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Fairness and Sustainability of Pension Arrangements in Singapore: An Assessment

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Abstract: Singapore's pension system is based on two major premises. First, it is possible to finance retirement expenditure almost entirely by mandatory savings of households which are micro-managed and intermediated by the state. Second, the pension system should focus on mitigating absolute rather than relative poverty. The analysis in this paper suggests that fundamental rethinking of these premises is needed to enhance sustainability and fairness of Singapore's pension system. This will require use of social risk pooling methods such as social insurance and budget-financed non-contributory social pensions linked to per capita income, whose value does not decrease over time in real terms; and a shift in policy focus from addressing absolute poverty to relative poverty. The paper also suggests improvements in the design and governance of the Central Provident Fund (CPF) system such as a shift away from administered interest rate to crediting members with full-returns earned on ultimate deployment of CPF balances; and reforming age-based premiums for health insurance and CPF Life. The main constraints in reforming Singapore's pension system towards fairness and sustainability are not fiscal, economic, institutional or capacity related, but arise from unwillingness of policymakers to reconsider pension system objectives, governance and design. More open and informed debate involving all stakeholders could facilitate public policy choices designed to enhance fairness and sustainability of Singapore's pension system.

Keywords: Ageing, CPF system, fairness, pension reforms, Singapore, sustainability
JEL clasification: H55, J11, J13, D63

1. Introduction

Pension reforms designed to improve sustainability and fairness of arrangements to finance old-age (often referred to simply as pension system) have become a major public policy priority in developed and emerging market economies. Sustainability may be viewed from a narrow or from broader perspectives. In both cases, it involves not just the current situation but future orientation, as pension arrangements in the final analysis allocate future output between and among the young and the old. From a narrow perspective, sustainability refers to specific pension schemes, which must be managed to balance long term assets and liabilities. At a macro-level, sustainability involves an assessment of fiscal burden of the pension system currently and in the future; adequate level of protection against longevity,

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inflation, and survivors' risks[1] and near universal coverage of the pension system among the country's population. The fairness criteria may be interpreted in different ways. But generally, it involves ensuring that different groups in the society do not have vastly different levels of pension provision and sustainability characteristics. It also involves equitable pension provision between men and women. The net burden borne by different generations to finance the pension system is also usually included under fairness.

There are several reasons why pension system reform has been accorded high priority.

First, pension expenditure accounts for significant shares of gross domestic product (GDP) in developed (or advanced) and in emerging economies. In 2010, as a percent of GDP, such expenditure was 8.4 per cent in advanced economies and 5.6 per cent in selected emerging economies; while the corresponding shares in 2050 are projected to be 9.2 per cent and 8.3 per cent respectively (IMF 2011).

Second, the aftermath of the 2008 global economic crisis has led to the emergence of income disparities and chronic fiscal imbalances as major risks facing the global economy (WEF 2012). The need to sustain short and medium-term growth is therefore particularly urgent for countries with high public sector debt and unsustainable fiscal deficits. This need must co-exist with the signs that in affluent countries, the capacity of economic growth to increase well-being has diminished significantly as a result of "… congestion externalities and by the need to devote an increasing proportion of income to competition for locally specific positional goods" (Turner 2012: 81).[2]

The emergence of income disparities as a global risk has led to the questioning of the conventional argument that such disparities accompany the GDP growth objective in a globalised economy (Turner 2012).[3] The implication for public policies in general and for pension reforms in particular is that improving absolute incomes will not address income disparities risk in affluent countries such as Singapore, and the focus must be on relative incomes.[4]

It is in the above context that this paper analyses sustainability and fairness aspects of Singapore's pension system and suggest measures which could improve them. The rest of the paper is organised as follows. In Section 2, the main features of Singapore's growth

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[1] Longevity risk is the risk that the resources of the individual are exhausted before death. Inflation risk refers to the real value of pensions being eroded when they are not indexed to at least prices. Survivors' risk refers to the situation when pension payments cease at the death of the pensioner. As women, as a group, live longer and have lesser labour force participation rates than men, protection against this risk is of particular importance to them and surviving dependents.

[2] Congestion externalities arise when with increasing incomes, the demand for some amenities such as transport networks, and recreational facilities grows much more rapidly than their supply. Positional goods represent those commodities whose value, and therefore willingness to pay, depends on their desirability by others. Examples include exclusive clubs, prime real estate, etc.

[3] A special report in *The Economist* (2012) has argued that growing inequality is one of the biggest social, economic, and political challenges globally, but suggests that more inequality need not be an essential condition for future growth. The report also argues that Asia is becoming increasingly unequal, and that its current model of export and investment led growth, and close relationships between large businesses and government need re-examination if this trend is to be checked.

[4] Even for wage income of the residents reflected in the CPF data, the wage-Gini coefficient, a standard measure of inequality was, 0.49 in 2010 (Mukhopadhaya *et al*. 2011). The income-Gini coefficient of Singapore is expected to be much higher as capital income disproportionately accrues to higher income groups.

strategy, demographic trends, and labour market characteristics are summarised. This is followed by a brief overview of Singapore's pension system in Section 3. The sustainability and fairness issues arising from these arrangements are discussed in Section 4. The final section provides concluding remarks.

2. Growth Strategy, Demography and Labour Market Trends

The city-state of Singapore, located in Southeast Asia, has evolved from a low-middle income country to a high-income country in a relatively short period of about four decades. Singapore has pursued a growth strategy focusing on ensuring that it remains an attractive business location even as the regional and global environment changes, and as it moves up the value chain. As a result, Singapore has benefited greatly from global trade, technologies, investments, and manpower flows, or more broadly the globalisation phenomena. Policymakers recognise that Singapore will increasingly need to rely on higher total factor productivity and on commercialisation of Research and Development (R & D) activities to generate sustainable high growth.

The economic success of Singapore's growth strategy is indicated by the many-fold increase in the GDP from $78.06 billion in 1991 to $163.14 billion in 2001, and to $326.83 by 2011 (World Bank 2011). Moreover, GDP per capita increased from $24,898 in 1991 to $63,050 in 2011. Singapore's real GDP growth has moderated from an annual average of 7.6 per cent in the 1990s to 4.8 per cent for the 2001-11 period.[5] Much of this growth was due to an increase in inputs such as labour and capital, with average annual labour productivity declining from 3.4 to 1.1 per cent during this period (Vu and MAS 2010). High growth in the past has provided potential resources to address ageing related expenditure, but this avenue will not be available to the same extent as growth moderates. The White Paper on population projects that between 2012 and 2020, GDP growth is likely to average 3 to 4 per cent annually, and between 2 and 3 per cent annually between 2020 and 2030 (Singapore 2013).

The growth in workforce is expected to moderate significantly. The White Paper projects that while the workforce increased at a rate of 7 per cent annually between 2007 and 2012, it is expected to grow at a rate of between 1 and 2 per cent annually between 2012 and 2020, and by 1 per cent between 2020 and 2030 (Singapore 2013).

Singapore's economic success notwithstanding, there are several factors, which are contributing to the need for policymakers to assign greater weight to promoting sustainability and fairness of the current pension arrangements in Singapore.

Concerns over congestion externalities, particularly in transport, housing, and recreational facilities; and competition for positional goods such as cars, housing, and education have become an integral part of political and social discourse in Singapore.

First, one of the consequences of Singapore's growth strategy has been the rising share of non-citizen population in Singapore. The ratio increased from 14 per cent in 1990, to 26 per cent in 2000, to 38 per cent in 2012.[6] The White paper on population projects that

[5] Even the moderated growth rate is substantially higher that for the other affluent countries, which grew at an annual rate of only 1.6% during the 2004 to 2011 period (*http://www.imf.org/external/pubs/ft/weo/2012/01/pdf/tables.pdf)*

[6] In 2012, of the total population of 5.31 million, citizens constituted 3.29 million, permanent residents 0.53 million, and foreign skilled and semi-skilled professionals on various work-visas, and their dependents 1.43 million (DOS 2012).

by 2030 the share of non-citizens will rise to 45 per cent of total population of 6.9 million (Singapore, 2013). This will further complicate economic, social, and political management of Singapore, as while businesses would be more comfortable with liberal foreign manpower flows, the citizens are more likely to be concerned with quality of living and quality of life issues.

Second, Singapore is expected to experience very rapid ageing of the population in the next two decades as a result of below replacement rate fertility rates since 1975.[7] The population aged above 65 years, as projected by the United Nations, will increase from about 0.46 million in 2010 to 1.40 million in 2030, an increase of 207 per cent in just two decades (UNDESA 2010). Life expectancy at age 65 which was 18.3 years for men, and 21.8 years for women in 2011 (DOS 2011), is also expected to rise. It is projected that a substantial proportion will live until age 85, and persons in their nineties will increase in the future. Age related pension and healthcare expenditure in Singapore is therefore expected to rise. There is a disproportionate increase in healthcare expenditure with age. For instance, health expenditure for individuals aged 65 and above is approximately four times higher than that for individuals below age 65 in Japan (Takayama 2013).

The official response to rapid ageing of Singapore's population is to raise productivity through business restructuring and retraining of workforce, encouraging higher labour force participation; continuing to encourage foreign manpower, albeit in a calibrated manner (MTI 2012). The above suggests that the Singapore policy makers do recognise that single-minded pursuit of growth is no longer desirable. Growth would need to be calibrated to address social and political acceptability, particularly its impact on congestion externalities and positional goods. The trade-off between rate and composition of growth on one-hand, and social and the need to seek political acceptability represents a major policy dilemma for Singapore. This is particularly the case as policymakers appear unwilling to undertake substantive fiscal and other family friendly initiatives, which could positively impact on the current low fertility rates.

Third, Singapore has relied primarily on a single-tiered retirement financing system, involving mandatory savings administered by a national agency called Central Provident Fund (CPF). With increasing longevity, and continuing increases in old-age dependency (ODR) ratio[8], relying on savings from income during the working years to the finance retirement period, which in some cases may exceed the proportion of life spent in labour force, has become increasingly untenable for a significant proportion of the population.

Fourth, the expectations of the policymakers in Singapore have been that a longer working life will significantly contribute to retirement income security even while primarily relying on the mandatory savings tier. The age-specific labour force participation rates

[7] In recent years, the Total Fertility Rate (TFR), which measures the average number of children born to a woman over a reproductive term, has fluctuated between 1.1 and 1.4, well below the replacement rate of 2.1 (DOS 2012). The White Paper on population does not anticipate any significant increase in the TFR (Singapore 2013).

[8] Old age dependency ratio is defined as the share of the number of individuals above age 65 to the share of the population between ages 15 and 64. A higher old age dependency ratio implies that a greater number of elderly will need to be supported by the working-age population.

(LFPR) for males and females in Singapore do not lend strong support to the above expectation.

Singapore's total LFPR in 2011, at 66.1 per cent, is higher than the corresponding figure for Japan (60 per cent) and Korea (61 per cent), but lower than that of Canada (67 per cent). The LFPR for age groups between 40 and 64 years is, however, much lower in Singapore. Thus, for the age group 60–64 years, Singapore's LFPR at 51 per cent compares unfavorably with Japan (55 per cent) and, Korea (56 per cent). A similar pattern is also observed in the LFPR for the 65–69 age group. Nevertheless, efforts to encourage a longer work life-span merit encouragement.

3. The Pension System of Singapore: An Overview

The pension system of Singapore overwhelmingly relies on the mandatory savings tier, administered by the Central Provident Fund (CPF) board, supervised by the Ministry of Manpower (MOM). Set up in 1955, it has evolved into a key socio-economic institution impacting on the welfare of Singapore households. Given its complexity and multi-faceted nature, a brief overview of those characteristics that are relevant for analysing sustainability and fairness aspects is provided.[9] These aspects are *aggregate indicators, high pre-retirement withdrawals*, including for investments, *administered rate of interest* credited to members, and *CPF-Life*, an annuity scheme at the payout phase. Civil service and military pension arrangements, and a voluntary Supplementary Retirement system (SRS) are also discussed as they are a part of Singapore's pension system.

3.1 Aggregate Indicators

The CPF system was established in 1955, but it was only in 1968 that a variety of pre-retirement asset-accumulation schemes were introduced. The schemes have been introduced over time in response to various *ad-hoc* policy objectives; and have been frequently revised and fine-tuned. The level and changes in the contribution rate structure have also been altered accordingly.

The CPF system is open only to Singapore residents, that is, citizens and permanent residents. The contribution rate and the shares mandated to different accounts,[10] vary with age. The contribution rate, which is subject to a wage ceiling of $4500 per month, ranges from 36 per cent for members below age 50, 32.5 and 14.5 per cent for those between 51 and 65 years, and 5 per cent for those above 65 years of age. Contribution rates for the aged-55 and above were increased by 0.5 and 2.5 per cent in September 2012. The proportion of the contributions allocated to different accounts of a member also varies with age. The rates decline with age, and so does the share explicitly allocated for retirement purposes in the Special Account. These allocations and arrangements suggest that policymakers assign low priority to accumulation of cash balances for retirement.

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[9] For more detailed discussion of the various components of the CPF system, see Asher and Nandy (2011). The official website of the Central Provident Fund is *http://www.cpf.gov.sg*

[10] Contributions are channeled into three accounts: *Ordinary Account, Medisave Account, and Special Account.* Broadly, these are to be used for housing and investments, finance healthcare expenditure, and old-age and retirement investment expenditure, respectively.

Table 1. CPF system: Coverage and aggregate balances

Total members (million)	3.40	100 %
Active members (million)	1.77	52% of total members
Active members/ Total labour force	54.60	
Active members/ Resident labour force	85.00	
Aggregate balances (billion)		Share of 2011 GDP (market prices)
Total member balances	224.7	68.7
Ordinary account	90.40	27.6
Special account	51.90	15.8
Medisave account	58.60	17.9
Retirement account	23.80	7.3

Note: Data as of 30 September 2012; Labour force data as of 2011. Details may not add up to the total due to rounding.
Source: CPF Statistics; DOS (2012)

Key aggregate indicators of the CPF are presented in Table 1. The active CPF members, those who have contributed to the CPF in either of the past three months, cover 85 per cent of the resident labour force. Thus, the coverage of the CPF has been comparable to that of other affluent countries. However, there is a large number of inactive members.

The CPF member balances as of 30 September 2012 were equivalent to 68.7 per cent of GDP. These represent gross savings of the 3.4 million members. The largest share was in the Ordinary account from which housing and other withdrawals can be made during the working life. The balances meant for health care were 17.9 per cent of GDP, while the remaining was for financing old age. This suggests that the CPF system has multiple purposes, only one of which is retirement financing.

3.2 High Pre-retirement Withdrawals

Due to multiple purposes of the CPF, the net contributions have been relatively modest due to substantial withdrawals for housing, retirement, healthcare and other purposes. For the 1997-2011 period, the withdrawals averaged 74.9 per cent of the contributions (Table 2). During this period, the CPF's contribution to gross national savings (GNS) averaged 8.1 per cent, including interest income earned on CPF balances (Table 2). This is a relatively modest contribution as Singapore's Gross Domestic Saving rates have been high, averaging 49 per cent during the 1997-2011 period. This suggests that the public sector and business sectors have been much more significant contributors to Singapore's high saving rates than the mandatory CPF savings.[11]

The CPF system has dominated residential mortgage financing in Singapore (Riesman 2007) As of September 2012, 1.40 million members had withdrawn a net amount of $104.7 billion for the public housing scheme; the corresponding values for Residential Property Scheme were 0.27 million and $51.5 billion respectively. Such a dominance has been facilitated by the state statutory organisation, the Housing and Development Board (HDB), being a

[11] Data on the contribution to savings (compulsory and voluntary) from households, businesses, and government are not available.

Table 2. Singapore's CPF: Contributions, withdrawals, and change in balances (1997-2011)

Gross contributions				Withdrawals		Net contributions		Change in CPF balances		
Year	Amount (Mn $)	% of GDP	% of GDS	Amount (Mn $)	Withdrawals as % of contributions	% of GDP	% of GDS	Amount (Mn $)	% of GDP	% of GDS
1997	15,873.8	10.8	20.7	11,456.5	72.2	3.0%	5.8	7090.8	4.8	9.3
1998	15,999.8	11.2	21.7	13,609.8	85.1	1.7%	3.2	5619.4	3.9	7.6
1999	12,826.7	8.9	18.4	12,788.6	99.7	0.0%	0.1	3120.1	2.2	4.5
2000	14,092.8	8.7	18.8	14,555.9	103.3	-0.3%	-0.6	1901.4	1.2	2.5
2001	18,322.3	11.7	27.5	18,860.4	102.9	-0.3%	-0.8	1922.9	1.2	2.9
2002	16,165.7	10.0	24.2	14,821.4	91.7	0.8%	2.0	4201.4	2.6	6.3
2003	15,870.0	9.5	21.6	11,816.5	74.5	2.4%	5.5	7117.0	4.3	9.
2004	15,320.1	8.0	17.0	10,310.3	67.3	2.6%	5.5	8334.2	4.4	9.2
2005	16,105.1	7.7	15.6	11,776.1	73.1	2.1%	4.2	7913.7	3.8	7.7
2006	16,547.1	7.1	14.1	14,350.5	86.7	0.9%	1.9	6016.3	2.6	5.1
2007	18,185.0	6.8	12.8	11,776.1	64.8	2.4%	4.5	10783.1	4.0	7.6
2008	20293.6	8.1	15.8	10966.0	54.0	3.7%	7.2	14721.0	5.9	11.4
2009	19079.2	7.7	14.9	10719.1	56.2	3.4%	6.5	15497.0	6.2	12.1
2010	20681.5	6.7	13.2	9617.3	46.5	3.6%	7.1	19083.0	6.2	12.2
2011	22865.1	7.0	14.2	10436.5	45.6	3.8%	7.7	21657.0	6.6	13.5
Average (1997-2011)	17,215.2	8.7	18.0	12,524.1	74.9	2.0	4.0	8,998.6	4.0	8.1

Source: Authors calculations based on CPF Annual Reports; World Development Indicators

monopoly supplier of public housing and its mortgage provider, administered through the CPF, in which more than four-fifths of the Singapore residents live; and by the absence of common or constitutional right to land ownership.

3.3 The CPFIS Scheme

This is a pre-retirement withdrawal scheme which provides avenues for members to invest their balances in approved financial and real assets. Individual CPF members may invest their Ordinary Account (OA) balance as well as Special Account (SA) balance in approved assets. There is no limit on investments in shares through the approved Unit Trusts. The wide choice available to members under the CPFIS scheme is in sharp contrast to the absence of choice provided to members on the funds managed by the CPF Board.

A member may open a CPF investment account with approved agent banks, all of which are locally controlled banks. Their charges and fees are not regulated. The expense ratios[12] of approved Unit Trusts (UTs) and investment-linked insurance products (ILIP) are, however,

[12] The expense ratio is the cost of owning a unit trust or a mutual fund. It comprises investment advisory fee or management fee, administrative costs, distribution fees, and other operating expenses. An expense ratio of 1% per year means that each year 1% of the total funds under management are used for covering expenses. Thus, assuming a historical gross return of 5%, a 1% expense ratio will reduce investors' historical return by about 20%

Table 3. Simple average nominal rate of return in SGD of all CPFIS funds (2006-2012)

Period	All CPFIS funds	Unit trusts		Investment-linked insurance products (ILPs)	
29 September 2006 to 30 September 2009	-3.78	-5.29	-52.3 to + 43.9	-2.27	-40.4 to + 45.3
30 June 2009 to 30 June 2012	12.64	15.91	-10.2 to + 82.6	9.36	-14.4 to + 48.9

Note: This is a simple average of returns, and not weighted by the amounts invested in unit trusts and ILPs
Source: Lipper (2012).

published regularly by the CPF Board, classified by risk profiles. For the low to medium-risk category, expense ratios for UTs (ILIP) ranged from 0.40 (0.58) to 1.15 (2.24) per cent of assets under management; while the corresponding ratios were 1.36 (0.49) and 3.59 (3.59) for the medium to high-risk category. Given such a wide-range, the actual returns obtained by different members of the CPFIS are expected to vary widely.

As of 30 September 2012, the total amount invested under the CPF-OA was $22.6 billion, 28 per cent of the total amount potentially available ($25,206 per participating member); the corresponding figures for CPFIS-SA were $6.3 billion, and 29 per cent ($14,016 per participating member).

Table 3 provides an overview of the average performance of CPFIS funds in SGD terms. The data suggests considerable volatility in three-year average nominal returns during the 2006-2012 period. The return on Unit Trusts were much lower compared to the ILPs in 2006-09 period, but considerably higher in the 2009-12 period. The range of returns in Unit Trusts and in ILPs was also quite large, suggesting that the participating members had quite divergent returns. Thus, the actual returns obtained by members may differ significantly from the average. It should be stressed that the average returns are not weighted by the actual investments made in the two categories and in different funds in each category.

The above figures suggest that only around a third of the CPF members have opened a CPFIS account and that nearly two-thirds of the balances eligible for the CPFIS have been left unutilised. Chia and Tsui (2011) estimate that for the 2004-09 period, nearly half of those who participated in the CPFIS Scheme incurred realised losses; nearly one-third had realised returns of less than the nominal CPF guaranteed 2.5 per cent; and only 20 per cent had realised returns higher than 2.5 per cent.

3.4 Administered Interest Credited to Members

In any defined contribution method, returns on members' contributions and accumulated balances substantially impact their savings for retirement. Since its inception, CPF members have been credited with an administered rate of interest, with a minimum government guarantee of 2.5 per cent interest on all accounts. With effect from 1 January 2008, an extra 1 per cent interest has been paid on the first $60,000 of members' combined balances, with up to $20,000 from the OA.

On 1 January 2008, savings in the Special, Medisave, and Retirement Accounts (SMRA) were pegged to the 12-month average yield of the 10-year Singapore Government Security (10YSGS) plus 1 per cent. To help CPF members adjust to the floating SMRA rate, the Government has pledged to maintain the 4 per cent floor rate for government securities till 31 December 2013. The 2.5 per cent floor rate legislated in the CPF Act will continue to apply for all CPF Accounts.

The asset side of the balance sheet of the CPF comprises non-marketable government securities, interest on which is determined *ex-post.* There is non-transparency concerning how the proceeds from these securities, which form a major part of Singapore's internal debt[13], are used by the government. IMF data indicate that the during the 2000 to 2011 period, Singapore's overall fiscal balance exhibited an annual surplus of 5.7 per cent of GDP.[14] This suggests there is no need for the government to borrow from the CPF system to finance its expenditure. It is therefore a reasonable assumption that the ultimate deployment of the CPF balances is not by the government itself. The Singapore Government Investment Corporation (SGIC), as Singapore's prominent sovereign wealth fund, which invests globally, is presumed to be the agency ultimately deploying CPF funds. By statutory provision, SGIC does not have to reveal their financial performance and activities. Thus, CPF members are not provided information on the ultimate investments of their balances. In return, they receive a guarantee of minimum 2.5 per cent nominal rate of return.

In analysing replacement rate, the annual rate of growth of real wage may be compared with the real rate of return on CPF balances. Such a comparison for the 1987-2011 period suggests that the annual real wage growth was 5.0 per cent, while the real rate of return on CPF balances was only 1.42 per cent, implying that CPF balances will double in nearly 50 years.

As the replacement rate reflects the ratio of retirement income to pre-retirement income, the higher rate of wage growth as compared to returns on balances has adversely impacted the replacement rate of CPF members. This is in contrast to the average annual rate of growth of 7.9 per cent in real GDP during this period, suggesting that the relative position of the retirees is likely to worsen over time. Thus, they are not able to benefit from growth in the country's GDP after retirement.

For a more detailed analysis of the replacement rates, disaggregated data concerning the density of contributions and age-specific member balances are needed, but these are not available.[15] This appears to have significantly restricted the public policy debate on old-age financing issues.

To the extent SGIC earns higher returns on CPF balances than credited to members, there is an implicit tax on CPF wealth which is both recurrent, highly regressive, and often quite large (Asher and Nandy 2011). The SGIC has publicly announced that it earned annual returns in SGD of 8.2 per cent for the 25-year period ending in March 2006; the

[13] Singapore's internal or domestic debt was SGD 321.2 billion in 2010, equivalent to 105.8% of 2010 GDP.

[14] Calculated using data presented in IMF Article 4 Consultation Reports for years 2012 and 2006; IMF (2012)

[15] Not regarding such basic socio-economic information as a public good to be made widely and regularly available is inconsistent with the expectations if the citizens desiring substantive participation on such a vital issue of managing Singapore's rapidly ageing population.

inflation adjusted return was 5.3 per cent per annum. The difference between what SGIC has earned and what the CPF members receive is a recurrent annual tax on CPF wealth. This is only partly mitigated by the guaranteed floor interest rate of 2.5 per cent.

3.5 CPF Life

The CPF Life, introduced in 2009, is a deferred annuity scheme, with individuals bearing the cost of purchasing the annuity from their accumulated balances of their retirement account (RA).[16] When introduced, the schemes offered four plans: *Plus Plan, Balanced Plan, Basic Plan, and* the *Income Plan*. These plans essentially varied in the amount of bequest (if any) that the participant would want to leave for their beneficiaries. The scheme has two components: a deferred annuity, and a savings component. Once an individual decides to participate in the scheme, they are required to purchase an annuity (premium is based on gender and age, and paid from their RA), which starts either at their draw-down-age (DDA), or at age 80 or 90. The remaining savings (if any) in their RA is drawn down on a monthly basis till age 80 or 90, after which, the deferred annuity begins. The pay-outs are not indexed to prices.

Effective January 2013, the CPF Board has reformed the CPF Life Scheme and now offers two plans: *reformed standard plan* and the *basic plan.* The scheme will be compulsory for those born after 1958, and have $40,000 in their RA at age 55, or at least $60,000 at their DDA. Members can voluntarily join at any age between 55 and 80. The two plans also essentially vary in the amount of bequest that members wish to leave. The annuity is to be bought at age 55, but in the base case (standard plan), payouts do not begin till the DDA of 65.[17] It should be noted that the CPF Life does not increase resources available to individuals for retirement. It just gives greater control to the government over the stock of savings of CPF members as the CPF Life is organised and administered by the CPF Board. However, it provides greater security to those purchasing CPF Life products because of government's implicit backing for the promises.

3.6 Civil Service and Armed Forces Pension Arrangements

Prior to 1986, eligible civil servants were covered under the Pension Scheme financed by the Government. In 1973, the civil servants were given an option to transfer from the Pension Scheme to the CPF, but relatively few chose to do so. The attempt in 1986 to transfer the civil servants to the CPF was effective as it was combined with the discontinuation of the Pension Scheme for most civil servants. A relatively small number of civil servants were permitted to remain on the pension scheme.

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[16] The CPF Life Scheme applies only to the minimum sum. At age 55, when members can withdraw CPF balances, they are required to leave a minimum balance in their accounts ($139,000 in 2012). At age 55, if members do not have sufficient balances to meet the minimum sum, their property purchased is automatically pledged to meet the difference. If accumulated balances of the member are insufficient for the minimum sum, there is no requirement that additional funds must be deposited to equal the minimum sum. The minimum sum is based on the absolute concept of poverty. Since January 2013, those members with stipilated balances in their retirement account are required to participate in CPF Life Annuity.

[17] Indeed, as CPF Life products are priced according to gender and age, it reduces the accumulated balances by varying amounts.

Most civil servants employed after 1986 are covered by the CPF. Non-pensionable civil servants have the same contribution rates, and wage ceiling as Singaporean citizens and permanent residents employed in the private sector. Pensionable civil servants, however, have lower contribution rates, but a higher wage ceiling of $6,666.67 is applied to their contributions.

Pensionable civil servants on reaching retirement can choose between (a) full pension calculated at 1/600 x Annual Pensionable Salary x Completed Months of Service; (b) a lump sum payment based on full annual pension x 14.2; (c) a combination of a lump sum payment and reduced pension for 12.5 years, after which the monthly pension is restored to the full pension. The Pension Fund Act stipulates that the maximum replacement rate should not exceed two-thirds of the highest pensionable emoluments paid to the civil servant.

The Parliamentary Pensions (Abolition) Bill was passed by parliament on 10 September 2012. The provisions include abolition of pension benefits for Members of Parliament and for political office-holders who were appointed on or after 21May 2011. They will be required to contribute to the CPF system. For those still entitled to pension, their benefits have been frozen at the level reached on 20 May 2011. While their numbers are not large, it promotes fairness in old-age income security arrangements in Singapore.

As of 31March 2010, the Pension Fund had assets of $11.37 billion. The Pension Fund is funded by income earned from its investments, occasional lump sum transfers from the Consolidated Revenue Account of the Government, and from monthly transfers. During 2009-2010, the fund earned $435.1 million, equivalent to 3.9 per cent in nominal terms, and 3.3 per cent in real terms, that is, adjusted for GDP deflator.

The Armed Forces personnel are governed by a defined contribution (DC) scheme, established in 1998. It is called the Saver Fund. The value of the accumulated pension benefits at the time of introduction was estimated and transferred into members' accounts.

The Saver Fund receives contributions from the Consolidated Revenue Account of the Government, mandatory contributions from personnel, and income earned from its investments. The contribution rate for the first six years of service is 13 per cent, after which it is increased to 15 per cent. Members have been given limited options to invest their accumulated balances. This is in sharp contrast to the CPF system, where members do not have choices on the balances left with the CPF Board.

As of 31 March 2011, Saver Fund investments earned an implicit real return of 4.0 per cent (5.2 in nominal terms). This is in contrast to the real rate earned on CPF balances of 2.0 per cent, and 2.8 per cent on balances in the Pension Fund during the same time period.

3.7 Supplementary Retirement System (SRS)

This was introduced as a voluntary tax-advantaged savings scheme in 2001 for employees only. Since October 2009, employers can also contribute and get tax benefits.

SRS contributions are subject to an annual cap of $12,750 for Singapore citizens and PRs and $29,750 for foreigners (2011 Budget). There are tax penalties for withdrawals before the stipulated withdrawal age.

Contributions are tax-deductible but half of the benefits in retirement are potentially taxable. Tax liability can, however, be minimised by withdrawing accumulated balances over a ten-year period. The estimates are that about one-third of Singapore's 750,000 individual income tax payers can potentially benefit, but only around 63,984 (as of December, 2010)

have opted for the SRS. As non-residents account for only 3 per cent of the account holders, Singaporeans and permanent residents predominate as members.

4. Sustainability and Fairness Issues

The previous sections have discussed Singapore's business-location focused growth strategy; demographic and labour markets trend portending rapid ageing of the population; the need to address a rising share of foreign workers; and key characteristics of Singapore's pension system.

There are two propositions emerging from the previous sections, which are relevant for assessing sustainability and fairness of Singapore's pension system.

First, mandatory savings during the working years, controlled and micro-managed by the State, would lead to sufficient physical (such as housing), and financial assets to provide adequate income in old age. *Second*, mitigating absolute rather than relative poverty should be the objective of the pension system, even as issues surrounding inequality acquire greater prominence.

4.1 Sustainability Issues

It is important to distinguish financial from economic sustainability for a pension system. Financial sustainability refers to the matching of assets and liabilities. If projected liabilities are greater than assets, the pension plan must either reduce benefits, increase contributions, increase income earned on accumulated contributions, be subsidised by the government, or reduce its administrative costs; or a combination of these to ensure that the scheme is financially viable or sustainable. Economic sustainability on the other hand, is the capacity of the economy to finance projected liabilities without sacrificing economic growth or other priorities. In this context, the most important macroeconomic variable is the long-term trend in economic growth.

Sustainability in a DC based pension system is intricately linked with adequacy of pension benefits. This is because in a DC system, contribution obligations are defined, but the benefits depend on (i) the number and level of contributions, (ii) interest income earned, (iii) extent of pre-retirement withdrawals, and (iv) the outcomes of conversion of accumulated balances into a retirement income stream. Individual members bear the investment and macroeconomic risks such as unemployment, relatively stagnant wages, or higher than anticipated inflation.[18]

Sustainability of Singapore's pension system may be viewed from a narrow perspective of the CPF system's sustainability; and from a broader perspective of constructing a pension system, which provides *adequate* real (i.e. inflation adjusted) income throughout old age, thus mitigating longevity, inflation and survivors' risks. From a narrow perspective, the CPF system - Singapore's pension system - is sustainable.

The CPF system is obligated to only return the accumulated balances, with an explicit government guarantee of 2.5 per cent nominal interest on CPF balances, and an implicit

[18] In a DC system, impact of rapid ageing is felt when net contributions to the system decline, and eventually become negative; and when asset prices change in response to elderly selling physical and financial assets to finance consumption.

guarantee that the balances and CPF Life obligations will be met by the government.[19] These promises are credible given Singapore's strong public finances indicated by long-term structural fiscal surpluses averaging 6.2 per cent of GDP per year during the 2000-12 period;[20] and due to the electoral importance of the CPF system.

The CPF system is thus sustainable. This is an important achievement, but insufficient to address pension sustainability from a broader perspective. The primary reasons are an over simplified organising principle (mandatory savings using DC method) and a consequent absence of social risk pooling, requiring individuals to bear macro-economic and other risks for which they are not necessarily equipped. This over simplification is accentuated by assigning a predominant role to mortgage finance, and for requiring savings to pay for healthcare expenditure under the CPF System, and by an administered rate of returns that leads to an implicit tax on CPF Wealth.

As the CPF Board does not publish cash balances of the CPF members, and other relevant information, it is not feasible to estimate replacement rates, that is, the ratio of pre-retirement income to retirement income in real terms throughout the retirement period. The CPF Board also does not publish the replacement rates for members. There are nevertheless indications that an inflation-adjusted replacement rate will be inadequate for most CPF members. First, even for the significant proportion of active members, the requirements for setting aside the stipulated minimum sum for basic needs are not being met. Thus, in 2011, only 45 per cent of the 33,644 active members who turned 55 in 2011 were able to meet the minimum sum. This suggests that the majority (55 per cent) did not meet even the stipulated basic income requirements, let alone being able to maintain their pre-retirement living standards.

Second, the focus of retirement provision is on meeting basic minimum needs in old-age. However, it is not absolute but relative poverty that is an increasing concern in affluent societies, including Singapore (*The Economist* 2012). Singapore's pension system does not focus on relative poverty as evidenced by the absence of social insurance principles; absence of budget financed inflation-adjusted basic pension; and insistence on levying health insurance and CPF Life premiums according to age and gender. This particularly reduces the adequacy of retirement income for women, who, as a group, live longer and have lower labour force participation rates than men.

4.2 Fairness Issues

As in the case of sustainability, fairness issues arise from the two propositions of Singapore's pension system noted earlier, and from certain design features of the system. The absence of social risk pooling is particularly unfair to women. This is because they, as a group, have higher longevity than men, but have lower labour force participation rates and lower balances

[19] There are benefits to individual members of government guarantees of individual retirement accounts as such guarantees have a market value (Lachance and Mitchell 2003). Since CPF members do benefit from government guarantees, this benefit to members must be included in a fuller analysis of the implicit tax. This is, however, not attempted in this paper.

[20] Estimated from IMF Article IV Staff Consultation Reports for 2005, 2008 and 2012. The most recent report is available online (IMF 2012).

in CPF accounts to finance their retirement. Frequent changes in the rules governing the CPF system also create disparities amongst cohorts of members.

4.2.1 Disparities among Public and Private Sector Pension Provision

As most of the civil servants in Singapore are under the CPF system, the disparities in pension arrangements of public and private sector workers are relatively less prominent. The disparities arise from the following sources. First, there are select bureaucratic positions at higher levels, which continue to have more favourable pension benefits than the rest of the population. However, their number is very small. Second, the funds managed for the members of armed forces are more transparent and more consistent with international fund management practices (such as choice among limited options based on risk profiles), as compared to CPF members. The implicit tax on CPF wealth, and non-transparent nature of investments of CPF balances have been noted earlier. Wide choice of products and providers under CPFIS, and no choice on balances with the CPF Board are in sharp contrast with how member balances for armed forces are managed.

4.2.2 Tax Treatment

For members, contributions to CPF (subject to a wage ceiling), income earned on CPF balances, and withdrawals during the pay-out phase are free of individual income tax. This is termed EEE (exempt-exempt-exempt) tax treatment of pensions.[21]

As the CPF contributions by the employees are tax exempt, the rate of subsidy varies with the marginal tax rate of income tax. The individual income tax rates in 2009-10 ranged from 3.5 per cent to 20.0 per cent, while the total number of tax payers was 33.8 per cent of the labour force. Since the labour force includes many high income earning expatriates, the share of income tax payers among citizens and permanent residents is likely to be lower. The implicit tax subsidy is therefore regressive, with a vast majority of CPF members not benefiting from the income tax deduction. The wage ceiling on which CPF contributions are paid has been lowered, and so have income tax rates. Therefore, the extent of the implicit subsidy is likely to have been lowered as well.

The regressivity is compounded by the implicit tax on CPF wealth which falls disproportionately on the bottom half of the income group. The officially reported annualised rolling 20-year (1981-2009) rate of return in SGD terms on SGIC's portfolio was 4.4 per cent in nominal terms and 2.6 per cent in real terms. Assuming, the CPF balances are managed by the SGIC, the implicit tax on the CPF wealth is the difference between what the SGIC has announced as its returns and what is credited to the accounts of CPF members. Applying the difference between 2.6 per cent and 1.4 per cent obtained on CPF balances, provide a crude estimate of the implicit tax of CPF wealth of $2.70 billion (2.6-1.4 =1.2% of $224.9 billion). The tax is both large and regressive as relatively lower income households are likely to have a larger proportion of their wealth in the form of CPF balances. In estimating Singapore's household tax burden, this implicit tax should be included.

[21] There are alternative tax arrangements such as exempting contributions, and income earned but levying income tax during the pay-out phase. The choice of tax treatment varies depending on the tax policy choices.

4.2.3 Fairness Issues in the Payout Phase

In 2009, CPF Lifelong Income Scheme (CPF LIFE) was introduced for the payout phase of the CPF. It is essentially a deferred annuity managed by the CPF, and paid for by members. Its design raises at least three fairness issues.

First, the premiums charged for the annuity is based on age and gender, with women paying higher effective premiums than men, as they as a group live longer. Thus, the premium of CPF LIFE is structured along private, not social insurance methods. This is particularly disadvantageous to women, who as a group have lower CPF balances than men, but need income support for a longer period.

Second, the annuity benefit is specified in nominal terms. This implies that real benefits will decline at the rate of inflation. The CPF LIFE scheme thus does not increase the resources available for retirement. Instead, as the members pay the premiums, it reduces the resources available for retirement, though the benefits are in terms of life-time stream of benefits in nominal terms.

Third, a subtle fairness issue arises due to the deferring macro-economic conditions, particularly the interest rate regime prevailing for different cohorts at the time the pay-out phase begins. Thus, a low interest rate environment would yield a lower annuity stream from a given capital sum, whether it is used for CPF Life products or not, as compared to a high interest rate environment. This CPF Life benefits are also subject to changes over time depending on macro-economic and actuarial considerations.

The above suggests that pre-retirement income inequalities are not only carried forward into the retirement period, but are accentuated due to the lack of indexation and methods to share the increasing wage and income levels of the country.

4.2.4 Treatment of Foreign Workers

The stock and flows of foreign workers are subject to government regulation, and administrative measures. The structure of the levy and its design is complex. It varies across sectors, skill levels, nationality and the dependency ratio.

While disaggregated data on the number of foreign workers is unavailable, as at end-December 2010, there were 201,000 foreign domestic workers. The Budget does not provide separate revenue data on the levies of foreign workers, combining it with Airport Passenger Service Charge under the 'Other Taxes' category. In 2011, the revised revenue estimate from Other Taxes was $3.15 billion (equivalent to 6.9 per cent of total tax revenue) (Singapore Budget 2012). This suggests that the revenue from the levy on foreign workers is non-trivial.

A substantial proportion of the Other Taxes collected can reasonably be assumed to be levies on the foreign workers. They therefore contribute significantly to fiscal revenues in Singapore. Foreign workers, however, are not members of the CPF, are ineligible for social and community benefit schemes, and do not receive healthcare subsidies and benefits like Singapore residents do.

5. Conclusions

Consistent with global trends, the need for enhancing sustainability and fairness of the pension system has become increasingly evident in Singapore. Singapore's pension system is based on two key premises. The first is that near exclusive reliance on mandatory savings

during the working years, micro-managed by the state, can provide adequate retirement income. The second is that the pension system should focus on mitigating absolute rather than relative poverty.

The analysis in the paper suggests fundamental rethinking of these premises is needed to enhance sustainability and fairness of Singapore's pension system. Relatively minor initiatives, such as allocating a small portion of budget surpluses of CPF balances of members, enhancing maternity benefits, and increasing infrastructure expenditure are insufficient to address fairness and sustainability concerns analysed in this paper.

In restructuring Singapore's pension system, the paper suggests a need to use social risk-pooling methods such as social insurance and budget-financed non-contributory social pensions whose value does not decrease in real terms; also a shift in policy focus from addressing absolute poverty to relative poverty is required. The paper also suggests that reforming aspects of the CPF system, such as a shift away from administered interest rates, and improving member choices in investments merits consideration.

Fiscal and other initiatives to increase the resident fertility rate could help mitigate congestion externalities and competition for positional goods. The main constraints in fundamentally reforming Singapore's pension system are not fiscal, economic, and institutional or capacity related. It is the unwillingness of the policymakers to consider alternatives.

The political and social choices concerning the pension system made now would have a far reaching impact on the quality of living and quality of life in Singapore, and would reveal values considered important by the society.

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