Redefining ‘old age’ and ‘dependency’ in the East Asian social policy narrative

Abstract

East Asian societies are currently some of the most rapidly ageing in the world. Projections of the traditional *old age dependency ratios (OADR)* present a daunting future of the size of the aged population both in absolute terms and, in the context of low fertility, relative to the future workforce. Recently scholars, especially Sanderson and Scherbov, have argued that *OADR* is inadequate as a guide to future levels of dependency based, as it is, on *past* scenarios of ‘old age’ and ‘dependency’ rather than current and future notions. Indeed, in the context of rapidly ageing settings in East with developmental welfare states, the *OADR* has probably never been truly relevant, is profoundly helpful and could lead to policy paralysis. As such, Sanderson and Scherbov suggest a new method to measure ageing *prospectively* to take into account both improved life expectancy and health across the life-course. We introduce these new measurements as a possible new, more radical and optimistic way to think about ageing in East Asia. These measurements more accurately demonstrate the ‘boundaries’ to ‘dependency’ and, hence, demonstrate the potential room for social policy interventions to maximise ‘active ageing’ for the population currently, perhaps incorrectly, defined as ‘old’ and ‘dependent.’

Redefining 'old age' and 'dependency' in East Asia: is 'prospective ageing' a more helpful concept?

Introduction: rapidly ageing populations in East Asia

Many industrial East Asian settings have experienced rapid fertility declines over the past thirty years (Straughan, Chan, & Jones, 2008); so much so that most of the lowest fertility rates in the world can currently be found in the region. As a consequence during this period, many territories such as Republic of Korea, Taiwan, Singapore, Hong Kong SAR, Macao SAR and Japan have been able to take advantage of the so-called 'demographic dividend' where the relative size of the working-age population has been disproportionately large compared to the dependent population of children and older people (Bloom, Canning, & Sevilla, 2003). Other countries in south- and south-east Asia for whom fertility decline has occurred more recently are themselves now feeling the benefit of this first step in population ageing (e.g. James, 2008; Wongboonsin, Guest, & Prachuabmoh, 2005).[1]

However, this 'demographic dividend' is but a window of opportunity before the population as a whole becomes ever older – particularly in the context of longer-term trends in low fertility (Ogawa, Kondo, & Matsukura, 2005). Indeed, these very same territories in East Asia are famously among the most rapidly ageing settings in the world (Eggleston & Tuljapurkar, 2010). This has clear implications for both the future demand for social and public services among a growing elderly population and the ability of a potentially shrinking labour force to fund it. This, in turn, clearly impacts upon issues relating to labour productivity, intergenerational justice, and the changing provision of health and social welfare (National Research Council, 2012).

The mood among academics regarding the future pace of ageing in East Asia is generally pessimistic. Both demographers and local statistical offices generally assume that fertility rates – the main driver of population ageing – will stay low for a wide reasons of cultural, social and economic reasons (Basten, 2013; Frejka, Jones, & Sardon, 2010; Lutz, Skirbekk, & Testa, 2006). Furthermore,

[1] A significant difference between these Asian settings and, say, European countries who are also experiencing ageing is the *speed* with which the transition has occurred – namely over a century in most European settings but only a few decades in East Asia.

life expectancy in many of these countries is extremely high and is projected to increase further (UNDESA, 2012; Yang, Khang, & Harper, 2010). Finally, replacement migration is unfeasible in many settings for both cultural and demographic reasons (Coleman, 2002; Douglass & Roberts, 2003).

This demographic pessimism is often translated into a gloomy appraisal of future prospects in both the social policy literature and among policymakers themselves – not least elucidated in this very journal (e.g. Choi, 2009; Lin, 2010). This pessimism is expressed in terms of future pension provision, labour force size, healthcare costs and numerous other factors (e.g. Ikegami 2010).

The dependency ratio

The *old-age dependency ratio* [*OADR*] is a simple measurement developed by demographers to demonstrate the relationship between the size of the working age population (usually defined as aged 15-64 or, more appropriately for industrialised Asian settings, 20-64) and those aged above working age who are taken to be dependent upon the labour force. The *OADR* is by far, the most widely used measurement of the degree to which a society is considered to be aged. Indeed, it is used as the standard reference measurement in both academic and policy literature regarding ageing across the world not least because of its ease of interpretation (e.g. Horioka 2010; Holzmann, MacArthur, and Sin 2000). As Figure 1 demonstrates, the projected *OADR*s for these six low fertility East Asian settings rise rapidly to the end of the century. (Indeed, even these *OADR*s are somewhat *optimistic* as they are based upon a constant increase in fertility to 2100, something disputed by numerous scholars and statistical offices (Basten, 2013)). These rising *OADR*s clearly represent a daunting prospect for policymakers and, one might suggest, go some way towards explaining much of the prevailing pessimism regarding future responses to ageing.

Figure 1: Old-age dependency ratios for six low fertility, East Asian territories. Population aged 65+ per 100 working age population (20-64).

Data source: (UNDESA, 2012)

Notes: * Taiwan is technically categorised in the UN projections as 'Other non-specified areas' within East Asia

The dependency ratio has, however, been increasingly critiqued in recent years – particularly in the context of countries with pay-as-you-go pensions. Bongaarts (2004), for example, rightly observes that both the number of pensioners usually exceed the population aged 65 and older, and the number of productive workers is substantially smaller than the total population aged 15, or 20, to 64. Fur current figures, this means that the *OADR* is, in fact, over-optimistic. For Japan in 2000, for example, Bongaarts (2004) calculates that while the *OADR* is 25/100, the *pensioner per worker ratio* is, in fact 0.39. Despite this, using a measure such as Bongaarts' does allow for the future reconceptualising of labour force participation, age of retirement and pension entitlement.

Prospective ageing: a more radical approach to measuring ageing

A more radical approach to critique the *OADR* is to tackle the assumption that the population aged over 64 are both 'old' and 'dependent.' In order to do so properly, we need to understand where this figure of 65 as a boundary between 'young' and 'old' come from? The simple answer is that it is derived from Western ideas of social welfare reforms developed in the nineteenth- and twentieth centuries (Atchley, 1982). However, the demographic context in which Bismarck was setting out his retirement legislation in the late-nineteenth century is entirely different from today in at least three ways: the size of the population *surviving until 65*; the *length of time* the average person would survive *after* 65; and the *health* of the population both before and after age 65. In Sweden, for example, of 100,000 children born in 1850, less than half would be expected to survive to their 65th birthday. Compare this to more than 90% in 2010. (University of California Berkeley (USA) & Max Planck Institute for Demographic Research (Germany), 2013).

Central to Sanderson and Scherbov's reconceptualization of 'ageing', however, is a recognition that in terms of planning for old age both individually and at a macro social policy level, it is far more important to examine how much longer we expect to live *for*, or to calculate a 'prospective age'. Rising life expectancy means that a 50 year old in 2050 might well behave in many ways like a 40 year old in 2000, because the 45 year old could have the same remaining life expectancy [*RLE*] as a 40 year old person in 2000. Using the excellent historical records in Sweden, for example, we can compare the ages at which the average person at four different time points had a *RLE* of 35 years: in

1851 at age 30, 1901 at age 36, 1951 at age 46, and in 2001 at age 54. To give a more contemporary example, a man born in Sweden in 1916 who survived to his 30th birthday would expect to live for another 44 years, i.e. to age 74. His grandson (or even son), born in 1970, however, would expect to live for another 44 years at his *40th* birthday, i.e. to age *84*. In other words, '40 is the new 30'.

Sanderson and Scherbov identify two methods to 'remeasure' age using these reconceptualisations of ageing in order to calculate *prospective old age dependency ratios* The first involves taking an initial age of 'retirement' – perhaps 65 – and observing the *RLE* for year t_1. As improvements in life expectancy occur over time, that *RLE* is subtracted from the new life expectancy to create an equivalent t_2. For example, in country *a* in year t_1 the average life expectancy at age 65 is 20 years; therefore we 'fix' this period of 20 years as the period of 'old age.' For 2050 we examine the projected life table to find the age at which *RLE* is 20 years. This then becomes the new 'old' age. Dependency ratios calculated on this bases can be termed $POADR_1$.

In Japan, for example, the age at the onset of 'Old Age Dependency' in 2050 – or the equivalent age of a 65-year old in 2000 – is 72.8. This translates into a $POADR_1$ of 0.51 compared to a traditional *OADR* of 0.866 (Sanderson & Scherbov, 2007). Similarly for Hong Kong, the $POADR_1$ for 2041 is 0.426 compared to an *OADR* of 0.531 (Basten, Yip, & Chui, 2013).[2]

However, the calculation of $POADR_1$ has a number of issues, especially when applied to developmental welfare states in East Asia. For example, it is still based upon the current notion of 65 as being a boundary of old age. This is especially important when examining territories in East Asia (and other areas without 'pay-as-you-go' pensions) where the notion of 65 as a 'retirement' age for the bulk of the population is somewhat meaningless.

A further measure of old age dependency, therefore, has been proposed in Sanderson and Scherbov (2010). Rather than being based upon current (vague) assumptions concerning the onset of 'old age' and 'dependency', this is entirely based upon fixing a *set period* of *RLE*. Such a method was first proposed by Ryder who suggested the age of 'old age' onset was when a period of 10 years of

[2] 2041 is the furthest projected year for which projected life tables are available for Hong Kong. See (HKCSD, 2012)

RLE was reached (Sanderson & Scherbov, 2008). This concept was further developed by Fuchs (1984) and Siegel (1993).

Sanderson and Scherbov (2008, 2010) suggest an *RLE* of *fifteen years* as a suitable boundary to mark the onset of 'old' age. This is based on the implicit assumption of disability, and 'dependency' being disproportionately confined to the last fifteen years of life (see, for example, Sanderson and Scherbov 2007; Lafortune 2007). Indeed, the growing literature on the compression of morbidity in this period suggests that such a 'boundary' of dependency may, indeed, be reasonable (CODI, 1991; Liu, 2009).

Using $POADR_2$ rather than the traditional *OADR* measurement can dramatically alter our view of dependency in Asia. Sanderson and Scherbov (2008) calculate this $POADR_2$ for each of the UN's Asia regions for 2045. For the East Asia region, the age at which *RLE* was 15 years rises from 66.4 in 2000 to 70.3 in 2045. This translates into a $POADR_2$ for the region of 0.292 in 2045 compared to an *OADR* of 0.435. We can gain a greater insight, however, by examining the differences between *OADR* and $POADR_2$ at the territorial level. In Japan, for example, the *OADR* in 2045 is 0.75, or 0.75 people aged over 65 per person aged 20 to 64. The $POADR_2$, however, is just 0.269 (Sanderson & Scherbov, 2008). Again for Hong Kong, the *OADR* for 2041 is 0.531 while the $POADR_2$ is just 0.218 (Basten et al., 2013). In other words, in such rapidly ageing societies as Hong Kong and Japan by simply applying a different measurement of ageing, and it is suggested a measurement which more accurately reflects both the present and future demographic, economic and health context of East Asian societies, then ageing can become a more manageable prospect. For an extended analysis of the implications for one Asian setting, namely Hong Kong SAR, see Basten 2013.

Conclusion: better identifying the boundaries of 'old'

In this short piece we have sought to highlight a new current in the demographic literature, namely the reconceptualising of ageing and 'dependency' to better account for changes in life expectancy and the compression of morbidity in older ages. This can allow policymakers to recognise the increasing obsolescence of the traditional *OADR* and look at new ways to define 'old' and 'dependent.'

The $POADR_2$ figures presented above could be said to represent something of an optimistic 'upper-bound' of the potential release of human capital by optimising the experiences of the population aged above 65 with a remaining life expectancy of greater than 15 years which is currently, incorrectly described as 'old' and 'dependent.' In this context, East Asian economies currently faced with a daunting, even unassailable future of ageing predicted by the *OADR* can design a suite of proactive policies designed to realign society's relationship to work and other activities at different stages across the life-cycle. Although this clearly feeds into the literature on and work (e.g. Kendig 2004; Peel, Bartlett, and McClure 2004), it also emphasises the need to realign work-life balance across the life-cycle which can lead to burnout and increased periods of inactivity in later life (Kitaoka-Higashiguchi & Morikawa, 2009).

Rethinking ageing, therefore, can serve to provide both policymakers and the general public with a more realistic view of dependency over the life-course. Indeed, it is an *optimistic* story of increased life expectancy and health. As such, if we redraw the parameters of the 'demographic dividend' to emphasise those who are more accurately 'dependent' in East Asia, we find that more time actually exists to define a holistic approach to ageing across societies.

Finally, given that popular misconceptions regarding life expectancy and fixed entry points to old age have been a key factor in holding back pension reform in the West, the sooner East Asian economies jettison the *OADR* as the default measurement of ageing, the less likely the age of 65 will be entrenched as a boundary which could affect future attempts at reform.

Atchley, R. (1982). Retirement as a social institution. *Annual Review of Sociology*, *8*, 263–287.

Basten, S. (2013). Comparing projections assumptions of fertility in Advanced Asian Economies; or "thinking beyond the medium variant". *Asian Population Studies*, forthcoming.

Basten, S., Yip, P., & Chui, E. (2013). *Remeasuring ageing in Hong Kong*. Department of Social Policy and Intervention, University of Oxford Working Paper 2013-2.

Bloom, D., Canning, D., & Sevilla, J. (2003). *The demographic dividend: A new perspective on the economic consequences of population change*. Santa Monica, CA: Rand Corporation.

Bongaarts, J. (2004). Population Aging and the Rising Cost of Public Pensions. *Population and Development Review*, *30*(1), 1–23. doi:10.1111/j.1728-4457.2004.00001.x

Choi, S.-J. (2009). Ageing Society Issues in Korea. *Asian Social Work and Policy Review*, *3*(1), 63–83. doi:10.1111/j.1753-1411.2008.00025.x

CODI. (1991). Table 7. Persons With a Disability, by Sex and Age: 1991-92. *CODI, University of Buffalo*. Retrieved from http://codi.buffalo.edu/graph_based/.demographics/.awd/tables/table07.txt

Coleman, D. A. (2002). Replacement migration, or why everyone is going to have to live in Korea: a fable for our times from the United Nations. *Philosophical transactions of the Royal Society of London. Series B, Biological sciences*, *357*(1420), 583–98. doi:10.1098/rstb.2001.1034

Douglass, M., & Roberts, G. (2003). *Japan and Global Migration: Foreign Workers and the Advent of a Multicultural Society*. Honolulu: University of Hawaii Press.

Eggleston, K., & Tuljapurkar, S. (Eds.). (2010). *Aging Asia: the economic and social implications of rapid demographic change in China, Japan, and South Korea*. Stanford, CA: APARC Books.

Frejka, T., Jones, G. W., & Sardon, J.-P. (2010). East Asian childbearing patterns and policy developments. *Population and Development Review*, *36*(3), 579–606.

Fuchs, V. (1984). Though much is taken: reflections on aging, health, and medical care. *Milbank Memorial Fund Quarterly: Health and Society*, *62*(2), 142–166.

HKCSD. (2012). *Hong Kong life tables: 2006-2041*. Hong Kong SAR.

Holzmann, R., MacArthur, I., & Sin, Y. (2000). *Pension Systems in East Asia and the Pacific: Challenges and Opportunities* (No. Social Protection Discussion Paper Series No. 0014). Washington DC.

Horioka, C. Y. (2010). Ageing and saving in Asia. *Pacific Economic Review*, *15*(1), 46–55. doi:10.1111/j.1468-0106.2009.00489.x

Ikegami, N. (2010). Financing health care in a rapidly aging Japan. In K. Eggleston & S. Tuljapurkar (Eds.), *Aging Asia* (pp. 97–108). Stanford, CA: APARC Press.

James, K. (2008). Glorifying Malthus: Current Debate on "Demographic Dividend" in India. *Economic and Political Weekly*, *43*(25), 21–27.

Kendig, H. (2004). The social sciences and successful aging: Issues for Asia-Oceania. *Geriatrics and Gerontology International*, *4*(s1), S6–S11. doi:10.1111/j.1447-0594.2004.00136.x

Kitaoka-Higashiguchi, K., & Morikawa, Y. (2009). Burnout and risk factors for arteriosclerotic disease: follow-up study. *Journal of Occupational Health (Japan)*, *51*(2), 123–131.

Lafortune, G. (2007). *Trends in severe disability among elderly people: assessing the evidence in 12 OECD countries and the future implications*. Paris: Organisation for Economic Co-operation and Development. OECD Health Working Papers (26)

Lin, W.-I. (2010). The Coming of an Aged Society in Taiwan: Issues and Policies. *Asian Social Work and Policy Review*, *4*(3), 148–162. doi:10.1111/j.1753-1411.2010.00043.x

Liu, J. (2009). Trends in Disability-Free Life Expectancy Among Chinese Older Adults. *Journal of Aging and Health*, *21*(2), 266–285.

Lutz, W., Skirbekk, V., & Testa, M. R. (2006). The Low-Fertility Trap Hypothesis : Forces that May Lead to Further Postponement and Fewer Births in Europe, 167–192.

National Research Council. (2012). *Aging in Asia: findings from new and emerging data inititaives*. Washington DC: National Research Council.

Ogawa, N., Kondo, M., & Matsukura, R. (2005). Japan's transition from the demographic bonus to the demographic onus. *Asian Population Studies*, *1*(2), 207–226. doi:10.1080/17441730500317451

Peel, N., Bartlett, H., & McClure, R. (2004). Healthy ageing: how is it defined and measured? *Australasian Journal on Ageing*, *23*(3), 115–119. doi:10.1111/j.1741-6612.2004.00035.x

Sanderson, W., & Scherbov, S. (2007). A new perspective on population aging. *Demographic Research*, *16*(2), 27–58.

Sanderson, W., & Scherbov, S. (2008). Rethinking age and aging. *Population bulletin, [PRB]*, *63*(4), 1–20.

Sanderson, W., & Scherbov, S. (2010). Remeasuring aging. *Science*, *329*, 1287–1288.

Siegel, J. (1993). *A Generation of Change: A Profile of America's Older Population*. New York, NY: Russell Sage Foundation.

Straughan, P., Chan, A., & Jones, G. (2008). *Ultra-Low Fertility in Pacific Asia: Trends, causes and policy issues*. London: Routledge.

UNDESA. (2012). *World Population Prospects, the 2010 Revision*. Retrieved from http://esa.un.org/wpp/

University of California Berkeley (USA), & Max Planck Institute for Demographic Research (Germany). (2013). *Human Mortality Database*. Humanmortality.org.

Wongboonsin, K., Guest, P., & Prachuabmoh, V. (2005). Demographic change and the demographic dividend in Thailand. *Asian Population Studies*, *1*(2), 245–256.

Yang, S., Khang, Y., & Harper, S. (2010). Understanding the rapid increase in life expectancy in South Korea. *American Journal of Public Health*, *100*(5), 896–903.