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Pension Policy in Emerging Asian Economies with Population Ageing: What Do We Know, Where Should We Go?

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ABSTRACT

This paper reviews the current state of knowledge about pension policy and pension policy formulation in emerging economies undergoing demographic transition, and, with this background, indicates possible directions for future policy development. The countries we consider are primarily located in East and Southeast Asia, a region which is home to more than 30% of the world's population, and are characterised by increasing life expectancy, falling and/or low fertility ratios, immature social protection policy structures, high rates of informal employment, and in many cases, high rates of co-residency.

These features point to the relevance of strands of research which do not normally sit together in thinking about the evidence base for pension policy formulation and its impacts. They include fiscal implications; impacts on economic growth and intergenerational affordability; the relationship between alternative pension models and labour market (in)formality the role of public benefits in the context of multi-generation households and intergenerational transfers; and the limitations of pension administration for older people who have worked in the informal sector for most or all or their lives.

The paper documents what we know about these various aspects of the issue and identifies knowledge gaps. On the basis of the evidence we do have, we indicate policy reform directions, in particular regarding development of social pensions directed to older people who have worked in the informal sector.

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1. Introduction

This century has been characterized as the Asian Century; but even more, it is the Ageing Century. Population ageing is a global phenomenon, exerting unprecedented pressures on long-established social norms and policy institutions around the world. The rapid demographic transition in many Asian countries presents a special challenge. These societies will get old before economic growth delivers affluence, making the further development of strong social (income, health, and long-term care) support structures problematic. Further, regional and within-country migration, leading to separation of families across generations, is combining with declining fertility to reduce effective intergenerational family support, especially family-based care of older people, which has for so long been a traditional part of the Asian way of life. While some countries within the Asian region have developed policy structures designed to address, at least in principle, some of these challenges, their scalability, efficacy and sustainability have in most cases yet to be proven.

This paper focuses on retirement income policy in emerging economies of East Asia and Southeast Asia (EA and SEA) which face the above set of common challenges. We begin in section 2 with documenting common economic and demographic forces at play in EA and SEA countries, reporting on their rapid population ageing and informality in the context of both the labour force and the overall population. Section 3 then provides an overview of retirement income policy initiatives, referring to the common three-pillar pension policy design and emphasising their diversity across the region, issues of administration, and evidence on household level impacts of pension policies. Section 4 examines the feasibility and design issues of addressing the inevitable issues of mature workforce participation, older cohort inequality and old age poverty through effectively and sustainably developing pension systems, in particular for non-contributory pensions. This includes a numerical example costing the introduction of social pensions calibrated to Indonesia. The final section summarises our conclusions.

2. Ageing and Informality

In this section we consider the interaction of population ageing and informality in the main emerging economies of EA and SEA, which include the world's most populous country, China and fourth most populous country, Indonesia. We begin by discussing rapid population ageing in the two Asian sub-regions. We also provide comparative demographic data for developed regions (Europe, Northern America, Australia/New Zealand and Japan). The demographic data are mainly based on United Nations (2019) population estimates and projections. We then report on employment informality as well as informality at older ages. Household data are derived from major reports on EA and SEA regions by the World Bank (e.g., World Bank 2016) and other international institutions (e.g., International Labour Organization 2018).

2.1 Demographic Change and Population Ageing

Population ageing in emerging EA and particularly many SEA economies is at an earlier demographic stage compared to ageing societies in the developed world. But the speed of demographic transition is much faster. Emerging EA and SEA economies are projected to face

very pronounced population ageing over the next 80 years, driven by substantial declines in fertility rates and projected improvements in survival rates and longevity. This demographic change will result in fast growing elderly populations and large declines in population growth.

We first document the past and projected changes in the key demographic drivers – fertility and life expectancy implied by mortality rates. We then present and discuss the demographic estimates and trajectories for the old-age dependency ratio and the annual growth rate of the total population.

Demographic Drivers

Table 1 shows the past, current and future total fertility rate and implied life expectancy at birth (for both sexes) in the main emerging EA and SEA economies and compares these to developed regions. The projected rates are based on the medium fertility variant of the UN, representing the most commonly used future scenario.

Total fertility rates (TFR) (i.e., live births per woman of reproductive age) have experienced pronounced declines in the selected emerging Asian countries in the past 60 years. For example, in China the TFR has declined from 5.5 births per woman in 1955-60 (with the peak of almost 6.3 births in 1965-70) to currently about 1.7.[3] Similar developments were seen in SEA. For instance, the TFR in Indonesia and Vietnam declined from 5.5 and 6.2 in 1955-60, to current (2015-20) TFRs of 2.3 and 2.1, respectively. Notice that these declines are much more pronounced than those observed in developed regions, where average TFR was 2.8 births per woman in 1955-60 and current TFRs are not that different from those in the displayed Asian economies. Furthermore, many emerging SEA economies are projected to undergo further declines in the TFR over the course of this century. For instance, the Indonesian TFR is projected to further decline to 1.8 by 2100.

Sustained improvements in mortality/survival rates have led to greater longevity, as shown in Table 1. In China, the average life expectancy at birth (for both sexes) has increased by more than 30 years in the last 60 years, from less than 45 years of expected life in 1955-60 to over 75 years now.[4] Compared to more developed regions, emerging Asian economies have lower life expectancies but they have experienced more significant improvements in the past. Life expectancy at birth has increased by over 25 years in Indonesia and by about 18 years in Vietnam in the last 60 years, compared to 11.5 years in developed regions over the same period.

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[3] Note that the UN population data for China do not include Hong Kong and Macao, Special Administrative Regions (SAR) of China, and Taiwan Province of China, which all have a lower TFR. A number of fertility studies on China using microdata found a lower TFR than the UN estimate reported above. For example, Guo et al. (2019) using the Chinese 2015 1% sample census data found the overall TFR to be 1.047 in 2015.
[4] There are also significant mortality variations and life expectancy gaps across regions. For example, in China the life expectancy gap (at birth for both sexes) between the richest and poorest regions exceeded 10 years in 2010 (for details, see Yang and Lu 2019).

Table 1: Demographic Drivers and Population Ageing in EA and SEA*

Region/country	Total fertility rate[a,b]			Life expectancy at birth[a,c]			Aged dependency ratio[d]			Population growth rate[a,e]		
	1960	2020	2100	1960	2020	2100	1960	2020	2100	1960	2020	2100
Eastern Asia[f]	5.0	1.7	1.8	46.7	77.8	88.1	8.0	20.9	65.6	1.6	0.4	-0.5
China	5.5	1.7	1.8	44.5	76.6	87.6	7.6	18.5	64.3	1.5	0.5	-0.5
Mongolia	6.3	2.9	1.9	46.1	69.5	82.8	9.7	7.4	39.7	2.2	1.8	0.1
Southeastern Asia	6.1	2.2	1.8	49.2	72.5	83.6	7.8	12.0	52.0	2.7	1.1	-0.3
Cambodia	6.9	2.5	1.7	41.0	69.4	81.6	6.0	8.7	45.9	2.5	1.5	-0.4
Indonesia	5.7	2.3	1.8	45.1	71.4	83.7	7.6	10.6	50.9	2.5	1.1	-0.3
Lao PDR	6.0	2.7	1.7	42.4	67.4	80.8	5.7	7.9	49.7	2.3	1.5	-0.6
Malaysia	6.4	2.0	1.7	58.5	75.9	86.4	8.1	11.8	58.4	2.9	1.3	-0.2
Myanmar	6.0	2.2	1.7	40.9	66.8	78.5	7.0	10.6	41.2	2.1	0.6	-0.4
Philippines	7.3	2.6	1.7	59.8	71.0	82.0	7.7	10.0	47.4	3.4	1.4	-0.3
Thailand	6.1	1.5	1.7	53.3	76.8	88.1	7.5	20.2	73.5	2.9	0.3	-0.7
Timor-Leste	6.4	4.1	1.8	32.5	69.2	80.8	5.5	9.1	39.8	1.5	1.9	-0.2
Vietnam	6.2	2.1	1.9	57.3	75.3	85.8	9.9	12.6	58.2	3.0	1.0	-0.3
More developed regions[e]	2.8	1.6	1.8	67.7	79.2	89.2	15.2	32.7	59.1	1.2	0.3	0.0

Notes: *United Nations (2019); [a]Five year average ending in displayed year; [b]Births per woman of reproductive age; [c]Both sexes (in years); [d]Ratio of population aged 65+ to population aged 20-64 (in %); [e]Annual growth rate (in %); [f]Only selected "emerging" economies are considered here; [e]Comprising Europe, Northern America, Australia/New Zealand and Japan.

To a lesser extent, the demographic transition in the EA and SEA regions has been and will be impacted by migration. While developed countries have experienced and are projected to experience positive net (international) immigration rates, the opposite holds for many emerging Asian economies, facing net migration outflows. For example, in Vietnam, the average net migration rate, defined as immigrants less emigrants per 100,000 of population, was around -1%, indicating almost one million net emigrants (United Nations 2019). Furthermore, as reported by Chomik and Piggott (2013), EA and SEA countries are the source of 25 million migrants, with high levels of international labour migration that has grown 6% per year and with migration flows expected to intensify due to increased skilled migration.[5]

Population Ageing

To demonstrate rapid ageing of EA and SEA populations, Table 1 reports estimates and projections for the old-age dependency ratio and the annual growth rate of the total population. The old-age dependency ratio is defined in this paper as the percentage of the population aged 65+ relative to the working age population aged 20-64. Note that the inverse of the age dependency ratio is the potential support ratio that indicates how many people of working age there are to "potentially" support the elderly. In the emerging EA and SEA economies, the majority of the elderly population works and relies on own earnings at older age, with only limited public support in most countries and declining private transfers for older people. Table 1 shows that in China, the old-age dependency ratio has more than doubled over the last 20 years, increasing to current 18.5%, and it is expected to further increase by a multiple of 3 to over 64% by 2100. In fact, the old-age dependency ratio in China is projected to be higher in 2100 than the average ratio among developed regions.

The displayed SEA economies have experienced much smaller increases in the old-age dependency ratio to date than China has, but they will face much larger increases over the course of this century. For instance, in Indonesia the old-age dependency ratio increased only slightly in the last 60 years to just over 10% currently, but the ratio is projected to increase by a multiple of 5 by 2100. These dramatic changes in the old age dependency ratio are due mainly to projected increases in elderly populations but also due to declines in (growth rates of) working age populations. Currently about 12% of the total Chinese population is aged 65+, but the elderly population share is expected to reach almost 32% in 2100 (UN 2019). The increases in elderly population shares that are projected for Indonesia and Vietnam are even more pronounced, e.g. in Vietnam, increasing from around 8% now to almost 30% in 2100.

Population ageing will be accompanied by declining population size, as depicted by changes in the population growth rates in Table 1. Although these populous regions have experienced much higher growth of their populations in the past (compared to developed regions) driven

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[5] Many emerging Asian economies have also been undergoing large internal migration associated with economic development and rapid urbanization, with people largely migrating from rural to urban areas in search of jobs and higher wages. In China, internal migrants account for 20% of its population (Zheng et al., 2020).

by very high TFRs, the future population growth rates will become negative in future years. The total population in China will start declining after 2030, reaching a negative growth rate of over 0.5% per year by 2100. In Indonesia and Vietnam, their populations are projected to start declining in the second half of this century.

Such pronounced demographic changes over the course of this century will have vast economy-wide implications, directly impacting the lives of more than 30% of the world population residing in EA and SEA countries. In emerging Asian economies and particularly in SEA, these demographic changes are occurring simultaneously with other challenges. These include: (i) high informality, with both large informal employment and informal social support via co-residency and private support; (ii) large regional labour migration from the countryside to towns and cities; and (iii) undeveloped formal social security and government support, particularly for the elderly operating outside the formal sector. Below we focus on informal employment and the elderly population, with public policy initiatives discussed in detail in Section 3.

2.2   Informality and the Elderly Population

We now document informality and regional migration in emerging EA and SEA economies. We begin with the labour force and working age population, reporting on developments in labour force composition and labour incomes, and also taking into account rural-urban differences. We then focus on older people, especially their living arrangements and income sources.

Informal Employment

A common feature across emerging Asian economies is very high informal employment, defined by the International Labour Organization in terms of the employment relationship and protections associated with the job of the worker.[6] Drawing on ILO (2018) data, Table 2 reports on the share of informal employment in total employment (including agriculture) in selected EA and SEA countries and also provides the decomposition into informal workers operating in the informal sector, in the formal sector, and in households (i.e., domestic workers producing only for final use). As shown, total informal employment in all selected countries is over 50%, and in some countries over 90%. In China, informal employment is 54%, with only 5.1% of informal employment in the formal sector (i.e., workers not covered by any protection policies). In Indonesia, total informal employment is over 85%, with 67.5% operating in the informal sector, 5.8% in the formal sector and 12.2% in households.

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[6] Specifically, according to ILO (2018), all own-account employers and all contributing family members are classified as in informal employment and for employees to be considered as informal, the employment relationship should not be subject to national labour legislation, income taxation, social protection or entitlement to certain employment benefits.

Table 2: Share of Informal Employment in Total Employment (Including Agriculture)*

Country/region	Informal employment			
	Total	In informal sector	In formal sector	In households
Cambodia	93.1	77.5	14.5	1.0
China	54.4	48.4	6.1	0.0
Indonesia	85.6	67.5	5.8	12.2
Lao PDR	93.6	86.7	6.8	0.1
Myanmar	85.7	71.5	14.0	0.3
Timore-Leste	71.8	56.9	11.0	3.9
Vietnam	76.2	61.0	11.5	3.7
Developed countries[a]	18.3	14.7	3.4	0.2

Notes: *ILO (2018); [a]Developed countries with per capita income of $12,236 p.a. or more.

ILO (2018) also shows that informal employment in EA and SEA differ significantly by region (rural vs urban), education and over the lifecycle. In China, rural informal employment is much higher at 82%, compared to urban informal employment at 36%. In Indonesia, the difference is much smaller, with rural informal employment at 91.3%, but also with high urban informal employment at 80.3%. As expected, informal employment is negatively correlated with educational attainment. The decline in informal employment for those with higher education is much more pronounced in SEA than in developed countries. The lifecycle profile of informal employment is U-shaped, being very high among young populations (15-24) and older populations (55+), exceeding 90% of total employment for those age groups in some Asian countries. Those workers classified in informal employment also work significantly more hours in the emerging economies of Asia and the Pacific, with 40% reporting working 48+ hours per week, compared to 15% across developed countries.

Although those in informal employment work more hours, their overall labour earnings are significantly smaller than those in formal employment. Using the Indonesian Family Life Survey (IFLS), Kudrna et al. (2020) find that the average earnings gap between those in formal and informal employment is almost 135% and that the earnings gap widens with age, exceeding 200% for cohorts 55+. Comparing IFLS 2007 and 2014 waves, Kudrna et al. (2020) show that the movers from the informal sector have higher earnings than the stayers in 2014, with the gap between earnings increasing initially but declining at older ages.
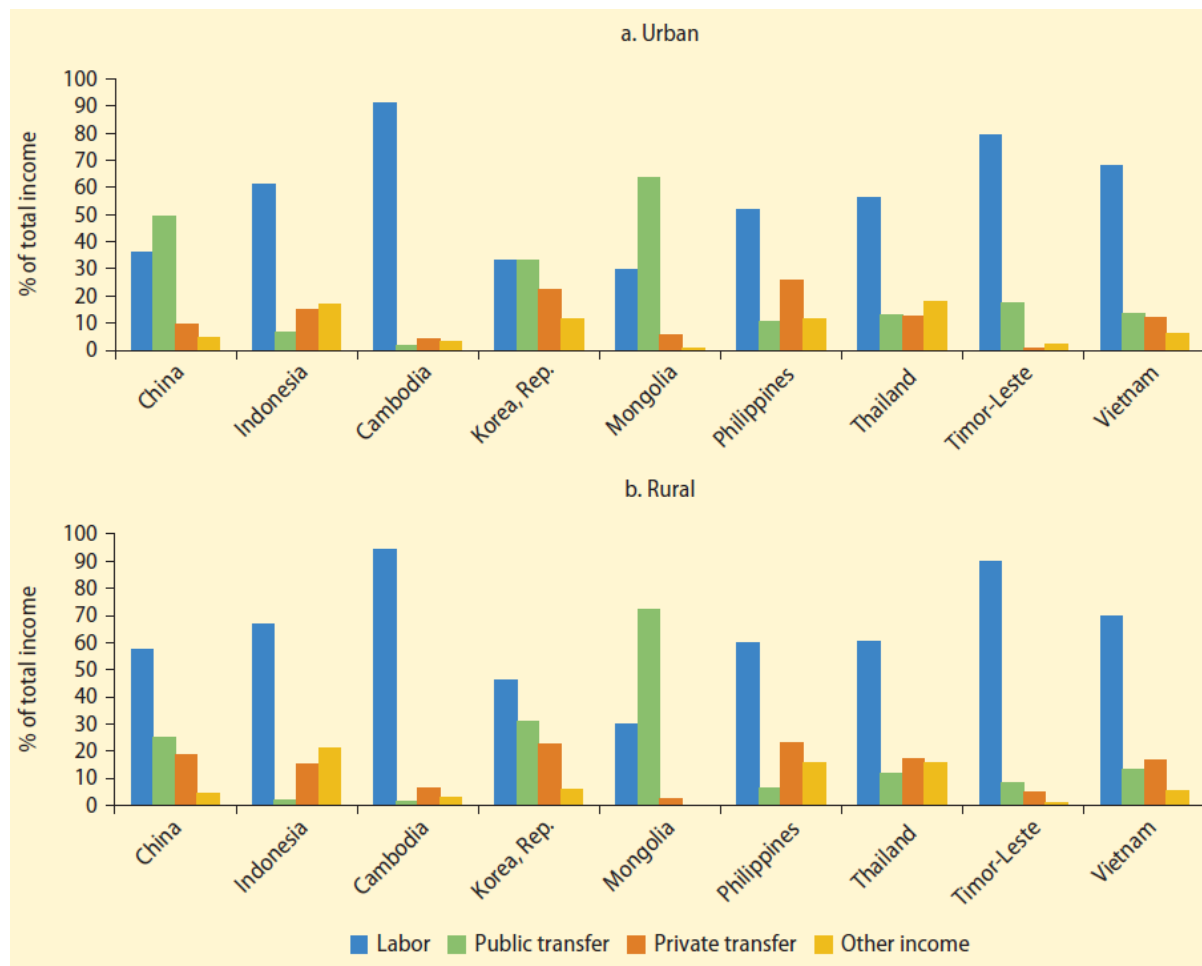
In addition to being very high, informal employment in most of emerging EA and SEA has been remarkably persistent over time, with the partial exception of China, and this is especially so in SEA. Hence, it is very likely that high informal employment will remain a key feature of most Asian economies for some decades into the future, even as they grow and experience pronounced population ageing.

Older People

We now focus on older people, their income sources and living arrangements. Figure 1, which is taken from World Bank (2016), depicts the sources of income at older age in various EA and

SEA countries. It reveals that the main source of income at older age is own labour income and the reliance on labour income is higher in rural areas. In contrast, public transfers represent a relatively minor share of income at older age in most Asian countries, although there is significant heterogeneity in the reliance on public transfers/pensions. Only in urban China and Mongolia are public transfers the main source of elderly income.

Figure 1: Income Sources for People Aged 60 to 85 in EA and SEA

Source: World Bank (2016).

Figure 1 indicates that private transfers represent the second most important source of elderly income in rural areas in most Asian emerging economies. Furthermore, the relative importance of private transfers in the total income of older people increases with age. Kudrna et al. (2020) find that in Indonesia for people aged 50-59, private transfers account for less than 20% of the total income, but those aged 70+ derive more than 50% of their income from private transfers. While the large majority of the old-age population does not receive a public pension, more than 70% of those aged 70+ receive positive net money transfers from their children.

Not only financial private transfers but also living arrangements with high elderly co-residence rates confirm the importance of family for old-age support in emerging EA and SEA economies. According to World Bank (2016), for people aged 60+, co-residence rates range from 25% to over 80% across emerging Asian countries. They are particularly high in lower-

income countries and for women at very old age. For example, Kudrna et al. (2020) show that in Indonesia most older people live with their children and that share (of those with no spouse but with child) increases significantly with age, especially women. There has been some decline in elderly co-residency rates over time, most notably in China and to a lesser extent Thailand, but overall rates are high by global standards for middle-income regions (Palacios and Evans, 2015).

While the starting point on elderly poverty relative to younger cohorts varies across EA/SEA countries, population ageing with fewer adult children to provide within-family financial support for older people and larger elderly populations living longer lives will challenge social cohesion in emerging Asian economies, many of which without government policy interventions and public transfers will experience increasing hardship and inequality particularly among older people.
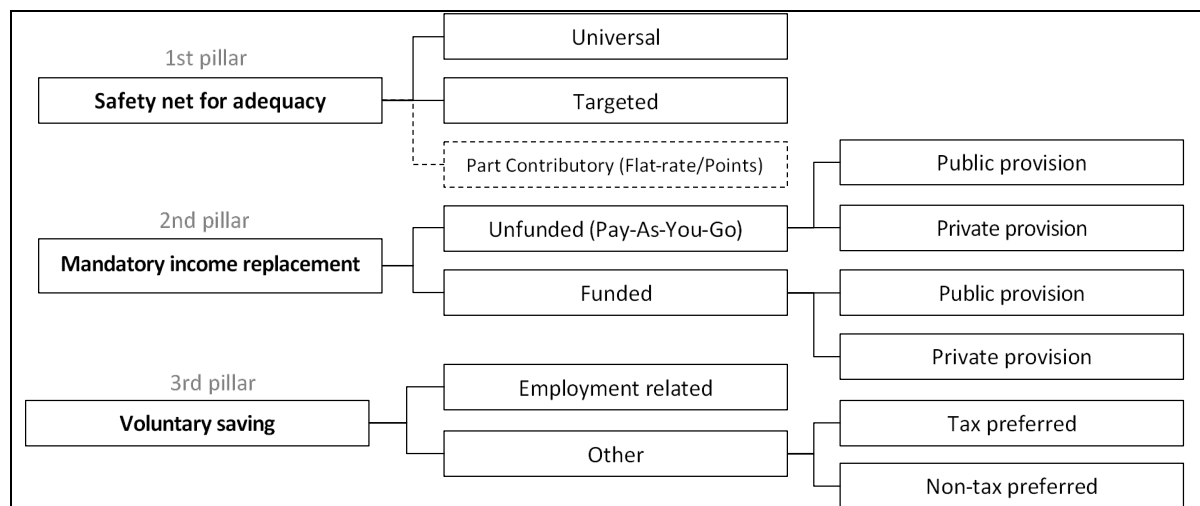
3.   Pension Policy

In this section we first introduce a simple schema to characterise and distil the various features of retirement policies. The main focus of this section is then on pension policies in emerging EA and SEA countries, emphasising both their common features and their diversity.

3.1   Multi-Pillar Pension Taxonomy

Each country has a distinctive retirement income system. They are best systematised in terms of the 3-pillar system (Bateman et al., 2001; OECD, 2017), as depicted by Figure 2.

Figure 2: Multi-pillar Retirement Income Designs

Source: Authors' compilation.

First pillar benefits are unrelated to an individual's past earnings and are sometimes referred to as non-contributory or social pensions. The payment, financed out of general revenue, may be universal or targeted. These structures serve as a *safety net* for those without other savings and aim to reduce poverty among the elderly.

By contrast, the aim of the second pillar is to provide *income replacement* – partly replacing income enjoyed pre-retirement. The benefits are typically related to a person's salary, based either on salary profile or on contributions into a pension fund whose value is geared to salary, usually up to some ceiling. Second pillar benefits can be unfunded, where the individual has a claim on the future revenues of employers, insurers, or governments, or pre-funded with an underlying accumulation converted into a lump-sum or income stream. Such schemes can be administered through public social security programs or through private pension funds, at arm's length from government.

The reason for mandating saving in a second pillar is two-fold. Firstly, without it, some people with capacity to save will nevertheless choose to rely (or "free-ride") on the first pillar. Secondly, mandatory saving acts as a commitment device. Many people may want to and can afford to save a portion of their income for retirement but don't get around to it, displaying myopic behaviour (Mitchell and Piggott, 2016).

There is also often a third pillar, involving incentives for further voluntary saving, for people who want retirement incomes beyond the mandated level, though this is marginal currently in emerging EA and SEA.

3.2   Pension Policy in Emerging EA and SEA Economies

Pension systems in emerging EA and SEA countries combine considerable diversity in design and instrument mix with a number of common features and challenges. The key elements of the pension systems of EA and SEA countries are shown in Table 3. Most countries in the region rely on contributory pension schemes. However, progress in expanding coverage of contributory pension schemes has been slow and often stalled at fairly low levels, primarily due to high labour market informality and demand-side issues among workers and employers. At the risk of over-simplification, the pattern in contributory schemes is one where unfunded defined benefit (DB) plans exhibit limited coverage, while pre-funded defined contribution (DC) plans offer very low benefits.[7] This has in turn led to diversified approaches to providing old age financial protection, with a proliferation of non-contributory social pension schemes and, in a subset of countries, matching defined contribution (MDC) programs targeting informal workers. Despite this, there remain major challenges of financial protection for those outside mandated contributory schemes, in the case of social pensions due to relatively low benefit levels (and in some cases, tight targeting), and in the case of MDCs due to limited take-up.

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[7] There are some exceptions to this pattern, such as Mongolia, China and Malaysia.

Table 3: Pension Policy in Emerging EA and SEA Countries*

Selected EA and SEA countries	Non-contributory		Part-Contributory		Compulsory income replacement			Mandated public and private sector
	Universal or pension-tested only	Targeted	Flat-rate	Points / formula	PAYG	Funded		Parallel or integrated
						Public	Private	
Cambodia					x			Parallel but integration planned
China				x	x	x		Parallel but convergence initiated
Indonesia		discuss			x			Parallel
Korea		x			x			Parallel
Lao PDR					x			Parallel
Malaysia[a]		x	x		x	x		Parallel
Myanmar[b]	x				x	x		Parallel
Philippines		x			x			Parallel
Thailand[c]	x		x	x	x	x		Parallel
Vietnam[d]	x	x		x	x			Partly integrated

Notes: *World Bank (2016 and forthcoming); OECD (2018); [a]Malaysia PAYGO DB only for civil servants; [b]Myanmar plans to introduce DC provident fund for public workers with less than 10 year work history in 2021; [c]Thailand has two separate MDC schemes, and DC pillar in mandated only for public sector; [d]Vietnam social pension, targeted 65-79 and pension-tested from 80.

This section examines past developments in and the current state of play with pension systems in emerging EA and SEA in terms of coverage, adequacy, and sustainability.[8] We look first at non-contributory social pensions, and then at matching schemes for informal workers and contributory schemes for the formal sector.

Social Pension Programs

There has been a proliferation of social pension programs in the past two decades and they are now part of the pension systems in much of emerging EA and SEA. Key features of the schemes are provided in Table 4.[9] As shown, there is a combination of variations and commonalities in design. The most significant variation is coverage, which ranges from 82% of the relevant age cohort in Thailand, through around 70% for those 65+ in Korea and 50% of those over 60 in Philippines, to 13.5% of those 60+ in Vietnam and much lower again in Myanmar. Cambodia and Lao PDR have no elderly social pension at all, while Indonesia covers only 0.1% of the over 60 population with its social pension and a further 4 percent with an elderly window of a targeted cash transfer program, but the elderly have to live with children to qualify.

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[8] This section draws in part on work with Robert Palacios (World Bank) for a forthcoming World Bank report on social protection in Asia-Pacific, and World Bank (2016).

[9] China is included in this discussion, though the design of its pension scheme for informal workers is a hybrid of social and matching contributory pension, and thus is discussed in detail in the following section. Nonetheless, given the scheme objectives, comparison of parameters to social pensions is instructive.

Table 4: Key Indicators for Social Pensions in Emerging EA and SEA Countries

Country	Eligibility age	Targeting	Coverage in eligible age group	Benefit level/GDP per capita	Spending as % of GDP
China	60	15 years of flat contribution	64% of 60+ in receipt (160.3 mln)	93 RMB monthly basic benefit. 1.7% GDP pc (20**)	0.31% of GDP
Indonesia	70	Tightly targeted Poor and co-resident with children	30,000 = 0.11% 1.1 mln = 4.0%		
Thailand	60	Pension tested	82%	600-1,000 baht monthly depending on age. 2.9-4.9% PC GDP	0.4% of GDP (2020)
Vietnam	60-80	Poverty targeted 60-79 + pension tested 80+	13.5% of 60+ cohort	360,000 VND monthly (from 7/21). 6.8% of 2020 GDP PC	0.11% of GDP
Malaysia	60	Means-tested	4.2%	350 MYR monthly. 9.4% GDP PC	0.04% GDP
Myanmar	85	Fully universal	70% of 85+ cohort in practice. Around 1.65% of 60+ cohort.	5.3% of per cap GDP (2020) 10,000 kyat monthly	0.02% of GDP
Philippines	60	Loose means test	50% (3.8/7.55 mln)	PHP 500 per month. 3.53% of 2019 PC GDP	0.1-0.12% of GDP (2019)
Korea	65	Means-tested	73%	Sliding scale with maximum benefit KRW 250,000 monthly. 9.4% of GDP PC 2019.	0.32% of GDP (2011 – update)

Sources: World Bank staff and government documents and budgetary sources; HelpAge International (2018); OECD (2019).

The coverage differences are primarily driven by the approach to eligibility and targeting of the social pension. First, they exhibit variation in coverage due to differences in eligibility age thresholds. While most EA/SEA have an eligibility age of 60, it is as high as 85 in Myanmar and 80 for the majority of beneficiaries in Vietnam. Apart from variations in eligibility age for social pensions, coverage differences are also due to the strictness of means-based targeting also exhibits variation (see below on targeting methods for social pensions).

Despite the variation in the coverage of social pensions across EA/SEA, in all countries the generosity of benefits and public spending on the schemes are very modest. No country has an elderly social pension benefit more than 10% of per capita GDP and the benefit is much lower in China, Philippines and Thailand. All are well below levels seen in most OECD countries

and other developing countries such as Brazil, South Africa and most Eastern European countries.[10] There are in general no explicit indexation rules in the social pension programs of emerging EA and SEA, with adjustments in benefit levels largely ad hoc and discretionary. Even in EA/SEA countries with higher coverage of social pensions, public spending remains modest, with Thailand easily highest at 0.4% of GDP. All social pension programs in EA/SEA are general revenue funded. Not surprisingly given the low levels of benefit, the limited available studies for developing Asia on the impact of social pensions on elderly poverty find very modest reductions in poverty (Badiani-Magnusson, 2016 and Giles and Huang 2016 for Thailand; Zhang et al., 2014 for China; HelpAge International 2018 for Philippines).

Thailand provides an interesting case with respect to social pensions.[11] A tightly means-tested social pension was introduced in 1993 and covered around 400,000 elderly in the first half of the 2000s. Subsequently targeting was decentralized and loosened in 2005 to include around 1.8 million elderly before the program was made quasi-universal from 2009, subject only to a formal sector pensions test for those over 60, and currently covering over 80 percent of the elderly cohort. Just as importantly, coverage of the bottom quintile increased over three times from 2006 to 2010, from just under 30% in the initial year.[12] The basic flat benefit level roughly doubled in real terms from 2000 to the mid-2010s, and an increase in the benefit level for each decade of age was introduced (see Table 4).

Implementation. A key factor in terms of coverage and impact of social pensions is the ability of countries to reliably identify, target and pay target beneficiaries. For identification of potential beneficiaries, there has been considerable progress in EA/SEA in recent years. Historically, documentation to establish identity and age was scarce, as coverage of birth certificates or equivalent documentation was at best partial, especially for older people. That situation has changed sharply, with the spread of national ID systems which provide more robust proof of identity and age. Countries such as Indonesia and Thailand already have foundational biometric national IDs which uniquely identify people and basic details such as age and gender and facilitate application for benefits. Philippines is rolling-out an open-source biometric ID presently, and Vietnam is accelerating roll-out of its national biometric ID and is aiming to cover around half the population by mid-2021. As of 2018, the shares of population without some form of reliable identity document had fallen rapidly, with full coverage in Thailand and almost complete coverage in China (98%), Vietnam (96%) and Indonesia (92%), and high coverage in Philippines (85%) and Cambodia (84%) (Identity for Development database, 2018, World Bank). Where there is no official document to verify age when registering older citizens for national IDs, countries rely on different combinations of less formal documents (e.g., baptismal certificates or even horoscopes) and/or some form of community validation of approximate age.

Looking at targeting practice, social pensions currently operating in emerging EA/SEA countries use different approaches. Myanmar is fully universal over the eligibility age. Beyond that, Thailand and Vietnam for the 80+ population use pension-testing, whereby those

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[10] See World Bank (2018), which provides global comparative figures on social pension generosity.
[11] See Sakunphanit and Suwanrada (2011) for an overview of the evolution of the scheme.
[12] Badiani-Magnusson (2016).

receiving formal sector pensions are excluded from social pension receipt. Countries such as Malaysia, Vietnam for those under 80 and Indonesia in its very small program use tighter means or proxy-means testing which leverages the general welfare targeting systems in the country. Philippines relies on a combination of local level assessments and information from the Listhanan social registry. More broadly for targeted social assistance for the general population, in emerging EA/SEA countries, proxy-means testing (PMT) is used in targeted social assistance programs in Indonesia, Philippines, Vietnam and Myanmar. A PMT uses household survey data to generate a formula for applicants which incorporates variables most strongly associated with household poverty. This in turn generates a weighted score for applicant households which is used to determine eligibility. While resulting in progressive targeting, there remain significant challenges with exclusion errors, for example of around 50 percent in the population eligible for targeted social assistance in Indonesia and Philippines (World Bank, forthcoming).

With respect to benefit payment, bank accounts and even mobile-based payment have become increasingly common in the region. Overall, the rate of bank account ownership was mixed across EA/SEA as of 2017, with high rates in countries such as China (80%), Malaysia (85%) and Thailand (82%), but very incomplete coverage in Indonesia (49%), Vietnam (31%) and Philippines (34%). Despite this mixed picture for the overall population, there is often high coverage of accounts among recipients of social transfers, with the overwhelming majority of beneficiaries receiving transfer payments through bank accounts, with the notable exception of Vietnam. Indonesia is a case in point, where poor households receiving targeted social transfers into bank accounts rose from only around one fifth in the mid-2001 to over 90% by 2019, and acted as a key driver of broader improvements in financial inclusion. The COVID pandemic has accelerated these trends, with for example Thailand enrolling and paying emergency benefits to around 22 million informal workers through mobile-based apps and accounts. A key facilitator of this trend in most EA/SEA countries has been the spread of e-KYC (Know-Your-Customer), including more liberal KYC rules for pandemic payments.

Part-Contributory and Matching Pension Programs

Distinct from formal sector contributory schemes and social pension, some EA/SEA countries have introduced pension schemes which require a low (often flat) contribution from informal workers which are matched with a government subsidy. These matching defined contribution schemes (MDC) are voluntary schemes not reliant on an employer relationship which aim to incentivize participation of informal workers through a publicly-financed contribution match, which varies in generosity and structure. MDCs have been introduced in Korea, Vietnam, Thailand, and Malaysia.[13] The impact on take-up of MDC schemes in EA and SEA has largely been modest or even marginal, adding only around 1.5 percent to membership in the Malaysian provident fund, and around 1.5% of the working age population in Vietnam, while Thailand has achieved somewhat more success with two MDC schemes adding around 8 % of the working age population, though there may be some double counting across schemes. The notable exception is Korea, with its MDC for "farmers and fishermen" more than doubling

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[13] The Chinese informal sector scheme is also structured in part as an MDC, though closer to a social pension in financing terms, and hence not discussed in this section.

coverage between 1995 and 1999 with a generous match. The modest impact on participation of informal workers in most of EA/SEA is consistent with global experience in developing and developed countries, where MDCs have typically tended to have modest take-up and play at best a supplementary role in the broader pension architecture.[14] The global experience suggests a potential supplementary role for MDCs that have attractive matching rates, simple design, and accessible administrative arrangements. However, it is important not to expect too much from MDCs which are unlikely to be the "silver bullet" which adequately addresses the coverage gaps among informal workers in contributory systems.

The most innovative case of these programs is China, which from 2009 rolled out a unique hybrid pension scheme for rural and later urban informal workers which requires a modest annual contribution from any income source, and after 15 years of contributions triggers payment of a flat basic pension at age 60.[15] There is also a matching contribution from the local government level of 30% of the individual contribution. Contributions are low and flat but tiered (as low as 100 RMB per year, though with considerable variation across provinces). The basic benefit level is also modest, with a national minimum benefit of 93 RMB per month over age 60 as of mid- 2021, but with some provinces topping up to as high as 1,100 RMB monthly in Shanghai. The central authorities finance the basic benefit entirely in western and central provinces and half in coastal. The design results in the total flow of benefits to a typical participant being 80-85 percent public subsidy. The contributory element of the scheme can perhaps more usefully be characterized as a membership fee of sorts during working life, with the policy motivation (in contrast to a pure social pensions) of building a record keeping base on informal workers which may facilitate migration to formal sector schemes at a later point.

Contributory Earnings-related Pension Programs

Contributory pension programs continue to represent the major component of the pension system in much of emerging EA and SEA in expenditure terms, but there is considerable diversity in the policy framework of contributory pension programs in the region. A first source of diversity is between countries that rely primarily on DB schemes and those which rely primarily on DC schemes. Countries which were formerly under British rule have tended to have DC/provident funds as the primary approach. In contrast, others tend to have DB as the bedrock of their systems (e.g., Vietnam, Thailand, Philippines, Cambodia and Lao PDR) or hybrid DB/DC (China). For both types of schemes, coverage beyond the formal sector is a continuing challenge, with adequacy a key additional challenge for DC schemes and sustainability for several DB schemes. There is also a considerable range in the combined employer/employee contribution rates in both DB and DC systems, from as low as 6 and 8 percent in Thailand and Korea respectively, to as high as the mid- 20% range in China, Vietnam, and Malaysia (Social Security Administration, 2018).[16]

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[14] See Hinz et al. (2013) for a review of experience in OECD, Latin America, Asia and Africa.

[15] See Dorfman et al. (2013).

[16] Countries can also be divided into those who adopted a national pension scheme when the population was fairly young, often not long after WWII (China, Philippines, Malaysia, Mongolia and Singapore), and a second set which adopted national schemes late in their demographic transition (Korea, Vietnam, Thailand, Indonesia,

An additional source of diversity in contributory systems is between the bulk of Asian countries with parallel (and more generous) schemes for civil servants and private sector workers, and a relatively small number with integrated (e.g., Mongolia, Singapore, and transition underway in China) or partly integrated (Vietnam) schemes. As already noted, across emerging Asia, voluntary occupational schemes are either largely absent in practice, or fairly modest in coverage (e.g., China).

Policy assessment. Coverage of contributory schemes in much of emerging EA and SEA currently sits around or below average global coverage by country income level. However, coverage rates have seen only modest gains in recent decades, with limited expansion beyond the formal sector. In effect, demographics are winning the "race" against expansion of contributory schemes. There are a few standouts in emerging EA and SEA, with Malaysia and Mongolia notably above global coverage averages by income level, and a group of countries which cluster around the global average, including China, Vietnam, Korea, and Philippines. In contrast, in lower income ASEAN countries, participation is in single digits. With few exceptions, there is a strong relationship between higher informal and rural worker shares and lower coverage. From a gender perspective, there is variation across countries, with female pension receipt rates low relative to men in Indonesia, Korea and Malaysia, but closer in China, Vietnam, and Myanmar, mirroring the share of women in wage employment relative to men (Chlon-Dominczak, 2015; Majoka and Palacios, 2018).

With respect to adequacy of benefits, for defined benefit schemes, there is considerable variation in target replacement rates across (and within) emerging EA and SEA countries, ranging from around 40% in Indonesia, the Philippines and Mongolia to as high as 75% in Vietnam for private sector workers, and as high as 80-90% of civil servants in countries such as China and Philippines.[17] Overall, DB schemes in developing Asia have reasonable replacement rates for those with full work histories, but there remain adequacy challenges in immature schemes for the initial generation of workers with partial contribution histories (e.g., Thailand, Korea and Vietnam). The substantial gap between the generosity of civil service and private sector pensions seems hard to justify in terms of equity, fiscal implications, and administrative and labour market efficiency, and is increasingly out of line with global trends.[18] The small number of EA/SEA countries with DC schemes face adequacy challenges due to factors including generous early withdrawal rules, low contribution density (especially for women), and low withdrawal ages in some cases. In Asia, countries with DC schemes avoid explicit government return guarantees over the long term.

As for eligibility, the retirement age is a key factor. For a set of emerging EA and SEA countries, retirement or eligibility ages are low relative to life expectancy of older workers. This includes

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and Lao PDR). There is a further sub-set of very late adopters such as Cambodia and Myanmar who are only now in the process of introducing a national contributory pension scheme.

[17] Based on full contribution history from age 25 to official retirement age. While most contributory schemes in developing Asia are gender neutral (OECD, 2018), Vietnam, the Philippines and China have higher female replacement rates for equivalent work history, but in practice lower average female benefits due to lower wages and contribution densities. See also OECD (2018) for relative generosity across the income distribution.

[18] Both China and Vietnam are gradually bringing the pensions of civil servants in line with those of private sector workers, though in both cases an extended transition period is anticipated.

China, Vietnam, Thailand, and Indonesia. Low official retirement ages are exacerbated in some by early retirement provisions which lower the median age at retirement in contributory schemes by 2-3 years. In socialist countries and Mongolia there are also 5-year differences in female and male retirement ages. Several countries have implemented or initiated gradual increases in retirement ages, including Vietnam, Indonesia, and Malaysia, and China has indicated that retirement ages are likely to rise in the 14th Five Year Plan period. A second set of countries, including Korea, Philippines, and Singapore have retirement ages more in line with OECD averages.

A final crucial factor to consider with pension systems is financial sustainability. For DB schemes, the challenge is sharply different from DC schemes. For latter, they are inherently financially sustainable, absent a guaranteed rate of return or some form of minimum benefit, which does not happen in emerging EA/SEA. For DB schemes in contrast, parameter design is crucial to sustainability. In this respect, there is diversity between and within national schemes. One consistent feature is that many of the standalone civil servant schemes are not internally sustainable at current levels. For private sector schemes, there is considerable variation, ranging from schemes which are already unsustainable (such as Mongolia which has an annual pension deficit of around 2.5% of GDP and rising) or will be soon if not reformed further (such as Vietnam which enters a cash flow deficit this decade), to a second group which have significant fiscal pressures likely to emerge over the longer run in the absence of deeper reforms (including Thailand, China and the Philippines), to less mature schemes which do not present imminent fiscal pressures (such as the poorer ASEAN countries).

Welfare and Behaviour Impacts of Pensions

Before turning to policy implications for retirement income policies, it is useful to examine the impact of receipt of different types of pensions on the welfare and work behaviour of older people. Here, the literature for emerging EA and SEA is limited but instructive. With respect to formal contributory schemes, there is a clear impact of pension receipt on the likelihood of stopping work in countries for which multivariate analysis has been done. In China, especially urban China, the likelihood of withdrawal from the labour force when in receipt of a contributory pension is strong (43% and 38% reductions in probability of working for urban men and women respectively), and also in Indonesia, with 19% and 25% reductions in probability of work for urban and rural men respectively (Giles and Huang, 2016).[19] In contrast, for China the impact of receipt of the hybrid social pension is minimal (Zhang et al., 2014). For Thailand, there is some impact on work probability of the (more generous) social pension receipt (Badiani-Magnusson, 2016; Huang and Giles, 2017).

In terms of household poverty and consumption/income impacts, for China, Indonesia, Thailand and Vietnam, contributory pension receipt is associated with significant poverty reduction in both rural and urban areas, with reductions in income poverty greater in rural areas of all countries (Giles and Huang, 2016). For social pensions, various authors find statistically significant poverty reduction impacts for rural elderly from the Chinese contributory social pension (Zhang et al., 2014; Zhang, Luo and Robinson, 2020), as well as

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[19] Interestingly, no such impacts are seen in Korea and Japan (Giles and Huang, 2017).

positive impacts on health, and household income and food expenditure (Huang and Zhang, 2016), while for Thailand no significant poverty impacts have been found from the social pension (Huang and Giles, 2017; Badiani-Magnusson, 2016).

The spillover impacts of non-contributory pension benefits are not typically considered in a developed country context but can be important in emerging economies.[20] Inter-generational family transfers, facilitated for most EA/SEA countries by high co-residency across generations, mean that benefits paid to one generation may benefit others. This positive spillover has been documented in a number of developing countries. For EA/SEA, the literature is limited, but in China for example, there is a significant association between social pension receipt and the health status of children up to 15 years of age. The association is larger for children who are boys, 'left behind' by migrant parents, and in poor health, with improved nutritional intake being the major channel underlying the impacts (Zheng et al, 2020). Other authors also find positive effects among the children aged below 15, with the social pension leading to more pocket money received, more caring from grandparents, improved health, and higher schooling rates among children under 15 (Huang and Zhang, 2016). Analysis for Thailand finds positive impacts on educational choice and child labour from receipt of the social pension (Herrmann et al, 2021).

These findings echo those in other developing countries, where receipt of elderly social pensions has been found to have positive effects on other household members, including improvements in child health and education in countries such as Kenya, Brazil, South Africa and Uganda, reductions in child labor in Brazil, and positive effects on job search in South Africa (Ardlington et al, 2009; Moscona and Seck, 2021; De Carvalho Filho, 2012).

The final important features of the EA/SEA regional context to consider before looking at policy directions in the next section are the overall government revenue performance of countries. The East Asia and Pacific region has relatively low public revenues on average relative to other developing regions, with average revenue under 20% of GDP in 2019 (IMF (2019)). There is also considerable variation, with China having total public revenues closer to 30% of GDP, but Indonesia for example collecting closer to 15% of GDP in public revenues. At the same time, public pension expenditure in most developing EA/SEA countries is relatively low by global standards relative to their per capita income levels. For example, in Indonesia, public pension expenditure was less than one percent of GDP in 2015 (OECD, 2017).

4. Policy Directions – Expanding Social Pensions

As documented in Sections 2 and 3, the emerging EA and SEA nations illustrate a diverse range of economic and policy structures. At the same time, however, they share some critical salient characteristics – rapid growth, rapid demographic transition, persistent high informal labour force participation, and major rural to urban migration. In particular, their economy-wide retirement oriented social protection structures are mostly immature, with low coverage and/or very low benefits. These combine to suggest an economic rationale for developing

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[20] Piggott et al. (2009) provide a brief overview.

social protection structures that will allow parametric adjustment, increasing sophistication, and improved coverage and adequacy with economic development.

Perhaps most importantly, these structures need to be designed to be resilient in the face of future economic growth and shared prosperity. The various elements of retirement policy will need to operate in a coordinated and complementary fashion, encouraging rather than inhibiting development, while at the same time providing adequate financial relief to those older people who need it.

We argue here that while contributory structures will continue to have their place, they will not address the most important social imperatives presented by persistent informality for older cohorts in these countries. Further, if they are used as the primary vehicle for retirement income policy, there is a genuine risk that the mistakes of the developed world in this space will be needlessly repeated in these countries. With demographic transition, they tend to become much more expensive through time.

Instead, we join others (e.g., World Bank, 2019, Chomik et al., (2019), Kudrna and Piggott, 2019) in advocating an expansion of non-contributory (social) pension entitlements. That is to say, we emphasise first pillar structures which are not tied to employment history. Historically, these have had limited application in developing countries but that situation has changed in more recent years, with around 90 developing countries with some elderly social pension as of 2018 (HelpAge International, 2018). Typically, however, benefits are still set at very low levels, and coverage is patchy. In what follows, we will assume an earnings-related retirement policy of some kind remains in place that ideally would increase in importance as the economy grows and formalisation takes hold. But we will not consider the design of this pillar in any detail.

4.1   Policy Objectives and Economic Analysis

Policy assessment requires appeal to some set of criteria. In the present developing country context, the most natural include equity – by which we mean (mainly) that the poorest, especially those whose earning capacity has been exhausted, are covered and adequately supported; and economic efficiency – the best possible allocation of resources, including especially the supply of labour and education choices, and saving; sustainability, by which we mean the capacity of the policy to be maintained as demographics and economic circumstances change.

These criteria suggest that, whatever their detailed design, non-contributory pensions enjoy a number of advantages over their contributory counterparts, especially in highly informal economies. They can be effectively targeted to those retirees most in need, not just those who have made contributions. They can be financed not just by labour taxes (which may not be efficient) but by any tax base that is feasible, allowing public finance design to be more flexible. They do not depend on a formal employer-employee relationship, which is challenged by developing country labour markets with high informality and fluidity. Their payments also need not be related to earnings history, meaning that redistribution within retirement cohorts can be more effective. And there is no need for complex record-keeping

– all that is necessary is documentation regarding identity and age, and in the case of a targeted design, capacity to measure and rank individual or household resources (as pointed out in the Section 3 on social pension implementation). While this may not always be straightforward in the countries considered here, it is much less demanding than a record of labour payments and contributions spanning several decades.

But to bring some rigour to this discussion requires a consistent macro-economic framework. The state-of-the-art model for this purpose – long term development with consuming units treated as moving through the life-course – is the overlapping generations (OLG) model. These models have been developed in the context of developed countries, with seminal computational large-scale OLG model developed for the US tax and pension policy by Auerbach and Kotlikoff (1987). Among other advantages, they are able to take account of demographic change, and also the behaviour of agents with regard to saving and labour supply choices as they move through time. They are also able to treat consistently the revenue collection and benefit disbursements of the pension and tax systems and features general equilibrium with markets clearing conditions.

An early model to study the economy wide effects of targeting non-contributory public pensions in the UK was developed by Kumru and Piggott (2009, 2010). More recently, Kudrna and his co-authors (Chomik et al 2015; Kudrna, 2016; Kudrna et al. 2018, 2019) have developed a more sophisticated model for Australia, which features a non-contributory pension structure with targeted or means tested pension benefits.[21] Expanding this kind of model to countries with a large informal sector is a major objective of the research program of which this paper forms a part.

There are nevertheless major insights from this exercise which are able to inform the present policy discussion. First, the Australian results indicate that a targeted public pension design dominates a universal pension, improving the welfare of older households across the income distribution. Multiple mechanisms contribute to this outcome. Targeting pension payments to poorer elderly households immediately redistributes resources to the relatively poor. But these households tend to have lower life expectances, and this magnifies the reduction in the revenue requirement generated by denying the pension to the better off. Second, the price distortion facing higher income households is confined to the revenue collecting tax, since they receive no benefit. As these households are more able to accumulate assets over the life course, in part because the targeted pension system requires less revenue, more move into the resource range where benefits are not payable, thus further reducing the revenue requirement. That is, a targeted first pillar pension is more sustainable: as second pillar pensions and life course resources build with economic growth, the cost of a targeted pension reduces relative to a universal pension. Overall costs, however, will depend on the changing longevity and size of the group receiving pensions.

4.2   Features of Social Pensions

The major issues regarding first pillar pension designs relate to benefit level; coverage (universal versus targeted); eligibility age; and financing instrument.

The Benefit Level and its Adjustment

Choosing the level of benefit is clearly value-laden, related to social views of poverty. For example, the beneficiaries' needs and basic acceptable standard of living could be judged against some absolute value (e.g., a fixed basket of goods or poverty line) or against prevailing, economy-wide community standards (e.g., average earnings). Most developed countries adopt a community standard (OECD, 2018). Practice across the developing world is diverse, commonly using some absolute benchmark or proportion thereof, or reverse engineering benefit levels from the allocated fiscal envelope.[22] For the benefit itself, the most common practice in emerging economy social pension programs is to have flat benefit levels among those who are eligible for simplicity of administration.

Once a benefit level is set, it needs to be adjusted over time. If it is accepted that non-contributory pensions should become more prominent in the overall retirement policy structure, then consideration should be given to moving beyond subsistence levels of benefit, and thinking instead about benefit levels set to remove poverty. Over time, poverty thresholds are generally viewed as moving with community standards. To strengthen first pillar pensions, benefits should be indexed to wages (or preferably a wider measure of average labour earnings which better reflects informal sector trends), or perhaps a mixture of prices and wages, rather than prices alone (Whitehouse et al., 2009). Given current practice in emerging EA/SEA of no or very imprecise and discretionary indexation of social pensions, the need for rule-based indexation is pressing.

Targeting

Perhaps the most complex question in developing a non-contributory pension policy is whether it should be targeted in some way. As shown in Section 3, both quasi-universal and targeted programs have been adopted in emerging EA/SEA, and sometimes, as in the case of Vietnam, both designs apply depending on recipient age. As argued above, however, available evidence points to the superiority of a targeted program, where the mode of targeting evolves over time to reflect the sources of income, administrative capacity, and broader developments in digitization and fintech.

The key implementation challenge in emerging economies when trying to balance equity and efficiency considerations is administrative capacity to measure means where incomes are volatile and hard to observe with precision. A straightforward initial step would be the means testing of public pensions in determining eligibility for social pensions and, hence, targeting social pensions to those in informal employment with no or limited coverage by formal earnings-related pension programs.

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[22]The developing country global average social pension level is very modest at 27% of the post-transfer household income of the bottom quintile (see World Bank, 2018).

When population ageing is introduced, it reinforces the sustainability and equity of a means tested pension design in two ways (see Kudrna et al, 2018). First, as people live longer, they save more for their retirement, and this will reduce the payouts of a means-tested social pension program. Analysis for Asia suggests that this behavioural effect may outweigh the compositional effect of larger aged cohort shares (Kinugasa and Mason, 2007). Second, mortality differentials between poor and rich (documented by Waldron, 2007; Cristia, 2009 and Chetty et al, 2016 for the US and OECD, 2016 for OECD countries) make a means tested pension equity-enhancing. That is, they provide a higher share of the non-contributory pension budget to lower income, shorter-lived, residents than would be the case with universal schemes (as shown by Kudrna et al. 2018). Available evidence for EA/SEA confirms such income-related mortality differentials (Banerjee and Duflo, 2007; OECD, 2017).

A further point relates to resource allocation by households. The households with the greatest flexibility regarding human capital, labour supply and saving tend to be the richest. A means test which excludes this group from benefits thus removes a price distortion which would otherwise adversely impact household choice. In addition, of course, these households face lower marginal tax rates, consequent upon a lower revenue requirement, as a result of means testing.

Choosing an Access Age

This parameter should be consistent with the policy's purpose — to provide support to those whose earning capacity has been exhausted. As such, both fairness and sustainability are relevant to the choice of access age (Chomik and Whitehouse 2010). The current range in eligibility ages for social pensions across EA/SEA are probably too low relative to rest-of-life expectancy and labor force behaviour in countries such as China, Thailand, and Philippines, and too high to be an effective source of old age income support for poorer people in Myanmar and in the quasi-universal program in Vietnam. Closer consideration of the current calibration of eligibility ages seems warranted (including the political economy of the relationship to official retirement ages in contributory systems). It is also critical that any access age be indexed to increasing life expectancy over time, and that this calculation is taken from the age of access. In other words, access age is indexed to rest-of-life expectancy. This will make it much easier to maintain the sustainability of the program as health improves with economic development, and life spans increase.

Eligibility

Most countries require residence and/or citizenship for eligibility to first-pillar pensions to avoid pension-based migration. In emerging economies, a citizenship requirement is most common and that is the prevailing approach in emerging EA/SEA. While in some developed countries current residence suffices, it is common to require a number of years of residence after a certain age or within a number of years of claiming the pension.

4.3   Fiscal Costs of Targeted Social Pensions – An Example

We do not yet have an OLG model which is effective in representing a developing economy with a large informal sector. But we can nevertheless parameterise a simpler structure to gain some sense of the fiscal costs of social pensions. We now consider specific parameters for social pensions and project the social pension expenditure under various assumptions. The

projections are carried out for Indonesia, a country that currently does not provide its elderly with any non-contributory social pensions.

The pension expenditure in year *t*, *SP(t)*, is calculated as follows:

$$SP(t) = p(t)*inf\_s(t)*elderly\_s(t)*Tpop(t),$$

where *p(t)* is the pension benefit, *inf_s(t)* is the share of informal elderly, *elderly_s(t)* is the share of age-eligible population and *Tpop(t)* is the total population.

Our projections for Indonesia start in 2019 (base year) and span to 2100. The demographic data (for variables, *elderly_s(t)* and *Tpop(t)*) are derived from United Nations (2019). We use the share of informal labour force as the proxy for *inf_s(t)*, derived from the World Bank toolkit for informality scenario analysis documented by Loayza and Meza-Cuadra (2018). This toolkit projects the employment shares and other variables over the period 2016-2040. After 2040, we assume the same 2040 shares (and the GDP per capita growth rate). We also use the projected GDP per capita growth rate from the toolkit. Note that the per capita growth rates are used to index the pension benefit *p(t)* over our projection period 2020-2100. In 2019, the pension benefit (*p(2019)*) is based on data from World Bank (2021), with all the benefit measures related to the International poverty line (IPL) set at 10282.4 IDR (or US$1.9 (2011 PPP)) per day, per capita, amounting to about 6.5% of GDP per capita in 2019.

Table 5 reports our projections of the social pension expenditure as a percentage of GDP in period of 2020-2100 under the baseline and several alternative scenarios. We first discuss the expenditure under the baseline projection. That baseline scenario assumes *(i)* the medium (most likely) fertility variant population projection, *(ii)* the social pension benefit at 50% of ILP (5141.2 IDR per day, per capita), *(iii)* age-eligibility of population at age 65 and over and *(iv)* targeting to all informal elderly (decreasing only slightly from about 82% in 2020 to 80.7% in 2040). As shown, the current expenditure (on social pensions targeting all informal elderly aged 65 and over) would be very modest, at 0.164% of GDP. [23] Due to population ageing in Indonesia, that expenditure increases to 0.411% of GDP in 2050 and 0.696% of GDP in 2100. Note that this modest social pension benefit (at 3.2% of GDP per capita) with small fiscal costs to the government (as indicated in Table 5) would eliminate most the old age poverty in Indonesia.

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[23] A similar exercise estimating the current fiscal cost of introducing social pensions has been done for China by Lu et al. (2014). Their central case results indicate that a social pension paid to all informal elderly aged 65 and over would cost less than 1% of GDP even in 2050. Nevertheless, their estimates are higher than our baseline case for Indonesia because of their higher benefit level (set equal to the national poverty line, indexed to 6.6% of per capital GDP growth) and also the already more pronounced population ageing in China.

Table 5. Projections of Social Pension Expenditure for Indonesia (as % of GDP)

Projections	2020	2030	2040	2050	2070	2100
Beseline projection[a]	0.164	0.242	0.327	0.411	0.523	0.696
Alternative demographics						
Low fertility	0.164	0.248	0.401	0.456	0.650	0.965
High fertility	0.164	0.237	0.311	0.377	0.434	0.528
Alternative benefit level						
17% of International poverty line[b]	0.056	0.085	0.111	0.140	0.178	0.237
100% of International poverty line[c]	0.329	0.483	0.655	0.821	1.046	1.393
Alternative age eligibility						
Age 60 and over	0.264	0.368	0.466	0.546	0.676	0.857
Age 70 and over	0.096	0.143	0.208	0.277	0.377	0.540

Notes: [a]Assuming the benefit at 50% of the International poverty line (IPL) (5141 IDR (or US$0.95 (2011 PPP)) per day in 2019) to all informal 65+ under medium fertility projection; [b]This approximates the P1 measure (or poverty gap) - average per capita shortfall to IPL; [c]This implies no poverty of population 65+.

Source: Authors' calculations using UN (2019), Loayza & Meza-Cuadra (2018) and World Bank (2021).

Table 5 also provides social pension costing under several alternative projections, assuming *(i)* different demographic projections (with low and high fertility variants), *(ii)* different benefit levels (set at 17% and 100% of IPL) and *(iii)* different age-eligibility (the population aged 60+ and the population aged 70+). Since the low fertility projection implies more pronounced population ageing (further increasing the old-age dependency ratio over the projection period), the social pension expenditure increases to 0.965% of GDP in 2100, compared to the baseline projection at 0.696% of GDP in 2100.

Changing the benefit level alters the expenditure significantly over the entire projection period. As one alternative, we set the benefit to 17% of GDP per capita, which represents the poverty gap P1 measure (in 2019) (i.e., average per capita shortfall to IPL). Note using that benefit level, the expenditure is significantly lower, at only 0.056% of GDP in 2020, increasing to 0.237% of GDP in 2100. The other benefit alternative sets the social pension benefit at IPL (or 6.5% of GDP per capita in 2019). Even here, the expenditure is still modest at 0.329% of GDP and increasing to 1.393% of GDP in 2100. This benefit level would imply that there would be no poverty al older age (using the World Bank's PPP IPL measure).[24]

The eligible age for the pension payment is shown to also have significant impacts on the overall cost. However, even with the eligibility age set to 60, the social pension expenditure would be 0.264% of GDP now and 0.857% of GDP in 2100. As mentioned, when discussing this parameter setting above, an alternative policy in relation to the eligibility age would be to

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[24] Using a more general benefit level at the lower middle income class poverty line (17,317 IDR per pay or annually at 10.8% of GDP per capita), would cost 0.55% of GDP in 2020 and 2.35% of GDP in 2100. Note that this benefit level is about the three times smaller than the maximum rate for the Australian non-contributory and means tested age pension.

consider an increasing eligibility age corresponding to increasing life expectancy over the projection period.

Overall, our projections for Indonesia show modest fiscal costs of introducing social pensions targeted to informal elderly. Importantly under our baseline setup these social pensions would eliminate most the old age poverty in Indonesia. Similar costing (and poverty applications) would apply to other emerging Asian economies with large informal sector, which will undergo pronounced population ageing over this century.

5.   Concluding comments

This paper brings empirical evidence and economic rigour into a discussion about a very complex policy issue. We provide evidence that the issue itself is urgent because: demographic transition is occurring very rapidly; family structures which have traditionally been supportive across generations are being stressed by large scale rural-urban migration and falling fertility; informal employment is dominant and showing little sign of rapid formalisation in most EA/SEA countries; and retirement related income protection programs in emerging EA/SEA countries are under-developed. These social and economic forces combine to threaten the wellbeing of older cohorts in coming decades.

At the forefront of concern is the welfare of informal sector workers who will live for longer over time, but who will not have the opportunity to accumulate resources to finance their increased lifespan. This naturally leads to consideration of an expanding social, or non-employment-related, pension to help reduce poverty within this cohort. Illustrative calculations suggest that such support, more generous than general subsistence welfare, can be offered at low revenue cost relative to GDP, and is unlikely to generate major adverse behavioural impacts.

New technology is enabling digital identification of previously undocumented residents, and electronic transfer of retirement support, thus rendering feasible, with reduced possibilities for error, corruption and fraud, the implementation of social pensions to the informal sector.

But design of such transfer instruments is not straightforward. They need to be resilient in the face of increasing longevity; they need to deliver support for those in need, related to community standards, in the face of economic growth; their design should take account of disincentives towards formalisation, and be compatible with formal sector contributory pensions which will continue to play a role in old age financial protection; and they should be designed to be fiscally sustainable in the face of the transitions identified above.

Available evidence suggests that a targeted pension, tested for affluence, whose benefit level is indexed to community standards and whose access age is related dynamically to mature-age expected life span, offers the best design for social pensions under these circumstances. Numerical illustrations suggest that an outlay as low as 0.16% of GDP currently rising to around 0.7% of GDP by 2100 will provide modest support for older cohorts whose earnings capacity has been eroded through age and deterioration in health status.

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