	0.754		0.595	***	0.946	
Marital status (currently married=ref)												
Widowed	0.514	***	0.660	***	0.391	***	0.470	***	0.530	***	0.503	***
Divorced/separated/never married	0.666		0.939		0.732		0.827		1.084		0.749	***
Number of children (4+=ref)												
None	0.634	**	0.531	**	0.967		0.751		1.941	***	1.911	***
One	0.802		0.900		0.605		0.747		1.148	*	1.093	
Two	1.049		1.024		1.403	*	1.491	*	0.983		0.902	
Three	0.847		0.878		0.826		0.84		0.863	**	0.807	***
Urban (rural=ref)	0.840	*	0.902		0.837		0.914		1.049		1.036	
Education (no education=ref)												
Some primary	1.337	**	1.105		1.539	*	1.231		0.942		0.882	
Complete primary	1.315	*	0.975		2.312	***	1.788	**	1.291	***	1.173	*
Beyond primary	1.421	**	1.119		1.782	**	1.445		1.497	***	1.317	***
Work status (did not work=ref)	1.948	***	1.403	***	2.320	***	2.015	***	1.211	***	1.118	**
Functional limitation index	0.987	***	0.994	***	0.991	***	0.997		0.993	***	0.995	***
Unweighted N	3,804				2,528				30,906			
*p≤0.05; **p≤0.01; ***p≤0.001												

Sources: 2012 Myanmar Aging Survey, 2011 Vietnam Aging Survey, 2011 Survey of Older Persons in Thailand.

Notes: Results based on weighted data.

a Unadjusted models include one covariate (i.e., zero-order effect). Adjusted models incorporate all covariates.