JOURNAL OF ASIAN SOCIOLOGY
Volume 48 | Number 4 | December 2019, 523-557
DOI 10.21588/jas/2019.48.4.006 **Special Issue**

The New Asian Active Ageing Index for ASEAN+3: A Comparative Analysis with EU Member States

Asghar Zaidi | Government College University Lahore, Seoul National University
Jinpil Um | Seoul National University

The high speed of population ageing in ASEAN countries and in China, Japan and Korea necessitate a high-quality, comparative evidence base for policy learning. The new Asian Active Ageing Index (AAI) proposed in this paper quantifies the extent to which older people make contributions to their families and societies. The Asian AAI was calibrated to cultural norms in Asia by revisiting the choice of indicators. We also revised the aggregation methods previously used in the AAI for European Union member states. Amongst ASEAN member countries, Thailand does better than Indonesia and they both fare better than many European countries. Japan is among the top performing countries alongside Scandinavian countries. In the two ASEAN countries, Thailand and Indonesia, older persons are physically and mentally capable while their pension incomes are low, which explains the level of informal support they offer and their high employment rates, respectively. Future active ageing strategies need to prioritize active ageing among older women, particularly those who live alone.

Keywords: *Active Ageing, Population ageing, Longevity, ASEAN+3, EU Member States, Japan, China, South Korea*

Introduction

The speed of population ageing is among the fastest in the world in countries of ASEAN+3, which includes the ten members of the Association of Southeast Asian Nations, or ASEAN, (namely, Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Viet Nam) and China, Japan, and Korea. The population ageing phenomenon in these countries has therefore become a matter of high significance and urgency, particularly in terms of developing social and health care services for older persons and reforming labour markets and pension systems. The ASEAN+3 governments are therefore looking into investing additional resources towards forming evidence-informed policies with greater capacities to address these issues. This, in turn, requires a high-quality and independent comparative evidence base for mutual learning (UNESCAP 2017a; Zaidi et al. 2018a; Parry et al. 2018).

In addressing these challenges, the focus has been on active ageing strategies which emphasize the scope of social investment, taking the view that the cost of managing ageing actively is cheaper than a passive portrayal of older people as dependent on the state or family (Walker and Zaidi 2019). These strategies tap into the potential of older populations with the aim of promoting good policies and practices to positively influence the lives of seniors. Specific goals of active ageing strategies in the ASEAN+3 member countries stress enhancing the social participation of older persons, promoting their physical and mental health status, and removing barriers arising from the age-based discrimination in their communities (UNESCAP 2017b).

The concept of active ageing, formally introduced by the World Health Organization (WHO) in the late 1990s and subsequently endorsed by many international organisations such as the United Nations and the OECD, aims to promote a positive perception of ageing on various levels of society. Formally, according to the WHO, active ageing means "the process of optimizing opportunities for health, participation and security in order to enhance quality of life as people age (WHO 2002, p.12). This concept is built on three main tenets of individual well-being: health, participation, and security. The keys to achieving active ageing are specified as maintaining autonomy, independence, quality of life, and healthy life expectancy (Sidorenko and Zaidi 2018).

In view of the importance of this concept, many developed countries, particularly those in Europe, have developed and expanded active ageing strategies over the past few decades (e.g. National Strategic Policy for Active Ageing, Malta 2014-2020, Irish National Positive Ageing Strategy 2013, Comprehensive Active Ageing Strategy for Longer and Better Working Lives (Latvia), National Strategy on Overcoming the Consequences of Ageing (Lithuania), Active Ageing Strategy (Northern Ireland) 2016-2021).

As a multi-dimensional concept, active ageing is difficult to assess and monitor. One of the methods of measuring the level of active ageing is to develop a composite index. The advantage of constructing a comparative, multi-country index is that it allows us to highlight a country's relative performance in comparison to other countries for the purposes of identifying policy priorities. Despite the fact that the use of the composite indices has gained popularity in recent times, the construction of these multi-indicator indices is not a simple task. In particular, it is often difficult to achieve good international comparability due to data limitations, relevance of indicators in different contexts, and in determining their relative importance. Nonetheless, these indices have the great potential to generate public policy debate with the help of the summary evidence they contain. With rigorous additional analysis, they can serve as the metrics for comparing performance across countries, their progress over time, and policies.

The aim of this article is to develop a composite index to measure active ageing (namely: Active Ageing Index, or AAI) in the context of selected ASEAN+3 nations, specifically Indonesia, Thailand, China, Japan, and Korea. A cross-country comparison of these countries with the EU member states is also undertaken to shed light on the differential experiences of active ageing of these countries in the Global North and Global South. For the purposes of constructing the new Asian AAI, we take as our starting point the AAI developed for European Union countries (hereinafter referred to as the EU AAI) by Zaidi et al. (2013) within the framework of the first phase of the AAI project of the European Commission's Directorate General for Employment, Social Affairs and Inclusion (DG EMPL) and the Population Unit of the United Nations Economic Commission for Europe (UNECE).[1] The EU AAI, which quantified the extent to which older people can realize their potential,

[1] See Zaidi et al. (2013) for the first methodology report of the EU AAI; Zaidi (2014) for the potential of the EU AAI in policy making; Zaidi and Stanton (2015) for the first EU AAI Analytical Report; Zaidi and Unt (2019) and Walker and Zaidi (2019) for the most recent extension of the EU AAI in the context of EU countries, and Zaidi et al. (2019) and Um, Zaidi and Choi (2019) for the extension of the EU AAI in China and Korea, respectively.

was generated with the impact objectives of highlighting the contributions older persons make to their families, communities, and societies.

The Asian AAI reported in this article is relevant for the purposes of building public policy capacities to measure and promote experiences of active ageing in older populations within the Asia-Pacific region. In comparison to the EU AAI, the Asian AAI is calibrated to Asian cultural norms, such as the role of older persons in society, the changing norms of filial piety, and the informal nature of contributions of older persons to their families and communities. The Asian AAI can be used in the monitoring of implementation of the Madrid International Plan of Action on Ageing, or MIPAA. It can also be compatible with the 2030 Agenda for Sustainable Development, especially in assessing how countries are able to fulfill the pledge of leaving no one behind.

For the purpose of our analysis of the Asian AAI, we refer to those who are aged 55 or above as 'older persons'. This age cut-off is low in many countries; many of those who are aged 55 or above would not consider themselves old. Conventionally, ages 60 and over have been widely used to describe those deemed an 'older person', especially, in many studies on developing countries and the UN's demographic projections (United Nations 2017). By including a pre-retirement age group (e.g. 55-59 and 60-64) in our AAI analysis, this study seeks to provide a wider and more comprehensive view of activities and social engagement of older people leading up to their retirement (nb. 60 or 65 is the retirement age used in many of the countries analysed in this paper).

The article has the following structure. The next section briefly reviews the existing literature on active ageing and its measurement. The third section provides some background information on population ageing pertinent to the active ageing analysis undertaken in this study. In the fourth section, we describe the data and methods used in constructing the Asian AAI for the countries considered. The results and their discussion are reported at the end, in section five.

Here, we have sought to compare Thailand and Indonesia's positions with those of China, Korea, Japan, and EU countries as a whole, using the overall AAI as well as domain-specific AAIs. We show how the Asian AAI can be used as an evidence base for developing ageing-related policies in Indonesia and Thailand.

Background

Literature review

Active ageing is a societal-level challenge, involving not only the elderly but the entire population (Rechel et al. 2013). Compared with the definition of successful ageing, which has its theoretical foundations in activity theory, many believe that a universal definition of active ageing has not yet been decided (Clarke and Warren 2007; Ranzijn 2010). It is often seen as "primarily a policy concept (Lassen and Moreira 2014, p.33) and can be used to also mean 'productive ageing' (Ranzijn 2010). However, the work of the AAI project in 2012 provided an operational definition of active ageing, albeit in the context of the EU countries only:

"the situation where people are able to live healthy, independent and secure lives as they age and thus continue to participate in the formal labour market as well as engage in other unpaid productive activities (such as volunteering and care provision to family members) (Zaidi et al. 2017, p. 143)

The AAI sought to evaluate the level of active ageing from a comparative perspective following the WHO's active ageing definition (WHO 2002). As discussed in detail in Sidorenko and Zaidi (2013), the 2002 WHO policy framework implies policy actions in three areas:

- **Health**, which is understood to incorporate physical health as well as mental and social well-being, following the WHO recommended definition.
- **Participation**, which, in turn, is understood as a multifaceted array of activities by older people in social, economic, cultural, spiritual, and civic affairs, in addition to their participation in the labour force.
- **Security**, which is concerned with the older persons' access to a safe and secure physical and social environment, income security, and (when applicable) the securing rewarding employment.

The AAI framework aims to capture the multi-faceted nature of active ageing by analysing four different aspects of ageing, each assigned an analytical domain. To analyse the actual ageing activities of older people, the AAI approach measures the activities related to employment and social participation. It then compliments these with the dimension of independent, healthy and secure living to imply that such finer forms of active ageing

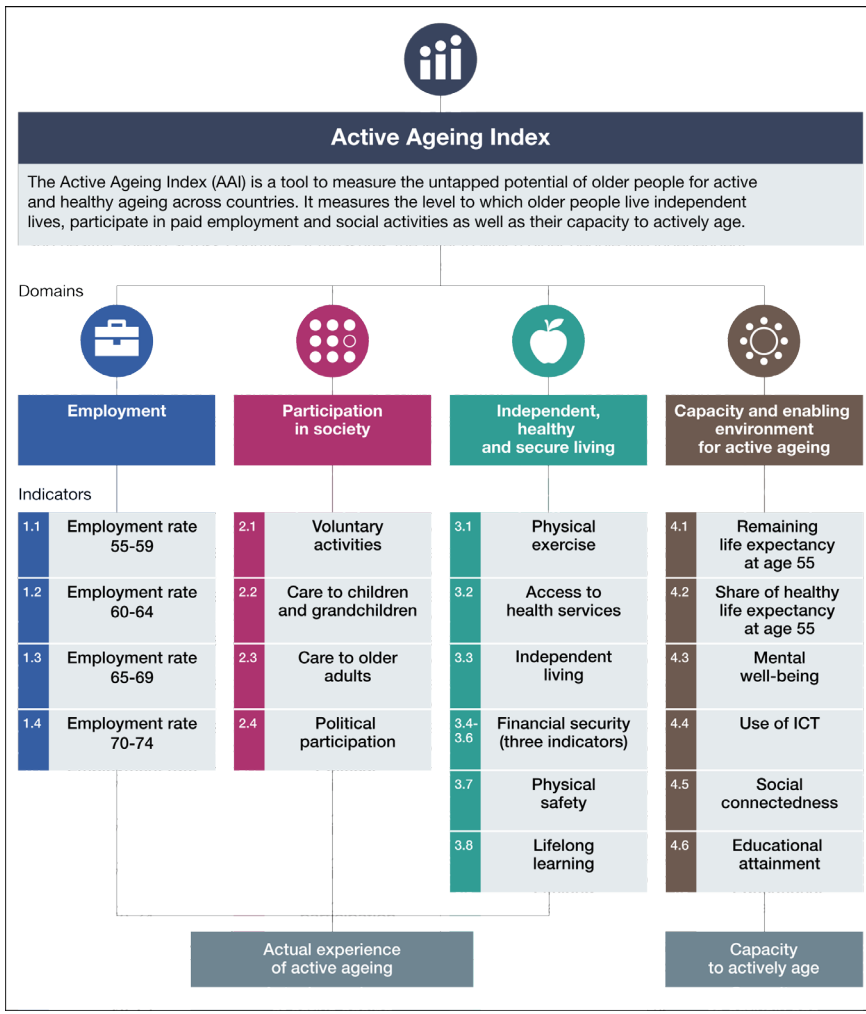
translate into self-reliance and independence (Figure 1). In addition to this, taking a cue from Sen's capability approach (1985), individual characteristics and environmental factors that relate to one's capacity for active ageing are measured through the domain 'capacity and enabling environment for active ageing' (for a detailed discussion, see the EU AAI methodology report, Zaidi et al., 2013).

Each of the four domains captures an important dimension of the contributions of older people.

1. **Employment** (*4 indicators*) focuses on formal employment, and contributions are measured in terms of labour market activities in different age groups, including those beyond the pensionable age.
2. **Participation in society** (*4 indicators*) focuses on productive social activities that are voluntary and make valuable contributions to the society; this involves social contributions made at home, such as care provision to older adults and to children, and social contributions made outside the home, such as in voluntary activities and political participation.
3. **Independent, healthy and secure living** (*8 indicators*) focuses on physical exercise and safety, independent living, financial well-being, and lifelong learning, including all aspects that relate to independent living.
4. **Capacity and enabling environment for active ageing** (*6 indicators*) measures the capacity for active ageing and an age-friendly enabling environment by including indicators of human capital of older persons as well as attributes of their environments.

All 22 AAI indicators are available in EU countries at the national level, with differentiation between men and women. The EU AAI's analytical framework also allows for the replication of the EU AAI in countries outside of Europe. Recently, it has been extended into several non-EU countries, most notably China (Zaidi et al. 2019 and South Korea (Um et al., 2019), where its methodology was used to measure levels of active ageing of older populations.

These extensions provided us with some useful lessons. For instance, in 2018, Zaidi, Um, Xiong, and Parry reviewed the data availability in China and assessed their potential relevance and applicability for constructing an AAI for China that would be comparable to the AAI for EU countries (Zaidi et al. 2019). They found that 21 out of 22 AAI indicators (all except political



Source: Zaidi and Stanton (2015), p13.

Fig. 1.—Domains and indicators of the EU Active Ageing Index "AAI"

participation) are available in China. The results were compared with the EU average to examine how China fares in comparison to various EU member countries. This same research team applied the AAI method to South Korea (Um et al. 2019); the overall AAI score and its domain-specific indices were analysed in comparison to China and EU countries. The comparative analysis provided insights that are often not possible in a single country, or unidimensional analyses of active ageing.

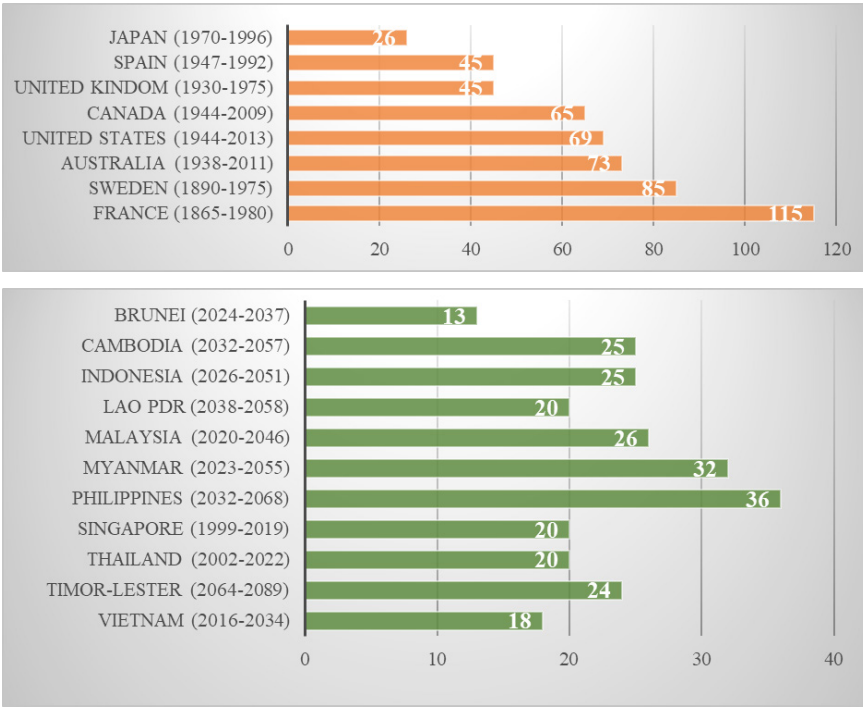
The AAI results for China and South Korea, using the EU AAI methodology, confirmed the feasibility of constructing an AAI in Asia-Pacific countries and its usefulness for monitoring the progress of active ageing in different countries. However, cautions have been raised when interpreting the AAI outcomes. In particular, both China and South Korea exhibit very high scores due to a high employment rate among older workers, which offers a different scenario compared to EU countries. Participating in the labour market in old age maybe interpreted as an independent and healthy way of ageing in Europe, but this is not true for countries such as China and South Korea where the majority of the current cohort of the elderly population tend to work more out of necessity than desire due to a relatively immature pension system.

Thus, it is difficult to capture an insightful depiction of the ageing situation in Asian countries using the EU version of the AAI. Both studies recognize this issue and assert that there is a need to develop AAI indicators that can reconcile it with an Asian context. This must include the cultural characteristics of Asian countries with a focus on social determinants of active and healthy ageing (Zaidi et al. 2018b; Parry et al. 2018; Um et al. 2019).

The population ageing context in Indonesia and Thailand

One of the most notable social phenomena currently being observed in Indonesia and Thailand is a decline in fertility levels, which has become an overriding driver of population ageing in both of these two countries (Jones 2014; McDonald 2016). The fertility rate has declined from a historically high fertility rate of 5.49 for Indonesia and 6.14 for Thailand in 1950 to 2.45 and 1.53 in 2015, respectively. Another major societal achievement observed in both countries are the advances in health and social welfare. People in both countries are now living longer and in better health than ever before (UNESCAP 2017a). The average life expectancy in both countries has increased dramatically, with an increase of almost 20 years over the past five decades, from 51 years in 1965 to 70 years in 2015 in Indonesia and from 58 years to 75 years in Thailand for the same period. Although healthy life expectancy at age 60 and over has also increased in both countries over the same period, life expectancy at birth increased faster than healthy life expectancy at age 60, largely due to sharp declines in child mortality rates (ASEAN Secretariat 2017).

The two trends of declining fertility and rising life expectancy have



Source: UN World Population Database (2017 Revision), Halter et al. (Hazzard's Geriatric Medicine and Gerontology, 2009)

Fig. 2.—The speed of 65+ proportion to double from 7% to 14% in ASEAN and other Advanced nations

resulted in a fast-rising share of older persons of aged 60 and above and a shrinking size of the conventional working-age population, aged 15-59. Both countries are experiencing population ageing particularly rapidly; for example, it is expected that by 2050, Thailand will be almost as aged as Japan, which is considered a hyper-aged society.[2]

While almost every region in the world (outside of Africa) has experienced substantial increases in the proportion of older persons, the progression of this trend is overwhelmingly quick in most of the member

[2] According to HelpAge International (2015): there are four different types of society based on the proportion of older people: Young Society: less than 10% of population aged 60 and over; Ageing Society: 10-19% of the total population aged 60 and over; High-Ageing Society: 20-29% of the total population aged 60 and over; and Hyper-Ageing Society: 30% or more of population aged 60 and over.

countries of ASEAN as compared to other countries (see Figure 2). In many developed countries, especially in Western European countries, this phenomenon was not new; it had developed steadily over the whole of the past century (Lloyd-Sherlock 2010). Obviously, this fast ageing trend in Asian countries has great significance for planning new social and health services for older persons.

While developed countries in Europe and elsewhere have already had social protection policies with comprehensive pension systems in place when their populations started to age, this is not the case in Indonesia and Thailand. Both countries will need to act urgently, and innovatively, to avoid a slowdown in economic growth resulting from reduced working-age populations and risks of an increase in poverty and inequality owing to effects on the financial sustainability of social protection systems (Jones 2014).

Whilst many people in this region enjoy longer lives, this may not necessarily correlate with an experience of active and healthy ageing. The policy responses to population ageing requires a more comprehensive and innovation-based approach to ageing in order to achieve the best possible health and well-being in older age and to enjoy those added years of life as actively as possible.

Rigorous research on active ageing in both countries is lacking. There are research gaps in analysing active ageing at both the national and individual level and no study stands out in identifying determinants of active ageing and their indictors using a context-specific model for Asian countries.

Given the urgency of supporting growing ageing populations, it is necessary for the governments of Thailand and Indonesia to commit sufficient resources to the implementation of their active ageing strategies. However, due to competing priorities, limited funding, and governments not being fully convinced of the validity of active ageing strategies, the rhetoric has not been adequately translated into policy actions (Walker and Zaidi 2016). Furthermore, active ageing strategies require coordination between different governmental and non-governmental agencies within a country, and this coordination is often lacking in both countries (UNESCAP 2017a).

Methodology and data

The Asian AAI framework

Our objective in this section is to define the analytical framework used for constructing the new Asian AAI. It will be drawn from the EU AAI, but with the adjustments necessary for making it appropriate for its application in the context of ASEAN countries. Given the complex nature of active ageing experiences, we maintain a focus on the multidimensional aspects of this concept. We also provide a precise definition with details of survey questions and data used for the chosen indicators. As a start, we retain the same four domains as in the EU AAI: (1) Employment; (2) Social Participation; 3) Independent, Healthy and Secure living; and 4) Enabling Environment and Capacity for Active Ageing.

All indicators used should have a positive normative judgement of 'the greater the better' so as to imply any strategy leading to improvements in an individual indicator will contribute to improvements in the overall active ageing experiences. We also apply similar generic requirements on the indicators chosen for the Asian AAI as was implied in the selection of the indicators for the EU AAI (cf. Zaidi et al. 2013).

- **Measuring outcomes:** Indicators measure outcomes rather than processes. For example, employment outcomes are observed instead of how age-friendly work environments are; healthy life expectancy is measured instead of how adequate health and social care services are.
- **International comparability:** Indicators offer a reasonable level of cross-country comparability. Some flexibility can also be applied with necessary precautions in some selected cases, e.g. if some of the original indicator definition is not available, the "best comparable possible approach is applied.
- **Sensitive to gender aspects:** Indicators should allow us to assess gender-related differences and obtain insights for equity considerations in pursuing active ageing strategies.
- **Intertemporal comparability:** Indicators are comparable over time as much as possible, as is the case with the healthy life expectancy indicators used. This requirement becomes more relevant when the AAI will be used in the future for the purpose of monitoring trends.
- **Data credibility:** Indicators should be available from the population-

based surveys or from other credible data sources such as administrative registers, censuses; they should be reliable in assessing current living conditions of older people; they should be able to capture, to the extent possible, diversity in age-related changes in old age.

As discussed above, the EU AAI is not fully applicable in Asian countries, mainly because it is difficult to accurately capture the same outcomes of active ageing due to socio-economic and cultural differences. Another constraint in applying the EU AAI to Asian countries in an identical manner is the lack of comparable survey data in this region. The use of alternative proxies for the AAI indicators undermines comparability with results from EU nations at national level, but the flexibility of methodology of the AAI allows us to offer suitable adjustments linked to various policy-related purposes and sociocultural situations in this region.

Thus, our focus here is to construct an Asian AAI that is similar to the EU AAI but with adjustments on a number of indicators to make them more contextually appropriate. We revise the definitions of the indicators to suit the context of the Asia-Pacific countries; in some cases, it involved using a new set of indicators whereas in some cases it required changing the reference period.

Adjustments may also have been applied if we thought that the indicator in question had less relevance in the Asian context or we were unable to obtain the necessary data for the selected countries. For example, participation in political activities carries a negative connotation in many Asian countries, as it was found in the analysis of the EU AAI of China (Zaidi et al. 2019) and the data availability for this indicator is also very limited. Thus, we replaced this indicator with participation in religious and civic activities, which helps us capture older people's inclusive ageing within their communities. The literature suggests that older people who derive a sense of meaning in life from religion and similar engagements tend to have higher levels of life satisfaction, self-esteem, and optimism (Krause 2003).

In addition, the indicator 'independent living' (as measured by living alone or as a couple only) is replaced with the indicator 'Activities of Daily living (ADLs)' and 'Instrumental Activities of Daily Living (IADLs). The term ADLs refer to the basic tasks of everyday life, such as eating, bathing, dressing, using the restroom (toileting), and mobility (transferring) (Katz et al. 1963). Whereas IADLs refer to independent living skills, such as shopping, food preparation, housekeeping, laundry, and managing finances (Lawton

Overall Index	The Asian Active Ageing Index			
Domains	Employment	Social / Engagement	Independent, healthy, and secure living	Capacity / Enabling Environment
Indicators	Employment rate 55-59	Voluntary activities (55+)	Physical Exercise (55+)	Remaining Life Expectancy (RLE) at 60
	Employment rate 60-64	Care to child / grandchildren (+55)	Access to health insurance or health benefits (+55)	Share of Healthy Life Expectancy (SHLE) at 60
	Employment rate 65+	Care to older adults (+55)	No ADLs (65+)	Mental well-being (55+)
		Civic & Religious activities (+55)	No IADLs (65+)	Subjective well-being (55+)
			Relative Median Income for +65	Social connectedness (55+)
			Poverty Risk +65	Physical Safety (55+)
			Home ownership (55+)	Use of ICT (55+)
				Educational attainment (55-74)

Fig. 2.—Domains and indicators of the Asian Active Ageing Index

and Brody 1969). These two indicators give us a good sense of a person's capability to live independently in the Asian context. Living with children is still very common in old age in many Asian countries, although it appears that the filial piety is on the decline (see, e.g., Cheung and Kwan 2009; Tsutsui et al. 2014). Yet, in the context of the Asia-Pacific, it may not yet be very appropriate to view living alone in old age as a positive phenomenon.

We include additional indicators so as to enhance the scope (e.g. towards healthy and inclusive ageing) and/or relevance of the Asian AAI. Another constraint faced in the choice of indicators is data availability. Each of the indicators included in the four domains are selected after checking the availability and validity of data.

As shown in Figure 3, we select 22 indicators with these adjustments in place. Some of the indicators are at personal level (e.g. employment or mental health) whereas others are at the household level (e.g. relative median income or poverty risk). Some indicators refer to active ageing experiences within the family (e.g. caring for older adults) and some involves engagements in the community (e.g. volunteer work).

Data

One of the challenges of monitoring the progress of active ageing is that it is very difficult to find a single source for the dataset that covers all of the relevant indicators. In this study, we have used secondary data from multiple ageing-related surveys and statistics reported by governments and international organisations.

In order to collect data for the Asian AAI indicators for Indonesia and Thailand, we reviewed the available surveys and censuses in these two countries. We applied the following criteria to evaluate each of the data sources: (1) the questionnaire has at least some information necessary to calculate the Asian AAI; (2) data are of good quality (i.e. the sampling framework and fieldwork procedures are representative for the country as a whole); (3) it is a repeated or longitudinal survey so that information can be used in the future to observe dynamics; and (4) it is an international study and the same indicator can be constructed for other Asian countries that will aspire constructing the Asian AAI.

To construct the 22 indicators of the Asian AAI, we extracted data mostly from ageing-related or family life surveys, but also from national statistic reports or data made available by national statistics authorities and international organisations (WHO, UN, International Labour Organization, and World Bank). Estimations of the Asian AAI for Indonesia, China, Japan, Korea, and Thailand are based on the following data sources:

- Indonesia Family Life Survey (IFLS), 2014-15, National Statistical Office (2014)
- Health, Ageing, and Retirement in Thailand (HART), 2015, National Statistical Office (2014)
- Korean Longitudinal Study of Ageing (KLSoA), 2014, Korean Statistical Information Service (KOSIS), 2014
- Japanese Study on Aging and Retirement (JSTAR) 2013, National Survey of Family Income and Expenditure (NSFIE) 2014
- China Health and Retirement Longitudinal Study (CHARLS) 2015, China General Social Survey (CGSS) 2014, Chinese Household Income Project (CHIP), 2013

Table 1
Data Sources and Weights Assigned to the Asian AAI Indicators and Domains

Domain	New Asian AAI Indicator	New Asian AAI Weight indicator	New Asian AAI Weight domain	Data source (EU)	Data source (Indonesia)	Data source (Thailand)	Data source (China)	Data source (Japan)	Data source (Korea)
1. Employment	1.1 Employment rate 55-59	50%	32%	ILO	ILO	ILO	ILO	ILO	ILO
	1.2 Employment rate 60-64	30%		ILO	ILO	ILO	ILO	ILO	ILO
	1.3 Employment rate 65+	20%		ILO	ILO	ILO	ILO	ILO	ILO
2. Participation in society	2.1 Voluntary activities	21%	17%	EQLS	IFLS	HART	CHARLS	JSTAR	MCST
	2.2 Care to children / grandchildren	27%		EQLS	IFLS	HART	CFPS	JSTAR	KLoSA
	2.3 Care to older adults	28%		EQLS	IFLS	HART	CHARLS	JSTAR	KLoSA
	2.4 Civic & Religious participation	24%		SHARE	IFLS	HART		JSTAR	KLoSA
3. Independent, healthy and secure living	3.1 Physical exercise	20%	20%	EQLS	IFLS	HART	CHARLS	JSTAR	KLoSA
	3.2 Access to health care / insurance	20%		SILC	IFLS	HART	CHARLS	JSTAR	KLoSA
	3.3 No ADLs difficulties	15%		SHARE	IFLS	HART	CHARLS	JSTAR	KLoSA
	3.4 No IADLs difficulties	15%		SHARE	IFLS	NSO	CHARLS	JSTAR	KLoSA
	3.5 Relative median income	10%		SILC	IFLS	Global AgeWatch	CHIP	NSFIE	KOSIS
	3.6 No poverty risk	10%		SILC	IFLS	Global AgeWatch	CHIP	NSFIE	KOSIS
	3.7 Home ownership	10%		SHARE	IFLS	HART	CHARLS	JSTAR	KLoSA
4. Capacity and enabling environement for active ageing	4.1 Remaining life expectancy at age 60	31%	31%	UN	UN	UN	UN	UN	UN
	4.2 Share of healthy life expectancy at age 60	22%		WHO	WHO	WHO	WHO	WHO	WHO
	4.3 Mental well-being	10%		EQLS	IFLS	HART	CHARLS	JSTAR	KLoSA
	4.4 Subjective well-being	10%		SHARE	IFLS	HART	CHARLS	JSTAR	KLoSA
	4.5 Social connectedness	6%		ESS	IFLS	HART	CHARLS	JSTAR	KLoSA
	4.6 Physical safety	6%		SHARE	IFLS		CGSS	JSTAR	KOSIS
	4.7 Use of ICT	8%		ICT Survey	NSO	NSO	CHARLS	MIAC	OECD
	4.8 Educational attainment	7%		SHARE	IFLS	HART	CGSS	JSTAR	KLoSA

Estimations of the Asian AAI for EU members are based on the following data sources:

- Survey on Health, Ageing and Retirement in Europe;
- English Longitudinal Study of Ageing (2014-15 and 2017);
- Irish Longitudinal Study on Ageing (2015);

- European Quality of Life Survey (EQLS, 2016);
- EU Survey of Income and Living Conditions (EU-SILC);
- European Social Survey (ESS); and
- Eurostat ICT Survey.

Choice of the aggregation methods

A careful review of existing index construction methodologies has been carried out in preparation for our work on the Asian AAI (e.g. UNDP 1990; Akder 1994; Anand and Sen 1995, Bradshaw and Richardson 2009; Klasen and Schüler 2011; and Kaneda et al. 2011).

One of the first approaches we considered was the z-score methodology, as presented in Bradshaw and Richardson (2009). The major advantage of the z-score methodology is that it allows for the standardisation of indicators of different types and scales around the sample mean and standard deviation. Thus, using this method, indicators measuring the share of the population and those reported in other measurement units (such as years in life expectancy indicators) can be conveniently expressed in a standardised manner, rendering them comparable and aggregate-able in a single index, using the arithmetic means of the z-scores.

While the z-scores methodology provides a convenient way to normalise results, by anchoring them around the mean, this also rendered comparisons over time more difficult. This is due to the fact that indicators referring to the year t+1 will be standardised around the mean values of active ageing observed in the year t+1. If the mean values have changed significantly in the time period in question (from the year t to the year t+1), it will affect their intertemporal comparability. In such a scenario, the AAI_{t+1} would be ranking countries according to the new reality in terms of active ageing observed in t+1.

Therefore, we use the other most popular method for converting our positive indicators in normalized terms, the method adopted by the Human Development Index. This method works by applying a comparison of an actual score with the minimum and maximum values observed among countries of interest. The Asian AAI uses the formula as it appears below:

$$Normalized\ indicator = \frac{Actual\ score - Minimum\ score}{Maximum\ score - Minimum\ score} \times 100$$

This normalization procedure allows us to convert any dimensionality into a number between 0 to 100, while maintaining the ratio of the individual values to the minimum and maximum boundaries. The same method is adopted to normalise the individual indicators within a domain.

Moreover, in light of substantial gender differentials in the different aspects of active ageing, we also calculate all indicators and domain-specific indices separately for men and women. Note also that the missing values (if any) are not imputed in the Asian AAI as each available method for statistical imputations carries its own methodological limitations. In our view, any imputation applied could restrict the credibility as well as the comparability (across space as well as inter-temporally) of the constructed index. This approach also allows us to point out those fields of missing data where data collection is highly desirable in the countries in question.

Results

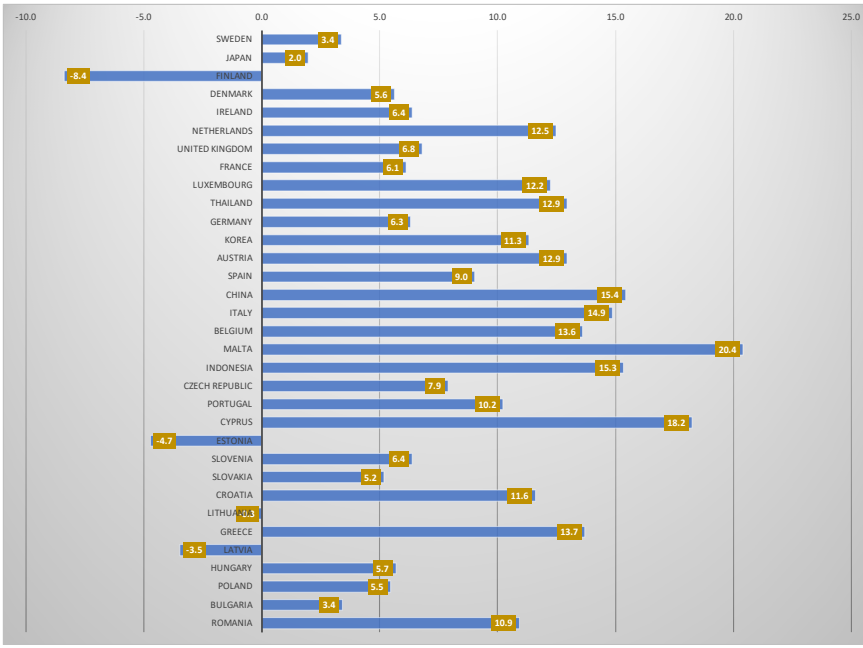
The overall indexes for Indonesia and Thailand equal 50.6 points and 59.7, respectively. This value gives Indonesia the 19th and Thailand the 10th position out of 33 countries (See Table 2). Fitting the other three Asian countries, China, Japan, and Korea, into the overall ranking with the 28 EU countries, Japan is ranked among the top three (2nd) and Korea is ranked 12th, in the upper-middle cluster of countries, just behind Germany (11th) and China comes in at 15th out of 33 countries. The overall AAI value for males and females in Indonesia are 58.8 and 43.5, respectively (see Annex A1). This large gender difference, with the explicit weight of 32 percent accounting for the employment domain within the overall AAI, occurs largely due to Indonesian males' higher ranking in the employment domain (overall employment index is 96.6) than females (overall employment index for females is 46.9).

Similarly, there is also a large gender difference found in Thailand with the overall index 66.9 for male and 53.9 for female. Such gender disparity was also found in Europe, especially in the Southern European countries, which traditionally have more patriarchal social settings (Malta, Cyprus, Italy, see Figure 4), and similar situations were also found in China and Korea.

TABLE 2
THE ASIAN AAI AND ITS DOMAIN SCORES FOR INDONESIA, THAILAND, CHINA, JAPAN, KOREA, AND THE EU

Country	Employmet	Social Participation	Independent and secure living	Capacity and enabling environment for active ageing	Asian AAI Overall Index (normalized)	Rank
Sweden	78.4	84.7	81.7	89.6	83.6	1
Japan	71.8	55.8	81.9	87.4	75.9	2
Finland	58.4	72.9	88.1	84.0	74.7	3
Denmark	61.8	60.7	68.1	89.9	71.5	4
Ireland	49.6	75.3	97.1	72.6	70.7	5
Netherlands	58.3	69.1	73.7	80.6	70.1	6
United Kingdom	57.8	75.7	62.2	75.8	67.2	7
France	42.0	78.9	67.4	78.2	64.5	8
Luxembourg	30.6	59.2	84.2	78.0	60.9	9
Thailand	69.0	69.1	66.0	40.4	59.7	10
Germany	63.1	43.0	49.4	68.1	58.4	11
Korea	67.9	18.2	67.5	59.9	56.9	12
Austria	35.2	58.7	60.0	73.4	56.0	13
Spain	43.6	50.6	52.6	71.5	55.1	14
China	54.8	33.8	85.3	46.9	55.0	15
Italy	36.9	69.3	51.4	64.2	53.8	16
Belgium	32.1	59.3	46.3	76.1	53.1	17
Malta	29.2	58.5	67.4	57.9	50.8	18
Indonesia	73.9	83.1	56.6	4.3	50.6	19
Czech Republic	54.1	45.1	43.8	43.5	47.2	20
Portugal	47.8	26.9	40.2	56.9	45.4	21
Cyprus	47.2	32.1	43.4	51.6	45.2	22
Estonia	63.3	22.0	34.5	43.1	44.2	23
Slovenia	24.8	34.5	66.7	47.2	41.8	24
Slovakia	40.7	27.2	59.8	37.9	41.4	25
Croatia	25.7	43.1	45.9	37.2	36.3	26
Lithuania	55.4	21.9	46.4	12.2	34.6	27
Greece	26.1	17.2	52.7	33.7	32.3	28
Latvia	55.9	18.8	12.5	27.2	32.0	29
Hungary	33.6	28.8	49.3	18.4	31.3	30
Poland	33.3	15.7	31.3	37.2	31.1	31
Bulgaria	48.5	16.6	16.6	19.1	27.6	32
Romania	33.2	20.4	12.2	11.6	20.2	33

Source.—Authors' calculation
Note.—the countries are placed according to their overall rankings (total)



Source.—Authors' calculation
Note.—the countries are placed according to their overall rankings (total)

Fig. 4.—The Asian AAI's gender gap between male and female

Employment

The employment domain, which measures the engagement of older persons in the labour market, demonstrates the top performance for males in Indonesia and Thailand. The values of this first domain for Indonesia and Thailand are equal to 73.9 and 69 points, respectively, and correspond to 2nd and 4th place (just behand Sweden 1st and Korea 3rd) among the considered countries. As expected, in Indonesia, employment rate decreases for older age groups from 74 percent for the age group 55–59 years to 39.5 percent for those aged 65 or above. Similar patterns across age groups were found in Thailand with 77.4 percent for the age group 55-59 years and 25.7 percent for age group 65 or above (see Annex A2). However, the employment rate of the oldest age group (over 65) is significantly higher in both Indonesia and Thailand compared to EU countries.

It had been expected that older women would be less able to participate

in employment than their male counterparts in both countries, as the same phenomenon had been found in many other Asian countries. Women are underrepresented in employment in both Thailand and Indonesia which means that there is a great potential for improvement. Of older males and older females, respectively scored 96.6 and 46.9 on the employment domain index for Indonesia, while those in Thailand scored 86 (male) and 49.9 (female). The large gender difference can largely be explained by the social convention that men usually shoulder the main responsibility as the provider for the family while women more typically remain out of formalized work to support their family (Jones, 2014). However, this situation appears to be changing quickly in many Asian countries (Jones 2014; McDonald 2016).

In both Indonesia and Thailand, as in many such emerging economies, many older people continue to work beyond their statutory retirement age in order to support their livelihood (Adioetomo and Mujahid 2014). This is partly due to the fact that only a small proportion of older people are covered by pensions based on their employment record and social pensions are inadequate. The decline in the employment participation rate with age implies that as older populations continue to age, an increasing proportion of older people would stand in need of financial assistance. Ageing of the elderly thus adds to the financial strains of population ageing in these countries.

The differences in the employment rates is smaller in younger age groups than in older age groups across the comparison groups. For example, the employment rate for males aged between 55 and59 is 89 percent in Indonesia and 89.8 in Thailand. The employment rate for those 65 and over is 55.2 percent for males in Indonesia, which is 19.4 percent higher than that in Thailand (35.8 percent).

Social participation

The second domain that captures older persons' participation in society is measured using four indicators. Overall, Indonesia's index value for this domain is 57.9 while Thailand scores slightly lower with 50.7, corresponding to 2nd and 8th place overall. Older people in Korea exhibit a very low social participation rate (24.4) and feature at the bottom of the rankings (30th), with only Greece (31st), Bulgaria (32nd), and Poland (33rd) scoring lower than Korea. Japan (15th) and China (21st) ranked at a mid-point for this domain compared to EU countries.

Engagement in voluntary activities by elderly Indonesians (15.8 percent) is considerably higher than that in Thailand (4.6 percent). However, the rate

of providing care to children or grandchildren in Thailand (60.7 percent) is almost two times higher than that in Indonesia (32.8 percent). This may be due to the rate of people aged 60 and above co-residing with their children being higher (68.4 percent in 2010) in Thailand than Indonesia (64 percent in 2010) (UNDESA 2017) and female employment rate in oldest group (over 65) is higher in Indonesia than in Thailand. About 13 percent of people aged 55 and over in Indonesia provide care to their elderly parents, which is considerably higher than that in Thailand (5.4 percent). It is noteworthy that the higher rates of providing care to grandchildren is related to social-cultural tradition, but also to the weak childcare system in both countries. Indonesian seniors' engagement in the civic and religious activities (55.4) are slightly higher than that in Thailand (48.1).

In terms of gender differences, in Indonesia, 20.8 percent of women aged 55 or above participate in voluntary activities, compared to 10.8 percent of men in the same age group, while both older men (4.1 percent) and women (5.1 percent) show very low participation rates in voluntary activities in Thailand (see Annex A3). Older men score slightly higher on the civic and religious activity indicator in Indonesia, at 56.1percent, compared to older women, who's participation rate is 54.8 percent. In contrast, an opposite phenomenon is observed in Thailand in that older women (52 percent) participate more in civic and religious activities compared to older men (44 percent). As for caregiving activities, in both countries, women aged 55 and older provide more care for children and/or grandchildren than older men do.

Similar gender differences in caregiving are found in China, Japan and Korea and European countries, particularly in Mediterranean countries (Italy, Spain, Cyprus). Older women (16.7 percent for Indonesia and 5.7 percent for Thailand) in both countries also provide more care to older family members than older men do (9.3 percent for Indonesia and 5.2 percent for Thailand). One possible explanation is that because women's life expectancy is higher than men in both countries, they spend more time being widowed in later life. This difference in household structures partly accounts for gendered differences in care giving to older adults.

Independent, healthy and secure living

Older persons in Indonesia have a lower index value in this domain regarding independence, with a 58.8, and rank at 17th. In contrast, older persons in Thailand score slightly higher with an index value of 63.8 and rank at 13th. China (3rd) and Japan (5th) are ranked among the highest in this

domain while Korea is ranked (9th) within the upper cluster of countries, just behind Denmark (8th).

There are higher levels of physical exercise (34.4 percent) and access to health insurance or health-related benefits (91.2 percent) in Indonesia as compared to 29.8 percent for physical exercises and 85.7 percent for access to health insurance or health-related benefits in Thailand. Older persons in Thailand show very high levels of independent living with 92 percent reporting no difficulties in the activities of daily living (ADL and IADL) compared to Indonesia, which reported 77.4 percent. The chance of disability or decline in physical strength increases with age. The UNFPA and HelpAge International (2012) identify this as resulting from accumulated health risks across a lifespan of disease, injury, and chronic illness. Although there is need to be cautious in interpreting the responses to ADLs and IADLs due to underreporting issues, our findings in response to ADLs indicate that a significantly higher number of people aged 65 and over (22.6 percent) in Indonesia cannot perform daily activities such as bathing, eating, and getting dressed without help from others compared to people of the same age group in Thailand (5.8 percent).

The relative median income ratio of Thailand (81.3) is much higher than that in Indonesia (68.5). The scores of no poverty risk (72 percent) and home ownership (92.2 percent) in Thailand are also higher than Indonesia, which means that poverty risk is lower for older persons in Thailand than it is in Indonesia.

In terms of gender difference, in both countries, older men show considerably higher levels of physical exercise (47.8 percent for Indonesia and 32.3 percent for Thailand) than women (20.7 percent for Indonesia and 27.5 percent for Thailand). The 'no unmet medical / dental care' and 'no ADLs difficulties' indicators show marginal differences between men and women in both countries. However, in Thailand, there is a large difference between men (79.4 percent) and women (65.8 percent) in 'no IADLs difficulties' indicator (see Annex A4).

There are marked variations between countries in levels of financial well-being in terms of gender. The relative median income ratio of Indonesia shows large differences between older men (74) and women (62.9), as it was similarly found in some European countries (Sweden, Finland, Slovenia, Austria, Croatia, Poland, and Belgium). The 'no poverty risk' indicator accounted for 74.1 percent of older men and 66.9 percent of women in Indonesia. Due to data limitations, gender difference analysis for these two indicators were not possible for Thailand. The last indicator, 'home

ownership' shows a marginal difference between men and women in both countries.

Capacity and enabling environment for active ageing

The fourth domain, which measures the individual characteristics and environmental factors that influence one's capacity for active aging in society, demonstrates the worst performance in Indonesia, which ranks at the bottom in 33rd place, compared to Thailand (23rd). Japan (3rd) ranked in the top three just behind Denmark (1st) and Sweden (2nd), while China (20th) and Korea (15th) placed in the mid-point on this domain compared to EU countries.

The first three indicators of this domain related to remaining life expectancy (RLE) at the age of 60 years, share of healthy life expectancy at 60 (the proportion of healthy life expectancy at age 60 to RLE at age 60), and individuals' mental well-being status. The RLE at the age of 60 in Indonesia is 18 years while Thailand is slightly higher with 21 years. As expected, older men fare worse than women in both countries. However, while women outlive men and might enjoy increased lifespans, they are not necessarily healthier, and are more prone to poor health conditions in later life (Ilinca et al. 2016).

This is confirmed by the next two indicators: 'share of healthy remaining life expectancy' and 'mental well-being'. Older men have better health status in later life than women in both countries. Older men in both countries show slightly higher shares of healthy life expectancy, with 69.4 for Indonesia and 82.1 for Thailand, while older women score 68.4 in Indonesia and 78.2 in Thailand (see Annex A5). Poor mental well-being is significantly more common among older women in old age in both countries as it was found in China, Japan, Korea, and EU countries. Older Indonesian men (68.5) have higher mental well-being than older women (65.4). Such similar gender difference is also found in Thailand (male: 64.9, female: 59.9) and other considered countries except Czech Republic, Estonia, and Slovenia where older women have better mental well-being than older men.

The subjective well-being of older people presents very similar scores for both countries. 82.4 percent of older people in Indonesia reported that they are satisfied with their quality of life (81.7 percent for male and 83 percent female) while Thailand shows 81.4 percent of older people are satisfied with their quality of life (82 percent for male and 80.9 percent for female). The level of social connectedness in Indonesia is 56.7 percent (56.6 percent for male and 56.9 percent for female), which is lower than Thailand with 67.7

percent (67.4 percent for male and 67.9% for female).

Physical safety is measured by the percentage of older persons who feel safe walking alone at night in the dark. Overall, older Indonesians felt safer with 89.6 percent reporting no problem walking at night. Unfortunately, this 'physical safety' indicator is not available for Thailand. The feelings-of-safety indicator shows a larger difference between men (95.6 percent) and women (84.2 percent) in Indonesia, as it was similarly found in all countries considered. The rates of use of ICT by older persons are very low in both countries (5.2 percent for Indonesia and 8.4 percent for Thailand) but slightly better than in China (3.9 percent). In order to encourage the use of the latest communication technologies by older people in both countries, institutions must increase the availability of such new technologies in addition to educational programmes that older people can access in order to learn about new communication methods and the internet.

Educational attainment in Thailand is much lower than in Indonesia. Only about 8.5 percent of older persons (11.7 percent of males and 5.6 percent of females) in Thailand have completed upper secondary or tertiary educational attainment, while 20.9 percent of older Indonesians (26.9 percent of males and 15.6 percent of females) have done so. As may be expected, many of the current cohort of older persons have no formal education or low educational qualifications. This is particularly the case for female seniors (aged 65 years or older) in Indonesia and Thailand, who belong to a generation in which the woman's main roles were housekeeping and caring for children or elders (Adioetomo and Mujahid 2014; Knodel et al. 2015).

Discussion and conclusion

The numerical exercise of applying the Asian AAI methodology to Indonesia and Thailand and three other major Asian countries, namely, China, Japan, and Korea, in addition to 28 EU member countries shows that in the overall situation with respect to active ageing, Asian countries are among the better performing countries, especially when we consider the fact that Indonesia and Thailand are not among the worst. Thailand is ranked at 10th and Indonesia places at 19th position among the 33 countries included in this study. However, both Indonesia and Thailand show their worst results in the 4th domain, Capacity and Enabling Environment for Active Ageing, where they rank 33th and 23rd, respectively.

Keeping the focus on the two ASEAN countries, older populations in

Indonesia and Thailand have very high employment rates. There is evidence of continued economic contribution from seniors through agricultural work, re-employment, running one's own business, or in unpaid and family businesses, despite the retirement age being younger in both countries (57 for Indonesia and 60 for Thailand). Adioetomo and Mujahid (2014) state that older Indonesians who are in good health with low pension income work for short periods only or are self-employed, and they tend to continue working beyond pension age. This is due to the fact that the country's development level is still low and pension system is inadequate. In addition, pensioners with low incomes are more likely to continue working, indicating that older people in both countries tend to work more out of necessity rather than out of desire. A similar phenomenon was observed in South Korea (Um et al. 2019).

The financial well-being of older persons in Indonesia is worse than that in Thailand. The poverty risk is higher than Thailand and the relative median income for older persons is low. This implies the existence of income inequality in the country and illustrates the need for reforms to the current welfare system in order to support low-income groups in their old age in Indonesia. However, there is still a lack of research in this area with respect to sources of income, the adequacy of that income, and possible solutions, including assessments of the older peoples' desire to work if suitable jobs were available. Policymakers should support the provision of suitable employment opportunities for older persons willing and able to work in jobs suitable for their age and health situation. Doing so might be one effective way of reducing some of the financial difficulties experienced by older people in Indonesia (Haque et al. 2016; Adioetomo and Mujahid 2014).

We have discussed that older people in both countries are now living longer. Older men and women aged 60 still have, respectively, an additional lifespan of 17 years and 19 years for Indonesia and 19 years and 23 years for Thailand (WHO, 2014). The question that arises is how they support themselves when they retire at age 58 (Indonesia) or 60 (Thailand). The amount of pension payout is also far short of what they require to maintain quality of life in old age. With the exception of the small proportion of those who are retired government employees or military personnel, the overwhelming majority of senior have inadequate pension coverage (Adioetomo and Mujahid 2014; Knodel et al. 2015). This explains why older people continue to work for an income to maintain their livelihoods in later life.

On the whole, comparing the Indonesia and Thailand AAI and its

domains with the EU plus three Asian countries' average as well as Sweden (1st place in the country rankings) allows us to conclude that there is unrealized potential in Indonesia and Thailand. The enabling environment for active ageing is as important as material conditions in determining the well-being for older people in old age. It can be suggested that policy efforts should be directed towards improving environments for active ageing that will provide opportunities for better health, social engagement, and security for older people (WHO 2007; Plouffe and Kalache 2011).

These results indicate that the governments of both Indonesia and Thailand should institute active ageing strategies for younger generations as upstream policies to prevent older people from disabilities and chronic diseases, say by reducing health-related risk factors through regulating alcohol use and smoking, encouraging physical activities and daily exercise, and providing healthy eating methods and information (WHO 2011). Such health-related prevention programmes, particularly health literacy educational programmes about healthy ways of living, can also be seen as aspects of an enabling environment and capacity for active ageing linked with the outcome indicator of healthy life expectancy.

As the proportion of older population that experiences difficulties in instrumental daily activities increase in old age, it is important to improve key aspects of age-friendly infrastructure, such as transportation and access to public buildings. It is also important to maintain as much as possible the culture of older people living in proximity to their children or families. Such intergenerational cohesion within the family helps to reduce conflicts between generations and maintain the tradition of filial piety. This could prevent older people suffering from mental illness, being lonely, isolated, and neglected.

(*Submitted*: November 27, 2019; *Accepted*: December 5, 2019)

References

Adioetomo, S. Moertiningsih and Mujahid, Ghazy. 2014. *Indonesia on the Threshold of Population Ageing,* UNFPA Indonesia Monograph Series: 1

Akder, A. Halis 1994. *A Means to Closing Gaps: Disaggregated Human Development Index,* UNDP Human Development Report Office, Occasional Papers. Available at SSRN:https://ssrn.com/abstract=2294666

Anand, Sudhir and Sen, Amartya. 1995. *Gender Inequality in Human Development:*

Theories and Measurement, Human Development Report Office, Occasional Paper 19, United Nations Development Programme.

ASEAN Secretariat, 2017. *Celebrating ASEAN: 50 Years of Evolution and Progress*, Jakarta: Indonesia.

Bradshaw, Jonathan and Richardson, Dominic. 2009. An Index of Child Well-Being in Europe. *Child Indicators Research* 2(3): 319-351. https://doi.org/10.1007/s12187-009-9037-7

Cheung, Chau-kiu and Kwan, A. Yui-Huen. 2009. The Erosion of Filial Piety by Modernization in Chinese Cities. *Ageing and Society,* 29(2): 179-187

Clarke, Amanda and Warren, Lorna. 2007. Hopes, fears and expectations about the future: what do older people's stories tell us about active ageing? *Ageing & Society* 27, 465-488.

Haque, Nuruzzaman., Soonthorndhada, Kusol., Hunchangsith, Pojjana., Kanchanachitra, Manasigan., 2016. Active ageing level in Thailand: A comparison between female and male elderly. *Journal of Health Research* 30(20): 99-107

HelpAge International. (2015). *Global AgeWatch Index 2015: Insight report*. London: HelpAge International.

Jones, Gavin. 2014. The population of Southeast Asia, in Ian Coxhead (ed), *Handbook of Southeast Asian Economics*, London: Routledge.

Krause, Neal. 2003. Religious Meaning and Subjective Well-Being in Late Life. *The Journals of Gerontology: Series B* 58(3): S160–S170.

Katz, Sidney., Ford, B. Amasa., Moskowitz, W. Roland., Jackson, A. Beverly., Jaffe, W. Marjorie., 1963. Studies of Illness in the Aged: The Index of ADL: A Standardized Measure of Biological and Psychosocial Function. *JAMA* 185(12): 914–919.

Klasen, Stephan and Schüler, Dana. 2011. Reforming the Gender-Related Development Index and the Gender Empowerment Measure: Implementing Some Specific Proposals. *Feminist Economics* 17(1): 1-30, DOI: 10.1080/13545701.2010.541860

Kaneda, Toshiko., Lee, Marlene., and Pollard, Kelvin., 2011. SCL/PRB Index of Well-Being in Older. Stanford Center on Longevity and Population Reference Bureau, June 2011, Retrieved October 7, 2019 (http://longevity3.stanford.edu/wp-content/uploads/2012/10/SCL-PRB-Index-of-Well-Being-in-Older-Populations.pdf).

Knodel, J., Teerawichitchainan, B., Prachuabmoh, V., Pothisiri, W., 2015. *The Situation of Thailand's Older Population: An update based on the 2014 Survey of Older Persons in Thailand*, Population Studies Center Research Reports, Report 15-1847.

Ilinca, Stefania., Rodrigues, Ricardo., Schmidt, E. Andrea., Zolyomi, Eszter. 2016. Gender and Social Class Inequalities in Active Ageing: Policy meets Theory. Retrieved October 7, 2019 (https://www.euro.centre.org/downloads/detail/1558).

Lassen, J. Aske, Moreira, Tiago. 2014. Unmaking old age: Political and cognitive formats of active ageing. *Journal of Aging Studies* 30: 33–46.

Lawton, M. Powell., Brody, M. Elaine. 1969. Assessment of older people: Self-maintaining and instrumental activities of daily living. *The Gerontologist 9*(3): 179-186.

Lloyd-Sherlock, Peter. 2010. *Populationa ageing and international development: from generalisation to evidence*, Bristol: Policy Press.

McDonald, Peter. 2016. Demographic Change in the Asian Century: Implications for Australia and the Region. *Asia & The Pacific Policy Studies* 3(2): 155-172.

Parry, Jane., Um, Jinpil., Zaidi, Asghar. 2018. Monitoring active ageing in the Asia-Pacific region: Recommendations for future implementation of the MIPAA. *International Journal on Ageing in Developing Countries* 2: 82-98.

Plouffe, A. Louise, Kalache, Alexandre. 2011. Making communities age friendly: state and municipal initiatives in Canada and other countries. *Gaceta Sanitaria* 25(2): 131–137.

Ranzijn, Rob. 2010. Active ageing – another way to oppress marginalized and disadvantaged elders? Aboriginal elders as a case study. *Journal of Health Psychology* 15: 716-723.

Rechel, Bernd., Grundy, Emily., Robine, Jean-Marie. Cylus, Jonathan., Mackenbach, P. Johan, Knai, Cecile., Martin, McKee. 2013. Ageing in the European Union. *Lance* 381 (9874): 1312-22.

Sen, Amartya. 1985. *Commodities and capabilities*, Amsterdam: Elsevier

Sidorenko, Alexandre and Zaidi, Asghar. 2013 "Active ageing in CIS countries: Semantics, challenges, and response. *Current Gerontology and Geriatrics Research,* pp. 1-29.

_____. 2018. International Policy Frameworks on Ageing: Assessing Progress in Reference to the Madrid International Plan of Action on Ageing. *The Journal of Social Policy Studies* 16: 141-154.

Tsutsui Takako, Muramatsu Naoko, Higashino Sadanori. 2014. Changes in perceived filial obligation norms among coresident family caregivers in Japan. *Gerontologist* 54: 797–807.

United Nations Economic and Social Commission for Asian and the Pacific (UNESCAP), 2017a. *Asia-Pacific Intergovernmental Meeting on the Third Review and Appraisal of the Madrid International Plan of Action on Ageing, Overview of trends in population ageing and related institutional responses in Asia and the Pacific*, Bangkok, 12-14 September 2017

United Nations Economic and Social Commission for Asian and the Pacific (UNESCAP), 2017b. *Addressing the Challenges of Population Ageing in Asia and the Pacific*, Bangkok: United Nations Publication

United Nations Development Programme (UNDP), 1990. *Human Development Report 1990,* United Nations Development Programme, New York.

United Nations Department of Economic and Social Affairs, 2017. *Living*

Arrangements of Older Persons: A Report on an Expanded International Dataset, United Nations, New York

UNFPA & HelpAge International. 2012. *Ageing in the Twenty-First Century: A Celebration and a Challenge*. New York: United Nations Population Fund (UNFPA) & London: Help Age International.

Um, Jinpil., Zaidi, Asghar., Choi, Sung-Jae. 2019. Active Ageing Index in Korea - Comparison with China and EU Countries. *Asian Social Work and Policy Review*, 13(1): 87-99, https://doi.org/10.1111/aswp.12159

Walker, Alan. and Zaidi, Asghar. 2016. "New Evidence on Active Ageing in Europe. *Intereconomics* 51(3): 139–144.

_____. 2019. Strategies of Active Ageing in Europe. In Alan. Walker (Ed.), *The Future of Ageing in Europe*. Singapore: Palgrave Macmillan

World Health Organization (WHO). 2002. Active ageing – A policy framework. Geneva: World Health Organization.

_____. 2007. *Global Age-Friendly Cities: A Guide*. WHO, Geneva: World Health Organization.

_____. 2011. *World Report on Disability,* WHO, Geneva: World Health Organization

_____. 2014. Life expectancy at age 60 (years), UNdata: World Health Organization. Available at: http://data.un.org/Data.aspx?q=life&d=WHO&f=MEASURE_CODE%3AWHOSIS_000015

Zaidi, Asghar., Gasior, Katrin., Hofmarcher, M. Maria., Lelkes, Orsolya., Marin, Bernd., Rodrigues, Ricardo., Schmidt, E. Andrea., Vanhuysse, Pieter., Zolyomi, Eszter. 2013. Active ageing index 2012 concept, methodology and final results. *Research Memorandum/ Methodology Report.* Vienna: European Centre Vienna.

Zaidi, Asghar. 2014. Enabling environments for active and healthy ageing in EU countries. *Gerontechnology* 12(4): 201-208.

Zaidi, Asghar and Stanton, David. 2015. *Active ageing index 2014: analytical report*, report produced at the Centre for Research on ageing, University of Southampton, under contract with UNECE (Geneva), co-funded by European Commission, Brussels.

Zaidi, Asghar., Gasior, Katrin., Zolyomi, Eszter., Shmidt, E. Andrea., Rodrigues, Ricardo., Marin, Bernd. 2017. Measuring active and healthy ageing in Europe. *Journal of European Social Policy 27*(2): 138-157.

Zaidi, Asghar., Harper, Sarah., Howse, Kenneth., Lamura, Giovanni., and Perek-Białas, Jolanta. 2018a. *Building Evidence for Active Ageing Policies: Active Ageing Index and its Potential*, Basingstoke: Palgrave Macmillan.

Zaidi, A., Parry, J., Um, J. 2018b. Developing a toolkit to monitor implementation of the Madrid International Plan of Action on Ageing: The context of the Asia-Pacific region. Social Development Working Papers 2018/02, Economic and Social Commission for Asia and the Pacific, Bangkok: ESCAP. DOI:10.13140/RG.2.2.33598.74566

Zaidi, Asghar., Um, Jinpil., Xiong, Qian., Parry, Jane. 2019. *Comparative study on active ageing: Experiences of EU Member States for Policy Developments in China. EU-China Social Protection Reform Project, Beijing*.

Zaidi, Asghar and Unt, Marge. 2019. *The Active Ageing Index: Measuring Successful Aging at Population Level*, in Rocío Fernández-Ballesteros, Jean-Marie Robine and Athanase Benetos, Editors, *The Cambridge Handbook of Successful Aging*, Cambridge University Press

ASGHAR ZAIDI is the Vice Chancellor at Government College University Lahore. He is also Professor of Social Gerontology at Seoul National University, South Korea and Senior Research Fellow at the Oxford Institute of Population Ageing, the UK. Previously, he was Professor in International Social Policy at University of Southampton (UK); Director Research at European Centre Vienna (Austria); Senior Economist at OECD (Paris); Civil Servant at UK's Department for Work and Pensions in London; and a researcher at London School of Economics and the University of Oxford (UK) and at Erasmus University and Tilburg University (the Netherlands). He is a Steering Committee member of the ASEM Global Ageing Centre in Seoul and a member of the Steering Group of the UN Titchfield City Group on Ageing. [E-mail: s.m.asghar.zaidi@gmail.com]

JINPIL UM is a Research Fellow at Institute of Social Welfare, Seoul National University. His background is in ageing and gerontology within social sciences, with an interest in active and healthy ageing, income mobility and income inequality in old age, long-term care and dementia care for older persons. His recent research is focused on developing active ageing index for non-European countries and economic well-being in later life, particularly linked to inequalities in the incomes of older persons. [E-mail: um.jinpil@gmail.com]

Annex A1

The overall Asian AAI by total, men, and women for Indonesia, Thailand, Japan, Korea, and China, in addition to 28 EU countries

Country	Both	Men	Women	Rank	Gender gap
Sweden	83.6	85.0	81.7	1	3.4
Japan	75.9	77.4	75.4	2	2.0
Finland	74.7	69.9	78.3	3	8.4
Denmark	71.5	75.3	69.7	4	5.6
Ireland	70.7	74.5	68.1	5	6.4
Netherlands	70.1	76.9	64.4	6	12.5
United Kingdom	67.2	71.5	64.7	7	6.8
France	64.5	68.1	62.0	8	6.1
Luxembourg	60.9	67.8	55.5	9	12.2
Thailand	59.7	66.9	53.9	10	12.9
Germany	58.4	62.5	56.2	11	6.3
Korea	56.9	62.2	50.9	12	11.3
Austria	56.0	63.8	50.8	13	12.9
Spain	55.1	60.8	51.7	14	9.0
China	55.0	62.1	46.6	15	15.4
Italy	53.8	61.1	46.2	16	14.9
Belgium	53.1	60.2	46.6	17	13.6
Malta	50.8	61.6	41.2	18	20.4
Indonesia	50.6	58.8	43.5	19	15.3
Czech Republic	47.2	50.8	42.9	20	7.9
Portugal	45.4	51.3	41.1	21	10.2
Cyprus	45.2	54.5	36.2	22	18.2
Estonia	44.2	41.3	46.0	23	4.7
Slovenia	41.8	45.2	38.9	24	6.4
Slovakia	41.4	44.8	39.6	25	5.2
Croatia	36.3	42.5	30.9	26	11.6
Lithuania	34.6	36.0	36.3	27	0.3
Greece	32.3	40.0	26.3	28	13.7
Latvia	32.0	31.5	35.0	29	3.5
Hungary	31.3	35.2	29.5	30	5.7
Poland	31.1	32.8	27.3	31	5.5
Bulgaria	27.6	29.9	26.5	32	3.4
Romania	20.2	27.1	16.2	33	10.9

Annex A2

The employment domain index for Indonesia, Thailand, Japan, Korea, and China, in addition to 28 EU countries

Country	Employment rate 55-59	Employment rate 60-64	Employment rate 65+	Normalized Domain Value	Rank	Gender gap
Sweden	86.3	69.9	16.9	75.8	1	11.6
Indonesia	73.9	63.9	39.5	71.5	2	49.7
Japan	80.4	62.8	21.2	69.4	3	39.4
Thailand	77.4	58.6	25.7	66.8	4	36.1
Korea	72.6	59.8	31.9	65.7	5	43.6
Estonia	79.4	55.0	10.8	61.2	6	2.8
Germany	81.0	55.8	5.8	61.0	7	16.7
Denmark	82.4	49.6	7.1	59.8	8	15.6
Finland	79.9	47.8	5.8	56.5	9	3.6
Netherlands	76.4	52.4	7.7	56.5	10	29.2
United Kingdom	75.9	50.0	10.3	56.0	11	19.5
Latvia	78.9	43.5	7.0	54.2	12	2.4
Lithuania	77.9	45.0	5.8	53.6	13	11.1
China	67.7	49.5	21.2	53.1	14	34.4
Czech Republic	83.3	33.4	5.0	52.4	15	25.1
Ireland	67.9	47.4	9.6	48.1	16	28.0
Bulgaria	73.4	40.0	4.0	47.1	17	10.7
Portugal	67.7	42.1	11.9	46.3	18	25.3
Cyprus	68.9	42.5	7.3	45.8	19	37.9
Spain	68.7	39.7	1.7	42.3	20	23.0
France	73.5	27.1	2.5	40.7	21	7.2
Slovakia	74.9	22.4	2.0	39.6	22	20.2
Italy	63.9	32.6	3.7	35.9	23	30.8
Austria	66.1	23.7	5.3	34.3	24	26.0
Hungary	67.3	21.0	1.9	32.7	25	19.3
Poland	61.8	27.8	4.8	32.5	26	27.7
Romania	57.1	31.0	10.8	32.3	27	27.1
Belgium	63.2	24.6	2.3	31.2	28	16.9
Luxembourg	61.1	23.7	4.1	29.8	29	21.4
Malta	58.0	25.3	5.4	28.5	30	56.4
Greece	53.8	28.3	2.8	25.5	31	34.2
Croatia	54.0	26.8	3.1	25.1	32	28.3
Slovenia	55.2	19.9	6.7	24.2	33	21.2

Annex A3

The Social Participation domain index for Indonesia, Thailand, Japan, Korea, and China, in addition to 28 EU countries

Country	2.1 Voluntary activities	2.2 Care to children, grandchildren	2.3 Care to older adults	2.4 Civic and religious activities	Normalized Domain Index Score	Rank	Gender gap
Sweden	18.3	26.1	10.2	65.2	58.7	1	2.2
Indonesia	15.8	32.8	13.0	55.4	57.9	2	0.5
France	16.5	35.5	13.0	44.8	55.7	3	3.9
United Kingdom	15.6	26.7	16.1	46.5	54.1	4	0.5
Ireland	20.1	39.4	16.5	18.7	53.8	5	1.4
Finland	12.8	31.0	17.1	42.5	52.6	6	14.9
Italy	11.3	53.7	16.9	15.1	50.8	7	1.4
Thailand	4.6	60.7	5.4	48.1	50.7	8	4.0
Netherlands	20.6	30.9	14.0	24.5	50.6	9	5.5
Denmark	17.4	26.8	6.3	42.6	46.3	10	3.9
Belgium	11.3	38.7	14.5	24.4	45.6	11	5.0
Luxembourg	17.5	31.6	11.8	22.8	45.5	12	16.4
Austria	15.9	25.0	11.9	33.9	45.3	13	0.1
Malta	9.7	31.7	15.0	34.6	45.2	14	0.5
Japan	15.2	11.7	30.1	8.6	43.8	15	18.1
Spain	5.9	36.1	15.7	27.0	41.1	16	0.6
Czech Republic	6.2	37.2	14.8	19.3	38.3	17	17.2
Croatia	5.8	33.7	15.0	21.4	37.2	18	0.4
Germany	10.0	17.9	8.5	43.4	37.2	19	7.7
Slovenia	5.8	41.2	10.6	10.2	32.8	20	17.1
China	9.6	32.9	13.4		32.5	21	0.1
Cyprus	4.3	44.5	9.0	10.4	31.6	22	2.7
Hungary	2.4	38.9	13.3	8.2	29.9	23	0.6
Slovakia	1.4	31.2	11.5	21.5	29.0	24	1.0
Portugal	5.9	27.9	14.6	7.1	28.9	25	2.2
Estonia	3.4	26.5	12.6	12.7	26.4	26	12.8
Lithuania	2.6	33.3	13.5	4.6	26.3	27	4.9
Romania	2.6	28.7	11.3	12.8	25.5	28	1.0
Latvia	1.4	31.3	10.7	11.8	24.7	29	8.3
Korea	8.1	5.0	2.2	43.4	24.4	30	9.9
Greece	1.3	34.1	11.3	5.4	23.9	31	12.9
Bulgaria	1.2	27.4	11.8	11.7	23.6	32	1.6
Poland	2.7	22.5	13.3	9.3	23.1	33	2.7

Annex A4

The Independent Healthy and Secure Living domain index for Indonesia, Thailand, Japan, Korea, and China, in addition to 28 EU countries

Country	3.1 Physical exercise	3.2 No unmet needs of health and dental care	3.3 No ADLs difficulties	3.4 No IADLs difficulties	3.5 Relative median income	3.6 No poverty risk	3.7 Home ownership	Normalized Domain Index Score	Rank	Gender gap
Ireland	25.4	95.4	92.2	89.6	88.4	92.3	88.6	80.6	1	16.8
Finland	48.9	88.2	87.4	82.0	77.7	94.5	84.6	75.7	2	10.8
China	46.8	89.5	85.0	85.0	87.1	71.1	85.9	74.3	3	2.8
Luxembourg	24.2	95.3	86.0	78.5	100.0	97.6	88.0	73.7	4	4.8
Japan	17.8	91.8	93.2	91.8	75.1	80.9	85.8	72.4	5	6.4
Sweden	42.6	87.1	88.5	84.1	77.5	94.5	74.8	72.3	6	5.4
Netherlands	23.4	97.7	89.1	77.5	89.7	97.4	56.0	68.0	7	2.7
Denmark	25.2	92.0	87.7	80.2	75.0	96.7	67.9	65.0	8	14.9
Korea	32.1	94.1	92.2	82.6	47.4	52.6	83.4	64.7	9	11.6
Malta	17.0	95.5	88.5	77.6	80.1	91.0	73.1	64.6	10	13.2
France	22.5	91.2	82.3	75.7	100.0	96.2	78.6	64.6	11	12.1
Slovenia	9.6	97.3	84.0	74.6	87.4	89.2	94.7	64.2	12	20.1
Thailand	29.8	85.7	92.0	71.9	81.3	72.0	92.2	63.8	13	9.8
United Kingdom	16.9	94.1	78.6	83.0	89.4	91.4	73.1	61.8	14	7.3
Austria	22.2	96.5	83.8	70.8	93.4	91.1	58.9	60.6	15	0.2
Slovakia	5.1	90.5	88.4	74.0	81.4	97.2	94.3	60.5	16	6.7
Indonesia	34.4	91.2	77.4	77.7	68.5	70.5	84.8	58.8	17	8.1
Greece	6.5	82.3	90.2	70.8	100.0	92.2	88.2	56.7	18	3.2
Spain	15.8	89.6	80.2	67.8	93.1	93.8	90.0	56.6	19	8.3
Italy	5.4	86.8	84.8	75.5	94.8	93.0	81.9	56.0	20	10.8
Germany	12.4	92.5	82.2	79.0	87.9	91.6	52.4	54.9	21	11.2
Hungary	5.6	87.5	83.2	65.6	97.4	97.7	96.2	54.8	22	13.7
Lithuania	18.5	91.3	74.7	65.6	78.1	94.9	97.7	53.3	23	5.9
Belgium	16.5	94.3	78.9	68.6	74.3	92.8	76.4	53.2	24	8.4
Croatia	7.4	87.5	82.0	71.6	85.9	84.2	93.5	53.0	25	4.7
Czech Republic	4.9	93.5	81.2	72.1	83.6	98.6	66.3	51.9	26	5.1
Cyprus	13.9	88.1	86.1	68.4	69.6	86.3	80.6	51.6	27	4.9
Portugal	5.9	78.5	86.0	79.0	91.7	93.4	68.6	49.9	28	13.4
Estonia	20.0	81.6	77.7	66.1	71.8	95.7	89.3	46.9	29	3.4
Poland	7.0	77.0	79.1	71.8	94.9	93.5	83.0	45.1	30	3.3
Bulgaria	0.7	79.6	77.1	66.1	73.7	82.6	93.7	37.2	31	11.2
Latvia	12.0	68.4	81.5	70.2	79.8	94.5	60.8	35.1	32	19.2
Romania	1.3	70.1	71.3	67.2	100.0	91.3	97.1	34.9	33	9.9

Annex A5

The Capacity and Enabling Environment for Active Ageing domain index for Indonesia, Thailand, Japan, Korea, and China, in addition to 28 EU countries

Country	4.1 RLE at age 60	4.2 Healthy life years at age 60	4.3 Mental well-being	4.4 Subjective Well-being	4.5 Social connectedness	4.6 Physical safety	4.7 Use of ICT	4.8 Educational attainment	Normalized Domain Index Score	Rank	Gender gap
Denmark	23.0	80.9	87.3	97.5	63.8	87.9	73.0	65.2	75.1	1	0.1
Sweden	24.0	79.6	83.4	95.3	66.9	84.0	78.0	67.2	74.9	2	3.3
Japan	26.0	80.0	88.5	83.9	44.9	85.4	41.0	73.4	73.7	3	11.9
Finland	24.0	78.8	81.6	96.1	57.2	89.5	68.0	66.6	71.9	4	8.4
Netherlands	24.0	78.3	73.7	95.9	67.3	81.5	77.0	56.4	70.0	5	0.5
France	25.0	81.6	67.7	79.9	61.0	67.1	55.0	54.2	68.7	6	3.6
Luxembourg	25.0	76.8	78.2	95.2	57.0	64.1	75.0	66.1	68.7	7	0.7
Belgium	23.0	81.3	73.7	92.8	59.6	74.9	55.0	50.8	67.6	8	2.4
United Kingdom	24.0	79.2	67.2	90.8	64.3	69.4	66.0	67.8	67.4	9	1.8
Austria	24.0	79.2	75.3	92.8	52.3	68.7	45.0	69.8	66.1	10	3.3
Ireland	24.0	79.6	77.4	90.6	52.5	77.1	43.0	49.0	65.7	11	0.6
Spain	25.0	80.4	68.2	89.9	67.5	67.4	29.0	28.9	65.1	12	0.4
Germany	24.0	76.7	74.6	90.4	46.6	74.6	52.0	81.3	63.2	13	3.3
Italy	25.0	78.4	68.4	90.6	58.2	67.4	24.0	34.4	61.1	14	0.9
Korea	24.0	80.8	50.7	63.5	59.5	71.2	64.3	43.0	58.8	15	2.5
Malta	24.0	79.2	62.2	89.6			33.0	17.5	57.7	16	2.2
Portugal	24.0	80.0	64.5	72.9	73.6	70.1	22.0	16.0	57.1	17	2.9
Cyprus	24.0	77.5	56.8	89.9	39.6	71.1	22.0	49.0	54.2	18	1.8
Slovenia	23.0	75.2	52.4	85.1	47.2	94.6	28.0	71.2	51.9	19	8.4
China	19.0	82.1	75.1	91.2	43.3	91.9	3.9	21.6	51.7	20	4.8
Czech Republic	21.0	77.1	61.4	81.0	44.3	65.0	36.0	84.3	49.8	21	8.4
Estonia	21.0	79.5	54.2	77.7	30.7	57.9	41.0	81.6	49.6	22	13.5
Thailand	21.0	80.0	62.3	81.4	67.7		8.4	8.5	48.2	23	2.0
Slovakia	21.0	76.2	55.2	80.5	50.2	58.9	37.0	79.3	46.8	24	7.8
Croatia	21.0	75.7	62.9	75.5	53.9	86.7	20.0	61.0	46.4	25	7.8
Poland	21.0	77.6	51.8	83.4	27.1	76.7	24.0	74.3	46.4	26	11.6
Greece	24.0	77.5	48.6	76.0	27.3	46.7	13.0	38.5	44.5	27	
Latvia	20.0	77.5	51.4	72.8	38.3	39.9	35.0	79.7	41.0	28	5.4
Bulgaria	19.0	78.9	55.3	47.6	48.2	57.8	18.0	66.6	36.6	29	7.2
Hungary	20.0	73.5	61.5	71.6	21.1	66.2	37.0	65.2	36.2	30	6.1
Lithuania	21.0	73.8	49.7	63.7	23.0	41.9	24.0	78.0	32.8	31	14.8
Romania	20.0	76.0	44.3	67.8	24.0	63.6	13.0	51.8	32.5	32	5.4
Indonesia	18.0	70.0	66.9	82.4	56.7	89.6	5.2	20.9	28.5	33	4.9