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# Pakistan Assessment of Civil Service Pensions

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Social Protection and Jobs Global Practice  
South Asia Region



## Abbreviations

CPI	Consumer Price Index
CPS	Civil Service Pension System
CS	Civil Service
DB	Defined Benefit
DCS	Direct Credit System
FCS	Federal Civil Service
GDP	Gross Domestic Product
GPF	General Provident Fund
LOS	Length of Service
MOF	Ministry of Finance
PKR	Pakistan Rupee
PPO	Pakistan Post Office (Pension Disbursement Agent)
PROST	Pension Reform Options Simulation Toolkit
RR	Replacement Rate
SOE	State-owned Enterprise

## Acknowledgements

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Country Director:	Patchamuthu Illangovan
Global Practice Senior Director:	Michal Rutkowski
Program Manager:	Stefano Paternostro
Task Team Leader:	Mark Dorfman

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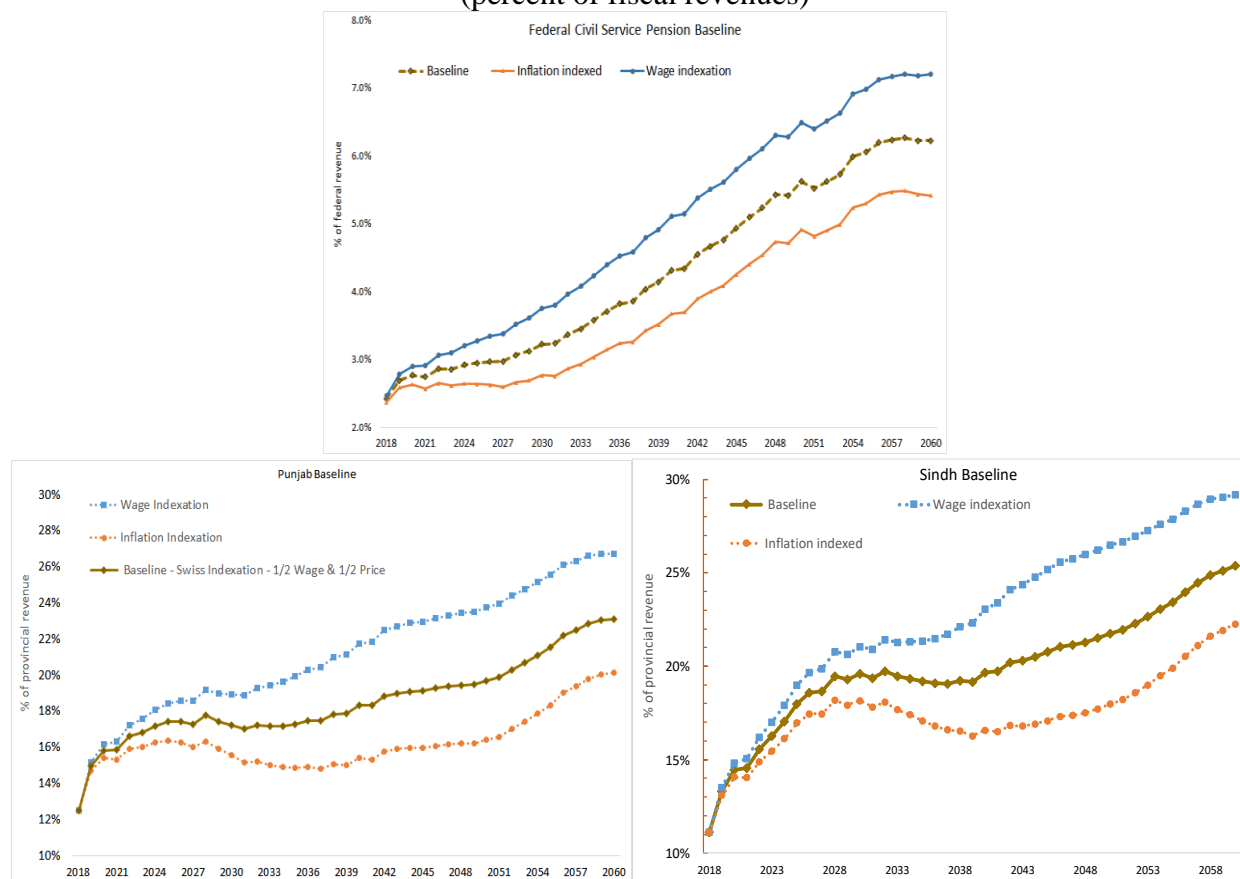
## Executive Summary

*Pakistan's civil servants' pension schemes have growing fiscal costs which, if not constrained threaten other development priorities. These costs grew since 2012 from about 4.5% of provincial fiscal revenues in Sindh and 6.7% in Punjab to about 12% of provincial revenues in 2019. Actuarial projections in this report suggest that these costs, along with growing salary costs will continue to grow substantially in the coming years crowding out other scarce public expenditures. Fortunately, the authorities can restrain the growth of these costs while also promoting equity and predictability of benefits by measures such as limiting the indexation of benefits and reducing benefits for those who retire early. This report projects the future costs of the existing scheme and simulates the costs and adequacy of benefits for reform options changing various parameters. The report also explores the costs and benefits of introducing a hybrid contributory defined-contribution scheme for new entrants which could also serve as a potential platform for pensions for non-government workers.*

***This draft report has been prepared at the request of the Finance Ministries at the Federal level and Punjab and Sindh.*** The report uses actuarial projections to evaluate the fiscal costs and adequacy of benefits in the civil service retirement schemes. It also evaluates the impact of reforms which would amend the parameters or qualifying conditions and the effects of introducing a contributory defined-contribution scheme for new entrants.

***Fiscal costs of the Punjab and Sindh Civil Service Pension schemes are projected to almost double as a proportion of fiscal revenues by 2060 if pensions increase in line with wages yet could be stabilized at about 15% of fiscal revenues if benefit increases were limited to the growth in consumer prices.*** Limiting benefit adjustments could therefore stabilize the finances of civil service pensions (see figure below).

## Baseline Cost Projections: FCS, Punjab and Sindh (percent of fiscal revenues)

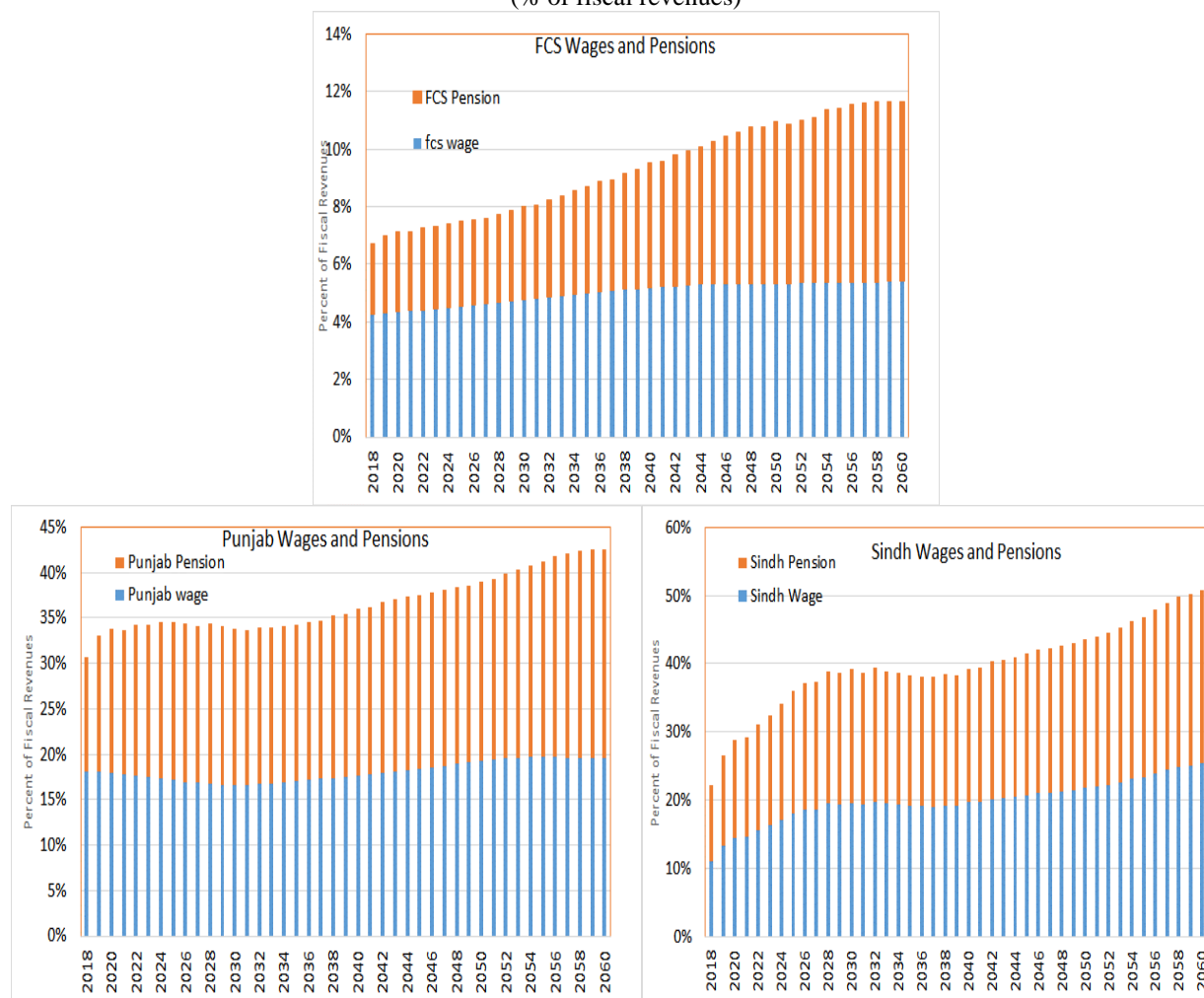


Source: PROST projections.

Note: The Baseline assumes indexation of benefits equal to one-half covered wage growth and one-half CPI growth.

***The sustainability of both basic salaries and pensions are also of considerable concern with the cost of pensions projected to soon overtake basic salaries as a proportion of public expenditures*** (see figure below). Notably, basic salaries and pensions are projected to increase in Punjab from about 25% of provincial revenues in 2020 to over 50% in 2060 while in Sindh are projected to increase from about 32% of revenues in 2020 to about 42% in 2060. Civil service compensation and pension benefits will therefore crowd out other public expenditures. Moreover, pensions are projected to overtake wages in 2023 in Punjab and in 2028 in Sindh.

Projected Civil Service Wage and Pension Costs – FCS, Punjab and Sindh  
(% of fiscal revenues)



Source: PROST projections.

Note: These figures do not include projections of non-wage allowances which would add to the fiscal costs. The projections of wages do not reflect any analysis of wages or the wage profile but do reflect the assumptions in the PROST model for wage growth and new hires.

**Although Pakistan provides generous benefits for full career workers of about 122% of pre-retirement basic wage,** the benefits are likely much less generous when viewed as a proportion of total compensation. Only by analyzing data on non-wage compensation can the authorities have a fully informed view of the adequacy of benefits and have a basis for fully considering the reform options outlined. The variation in the importance of allowances makes pensions inequitable – adequate for some and likely inadequate for others.

**The key reasons for the past and expected future growth in expenditures are:** (i) substantial increases in real terms in civil servant wages, pension benefits and allowances; (ii) a retroactive Supreme Court decision restoring commuted benefits; and (iii) growth in the civil service headcount.

**The civil servants' pension schemes also face important weaknesses in the equity between workers, and predictability of benefits:**

- *Post-retirement benefit adjustments have not only substantially increased fiscal costs but their ad hoc nature subject workers and retirees to the risk that their benefits may lose their purchasing power.*
- *Non-pensionable allowances vary substantially across grades of workers and even across workers in the same grade.* As a result, individual's total replacement rates vary widely at retirement even though many have similar work histories.
- *Since benefits are computed based on workers' final salaries, pensions can be materially affected by promotions or wage adjustments prior to retirement.* Generally higher wage workers receive a higher replacement of lifetime wages than low income workers.<sup>1</sup> Finally, workers who retire shortly after a wage hike can receive much higher benefits when compared with those who retire prior to one.
- *The formulas used to calculate commutation (and restoration) are not actuarially fair and retirement benefits are not subject to an actuarially fair adjustment for early retirement.* Actuarial fairness could enable retirees to avoid any financial losses by commuting or not commuting their retirement benefits and equalize the benefits depending upon the age of retirement.

*Parametric reforms which modify the benefit formula and qualifying conditions could moderate the fiscal costs while at the same time improve incentives, equity and predictability of benefits* (See graphs below). The authorities will need to weigh the tradeoffs and fiscal constraints in considering different reform options and specific parameters. Most of the reform options below have been modeled to assess their impact on fiscal costs and benefit adequacy of benefits.

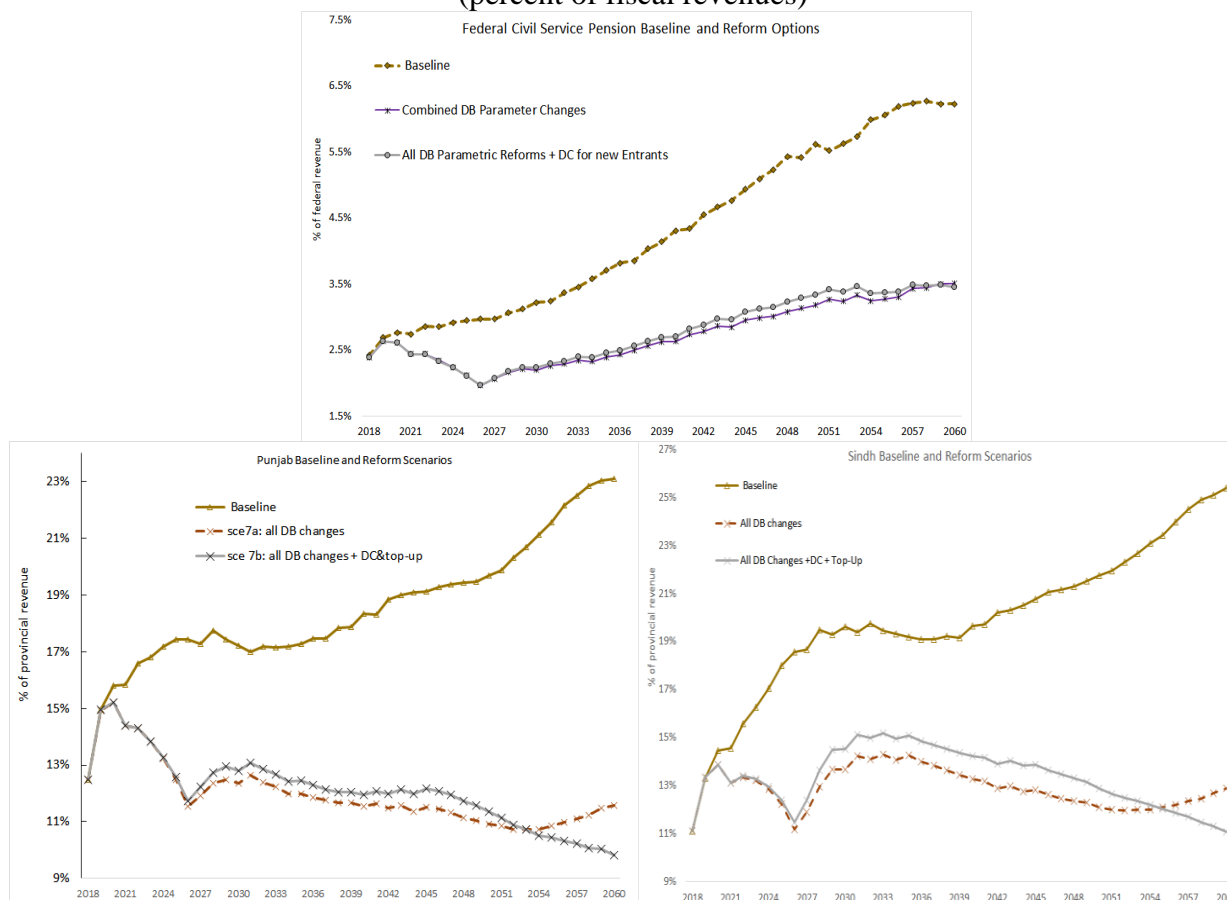
- **Reducing the accrual rate** for service after reform can reduce costs and the generosity of benefits. It is essential to have a systematic review of the relationship between allowances and basic salary and to then thoughtfully broaden the wage base to include some non-pensionable allowances in a way that addresses the distributional impact between workers.
- **Limiting the growth of pensions and post-retirement allowances to the growth in consumer prices** could materially stabilize pension finances. Although pensions would, on average, decrease relative to civil service wages, benefits would retain their purchasing power.
- **Reducing benefits by an actuarially fair adjustment factor** for retirement before the retirement age would also improve system finances and make pensions fairer between workers.
- **Gradually eliminating the option for retirement after 25 years of service and increasing the normal retirement (eligibility) age** for civil servants beyond age 60 would both improve system finances and enable healthy workers to work longer as healthy life expectancy continues to grow.
- **Extending the period of the pensionable wage base** to include many years' of worker's income and indexing or valorizing the wage base would improve system finances and promote equity between workers.

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<sup>1</sup> On average, workers with higher wages at retirement have had a steeper rise in their wages over their careers when compared with workers with relatively lower wages at retirement.



## Baseline and Reform Scenarios Cost Projections: FCS, Punjab and Sindh (percent of fiscal revenues)



Source: PROST projections.

***One option which over time could partially address the problem of unsustainability and diversify individual and government funding risks would be to replace the current unfunded defined benefit scheme with a hybrid contributory defined-contribution scheme for new entrants.*** Such a hybrid scheme could diversify the risk from a worker’s perspective while providing a more sustainable financing structure. A hybrid of a contributory defined-contribution scheme and a non-contributory defined-benefit “top-up” may be necessary to ensure continuity in replacement rates between cohorts on an affordable basis. Most or all of the pension benefit could be provided as an annuity financed from accumulated employer and worker contributions. Some level of a top-up defined benefit may be needed to achieve a target level of income replacement. At the same time the General Provident Fund (GPF) could be integrated with such a DC benefit and voluntary retirement savings options could be offered to all civil servants.

***Pre-funding part of its obligations to workers would have both positive and negative fiscal effects:*** Over the initial period of 25-35 years, the Government would be responsible for so-called transition costs, namely both financing existing retirees from the budget and also making contributions on behalf of both workers and retirees. After such a transition, the fiscal costs would drop substantially, namely because benefits under the funded scheme would be paid from the reserves of the scheme and not from the current budget.

***A contributory DC scheme could also provide the foundation for a similar scheme for private sector workers*** as has been established in several other countries. New technology provides

an opportunity to achieve substantial efficiency and effectiveness. Moreover, a common DC design for both the public and private sectors provides an opportunity for seamless labor mobility unhindered by pension vesting and preservation parameters.

***Constraining the growth of pension costs need to be aligned with similar measures to constrain headcount and real wage growth.*** The inequities created by varying levels of individual allowances in total compensation also require separate consideration which weighs equity and fiscal implications of changes in the existing approach. Finally, continued institutional reforms will be needed to improve the automation and oversight of benefit administration as well as delivery systems to support the proposed reforms.

***A reform program cannot be undertaken without a careful assessment of non-wage compensation*** and an effort to align changes in pension parameters with the composition of the pensionable wage base.

***Additional modeling of reform options to quantify the effects of various parameters and transition arrangements will also be needed.*** The authorities will need to weigh the tradeoffs between fiscal affordability and sustainability on the one hand and benefit adequacy on the other in simulating changes to parameters building on the initial scenarios suggested in this report.

# Pakistan: Assessment of the Civil Servant's Pension Schemes

## I. Introduction

*This report was prepared at the request in mid-2018 of the Secretaries of Finance for the Pakistan Federal Ministry of Finance, the Sindh Ministry of Finance and Punjab Ministry of Finance.* Missions visited Pakistan in January and November 2018, the latter which included a week-long training program in the use of the Pensions Reform Options Simulation Toolkit (PROST). Policy discussions were held about reform options in January 2019 during a workshop on South Asia Civil Service Pension system in Bangkok, Thailand. The initial findings of the PROST projections were discussed with key counterparts in Islamabad, Karachi and Lahore in October, 2019.

*This report evaluates the current civil service pension scheme and suggests options to consider for pension policy and parameter reforms to improve sustainability, equity and predictability.* Actuarial projections have been employed for the civil servant schemes for the Federal civil servants, and for civil servants in Punjab and Sindh. We have not modeled the schemes for other provinces, for Autonomous Authorities or for Uniformed Forces.

*This report is organized as follows:* Section II reviews the design, parameters and coverage of the civil servant pension schemes in Pakistan; Section III evaluates the key challenges presented in these schemes; Section IV suggests options for parametric and structural reforms; and Section V concludes.

## II. Description of Current Schemes

*Pakistan's civil servants' pension scheme is a non-contributory defined-benefit scheme providing relatively generous benefits for career civil servants.* A worker is entitled to an annuitized benefit at age 60 or upon completion of 25 years of service (Table 1). The benefit is calculated as the number of years of service multiplied times the accrual factor times the pensionable wage base. In addition, retirees are entitled to post-retirement allowances which materially increase the individual replacement rate after retirement. Allowances added to post-retirement pensions have, in recent years increased the effective average accrual rate from 2.33%/year of basic salaries to 4.09%/year in 2018.

*Separate schemes for armed forces and frontier guards have different rules.* Employees of state-owned enterprises are also covered by separate non-contributory defined-benefit schemes and some also have provident funds. These schemes have not been analyzed in this report.

*Individual replacement rates vary considerably* even though many workers have similar work histories because non-pensionable allowances while working make up an estimated 20-50 percent of total emoluments for civil servants.<sup>2</sup> As a result, a worker with allowances of 20% of total emoluments and a benefit equal to 122% of an individual's pre-retirement wage would have an effective replacement rate of 98% of total emoluments while a worker with allowances of 50% of total emoluments an effective replacement rate of 61%.

*Pension indexation is legally ad-hoc though in recent years has been similar to the indexation of wages for many retirees.* Benefits are not subject to automatic annual adjustment but are adjusted on an ad-hoc basis. The adjustments are also not applied on a uniform basis. For example, benefit adjustments may be on a percentage basis or may be flat. Moreover, they have been discreet adjustments provided to workers in certain retirement cohorts. Discreet adjustments have been applied according to the pre-retirement grade.

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<sup>2</sup> The team did not receive data on individual compensation provided by allowances. As a result, it was not able to assess in detail the distributional effects of such allowances on workers at different levels, with different service histories and with different basic salaries.

Moreover, some of the benefit adjustments have been applied retroactively to benefit retirees who may have had insufficient adjustments in prior years.<sup>3</sup>

**Up to 35% of the pension benefit can be received in a lump-sum commutation.** A retroactive decision by the Supreme Court in 2015 provides that the full amount of commuted benefits have to be restored after about 12 years.<sup>4</sup>

**Financing of pension benefits is directly from the budget with no employer or employee contributions** (See Box 1 for a description of typical financing options for civil service schemes). Provincial reserve funds have been established in 2002-2003 with the aim of pre-financing some of future pension liabilities. Later in 2009, an effort was made to put in place more rigorous financing strategy for each fund. Actual fiscal transfers to these funds have been substantial but very small relative to growth in pension liabilities.

Table 1: Civil Service Pension Scheme Parameters

**Qualifying Conditions**

Reference Wage	Member's final month of pay plus some special pay/allowance
Estimated allowances	20-50% of total emoluments <sup>5</sup>
Minimum vesting period for pension benefits	10 years
Eligibility for full pension	Age 60 or 25 years of service

**Benefits**

Accrual rate	2.33% per year * Basic Salary <sup>6</sup>
Minimum pension	R10,000 p.m.
Maximum replacement rate	70% of pensionable wage
Termination benefits (prior to min. eligibility)	>5 <10 years; 1 month pay per year of service
Pension indexation	Ad-hoc
Pension payment type	Life annuity (+ up to 35% commutation and restoration after 12 years on average)
Other retirement savings	Provident Fund -- mandatory DC, contribution rate of around 3 to 10% depending on pay range
Survivor pension before retirement	50% of accrued pension + gratuity of 25% of pension
after retirement	50% of pension in payment (in case death happens within 10 years of retirement)

**Pakistan shares several design characteristics with civil servant schemes in South Asia** (See Annex 2 and Table 13).

- *Several countries in the region inherited non-contributory defined-benefit special schemes for civil servants from the British.* Bhutan and the Maldives have distinct histories. India moved to a contributory defined contribution schemes for new entrants to the civil service in 2004 and later established a voluntary scheme for private sector workers with the same design and using the same platform. The Maldives converted its defined-benefit scheme for civil servants and private sector workers to a contributory defined benefit scheme in 2009.

<sup>3</sup> The decrees which spell out benefit adjustments generally provide a percentage adjustment to specific beneficiaries, often with two or more different percentages applied to different groups. Given the complexity of the decrees, the team was not able to determine the overall average historical adjustments in benefits.

<sup>4</sup> Restoration depends upon the year of retirement. For a person at age 60, the benefits are restored after 12 years.

<sup>5</sup> The levels, criteria and evolution of allowances both during employment and during retirement have not been assessed and need to be the subject of a separate study.

<sup>6</sup> The pensions law suggests that a worker will receive a replacement rate of 70% of final basic salary after 30 years of qualifying service which results in an accrual rate of 2.33%/year. However, additional post-retirement allowances make the effective accrual rate about 4.1% in recent years.

- *Pakistan offers one of the most generous average civil service pensions in the region when measured as the replacement rate for basic wages.* However, when one factors in the wide range of differences in the importance of allowances to total compensation in Pakistan, this suggests that many workers may enjoy far less generous replacement rates. In addition, the prevalence in the region of such allowances in the overall compensation package for civil servants makes it difficult to make meaningful replacement rate comparisons.
- *Most of the region has ad-hoc indexation,* again with the exception of Bhutan which has automatic indexation and India and the Maldives which have had structural reforms. Pakistan is the only country in the region that has post-retirement allowances which are not in the benefits specified in pension legislation.
- Pakistan's retirement age of 60 with a majority of workers able to retire with 25 years of service is similar to several countries in the region, although the tendency is to move the retirement age higher such as Afghanistan and the Maldives that have gone to age 65.
- All of the schemes in the region with the exception of Afghanistan have or have had supplementary provident funds. The benefits from these supplementary schemes vary a great deal however, as in many cases substantial withdrawals can be made for health needs and housing.

#### **Box 1: Key Design Characteristics of Civil Service Pension Schemes**

**Benefit Design** – The general architecture is generally *Defined Benefit* or *Defined Contribution* or a *hybrid thereof*. *Defined benefit* schemes generally have an accrual rate and provide a pension benefit from retirement age until death. A defined benefit is often formulated as: [Number of years of qualifying public service employment] \* [An Accrual Rate] \* [the pensionable wage base]. In Pakistan, this is [the number of years of qualifying public service] \* [about 2.33%] \* [an individual's basic salary in the final year of public sector employment]. The payout phase for a defined-benefit scheme may include benefit indexation, such as the annual adjustment of an individual's benefit based on the growth in the Consumer Price Index.

*Defined-contribution* schemes are generally contributory and apply a contribution rate for employers and employees \* the pensionable wage base in that year and the contribution goes into a fund which accrues interest, dividends and capital gains. Benefits are computed based on the accumulated funds at retirement. The payout phase for a defined-contribution scheme can be a lump-sum, phased-withdrawal, annuity or some combination thereof.

**Pre-financing of pension benefits** can be *Unfunded, Partially-Funded, or Fully-Funded*.

- *Unfunded* schemes are those that have no contributions or reserve fund and pay benefits entirely from current tax revenues. Reserve funds have been established at a provincial level though these have no legal liabilities for financing civil service pensions.
- *Partially-funded* schemes generally have contributions and a reserve fund but the amount of the reserve fund can only partially finance promised pensions of individual members at any point in time. *Partially-funded* defined-benefit schemes are often referred to as Pay-as-you-go (PAYG), as part of current contributions are used to pay current benefits.
- *Fully funded* schemes have accumulated assets backing all of the benefit payouts. Generally, fully funded schemes are Defined Contribution.

*Civil servants make up about 2.7% of the national labor force and civil servant retirees about 3.5% of the elderly age 60 and above.* Pakistan's federal system delegates many government functions to a provincial level such as teachers and municipal workers. The coverage is therefore much higher at a provincial level when compared with Federal civil servants.

Table 2: Worker and Retiree Coverage

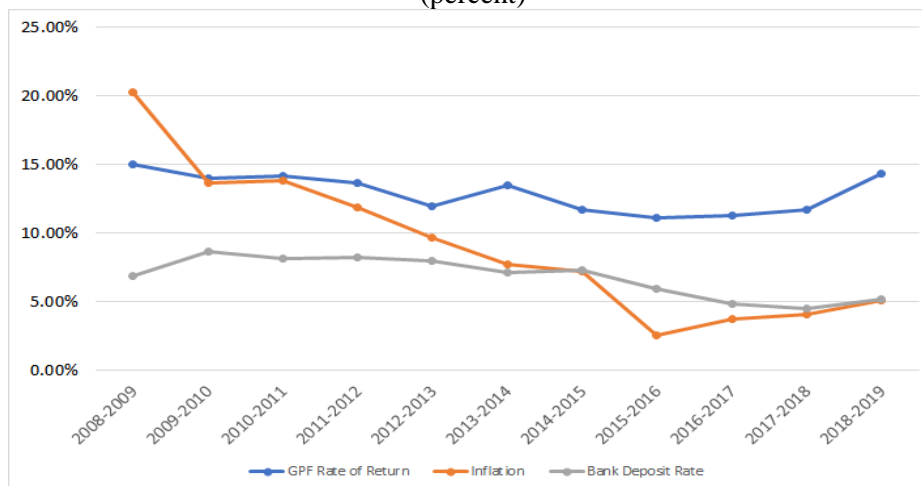
Coverage	Federal Civil Servants		Sindh	Punjab	Khyber Pakhtunkhwa	Balochistan	Total	
Civil Servant Workers	392,941	2/	492,613	801,473	401,707	5/	2,088,734	6/
Old Age Beneficiaries	79,300		103,644	301,267	119,379	5/	603,590	
Survivors	39,981		67,390	152,586			259,957	
Disabled			1,479	1/			1,479	
System Old Age Dependency Ratio	20.2%		21.0%	37.6%	29.7%		28.9%	
Civil Servants as a % of the Labor Force			3.4%	2.1%	5.4%		3.3%	
Old Age Beneficiaries as a % of Age 60+	NA		NA	NA	NA	NA	4.4%	
Labor Force 2/			14,700,000	38,600,000	7,500,000	2,500,000	63,400,000	
Elderly 60+							13,697,000	3/
Population			47,886,051	110,012,442	35,525,000	12,344,000	206,600,000	2/
Labor Force as a Percent of Total			23.2%	60.9%	11.8%	3.9%	100.0%	
Population as a Percent of Total			23.2%	53.2%	17.2%	6.0%	100.0%	
1/ 2015. Source Sind: Analysis of Civil Service Pension Schemes.								
2/ Source: Pakistan Bureau of Statistics, Labor Force Survey, 2017. Reported in Pakistan Employment Trends, 2018.								
3/ Source: Pakistan Labour Force Survey								
4/ Source: Actuarial Report - 2016.								
5/ See <a href="https://agkhyberpaktunkhwa.gov.pk/reports/active-employees-pensioners/">https://agkhyberpaktunkhwa.gov.pk/reports/active-employees-pensioners/</a>								
6/ Source: Labour Force Survey 2017-2018.								

***The General Provident Fund (GPF) is the source of additional retirement benefits for civil servants.*** All civil servants are also required to make employee contributions of between 3 and 8 per cent of their basic salary to the GPF according to their basic salary level.<sup>7</sup> The contributions and individual account balances are recorded in the government accounts, but have not been invested.<sup>8</sup> The Government determines the interest rate each year and over the past decade these rates have averaged about 4% in real terms and had returns more than 6% above the bank deposit rate (Figure 1). Such favorable rates of return provided to such accounts provide an additional public benefit to workers. Moreover, such benefits favor civil servants with higher basic salaries and/or accumulations. Various withdrawals are permitted for select purposes such as for housing or health needs prior to retirement and the remaining balance is distributed as a lump-sum at retirement.

<sup>7</sup> The contribution rate is 3% for BPS 1, 5% for BPS 2-11, and 8% for BPS 12-22.

<sup>8</sup> Provincial Provident Investment Funds were established in 2006-2007 to partially pre-fund some of the anticipated pension expenditures. The concept was to prudently invest the reserves of such investment funds and to utilize the portfolio returns as a means of offsetting some of the fiscal costs.

Figure 1. GPF Rate of Mark-up Compared with Inflation and Deposit Rates (percent)

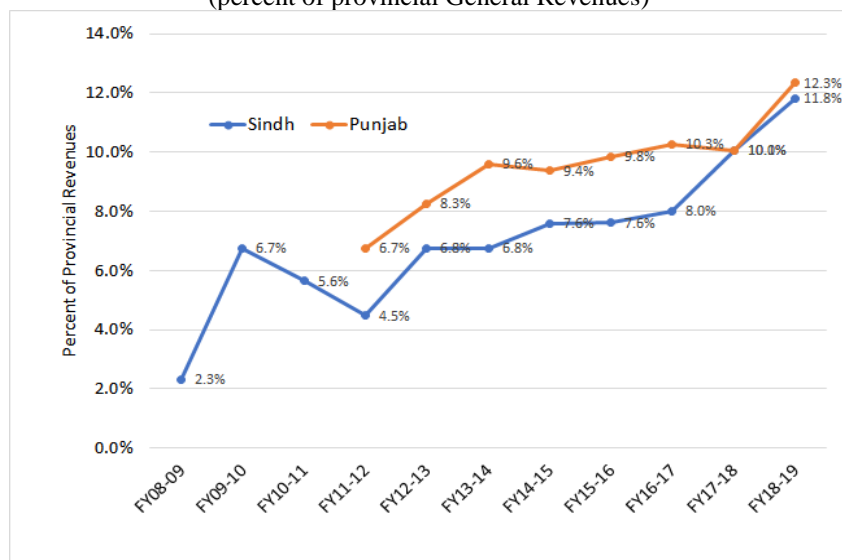


Sources: Periodic Announcements by Comptroller General of Accounts, World Economic Indicators.

### III. Evaluation

**Sustainability - The fiscal costs of civil servant pensions<sup>9</sup> are high (about 12% of provincial current revenues) and are projected to absorb an increasing proportion of fiscal resources** (Figure 2, Figure 3, Figure 4). This is attributed to a number of factors including growth of headcount and payroll, the high replacement rate, growing life expectancy of retirees, high rate of ad hoc pension allowances and a Supreme Court decision providing for retroactive restoration of benefit reductions resulting from commutation of retirement benefits since 2001.

Figure 2. Sindh and Punjab: Growth of Pension Expenditures (percent of provincial General Revenues)



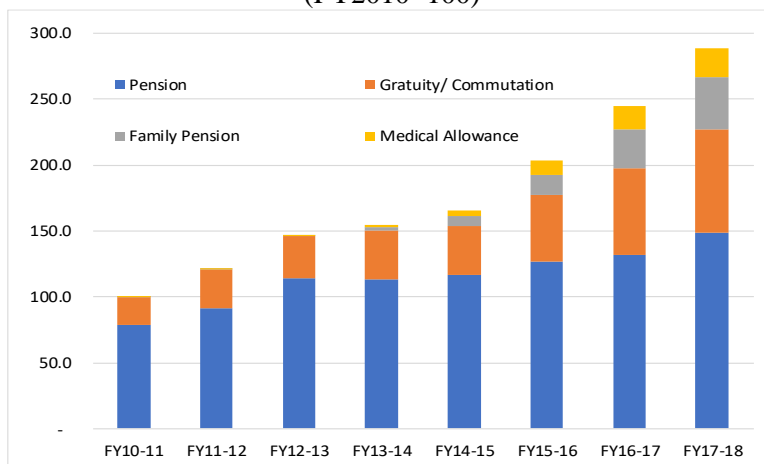
Sources: Government of Punjab, Punjab Pension Fund, Finance Department, Report on Ballooning Pension Liabilities and Proposed Remedial Measures; Najam Ahmed Shah, Challenges in Reforming Pakistan's Public Sector Pensions (The case of Province of Sindh) 2019. Powerpoint presentation delivered at a Workshop on South Asia Civil Service Pensions, Bangkok, Thailand, January 17-18, 2019.

<sup>9</sup> We have not modeled the military pensions or pensions for State Administered Entities. As of 2017 military pensions were 72% of total pension expenditures and we assume SAE is 9% of pension expenditure.



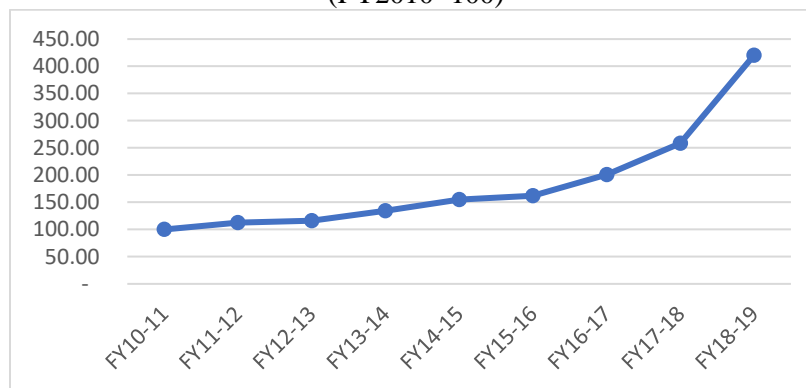
**Total retirement benefit outlays increased by almost 200% from 2010 until 2018 in Punjab and by more than 300% in Sindh** (Figure 3). During the same period, the composition of pensions changed markedly, with old age pension comprising over three quarters of benefits in 2010 to just over one-half in 2018. Moreover, substantial changes in survivors' benefits (Family Pensions) and provision of medical allowances substantially increased the amounts of these benefits since FY2013.

Figure 3. Punjab: Real Growth of Pension Benefits FY2010-2018 (FY2010=100)



Source: Government of Punjab, Punjab Pension Fund, Finance Department, Report on Ballooning Pension Liabilities and Proposed Remedial Measures, mimeo, 2019.

Figure 4 Sindh: Real Growth of Pension Benefits FY2010-2018 (FY2010=100)



Source: Najam Ahmed Shah, Challenges in Reforming Pakistan's Public Sector Pensions, (The case of Province of Sindh) 2019. Powerpoint presentation delivered at a Workshop on South Asia Civil Service Pensions, Bangkok, Thailand, January 17-18, 2019.

**Between 2010 and 2018, substantial real increases were provided to both salaries and pensions, the latter in the form of pension allowances.** Cumulative salary increases in Punjab were almost 80% and cumulative real pension increases were almost 40%.<sup>10</sup> Every year in this period the increase was the same for pensions and salaries except in 2010 when salary increases were 50%. There is a compounding effect as real increases

<sup>10</sup> These data are estimates based on compound averages and assume a real pension increase is uniform across retirees in each year. Actual increases were not the same across retirees in each year but specific adjustments were provided to groups of retirees and other adjustments to other groups. In addition, the adjustments for disability pensions, survivorship (family) pensions and medical allowances were also not fully aligned with the adjustments for old age pensioners.



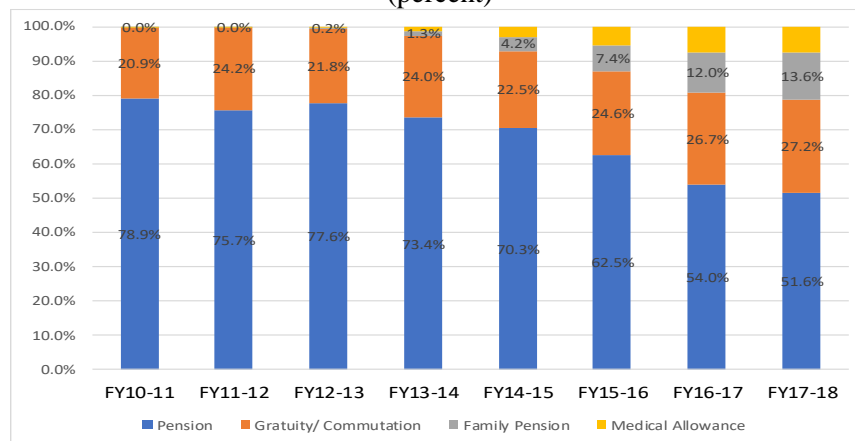
in wages go into the wage base for determining a pension, in addition to the cumulative pension increase provided.

Table 3: Punjab: Salary and Pension Increases 2010-2018<sup>11</sup>  
(percent)

	Inflation	Salary Increase (Punjab)	Pension Increase (Punjab)	Real Salary Increase	Real Pension Increase	Compounded Real Salary Increase	Compounded Real Pension Increase
FY10-11	10.10%	50.0%	15.0%	36.2%	4.5%	36.2%	4.5%
FY11-12	13.66%	15.0%	15.0%	1.2%	1.2%	37.8%	5.7%
FY12-13	11.01%	20.0%	20.0%	8.1%	8.1%	49.0%	14.2%
FY13-14	7.36%	10.0%	10.0%	2.5%	2.5%	52.7%	17.0%
FY14-15	8.62%	10.0%	10.0%	1.3%	1.3%	54.6%	18.5%
FY15-16	4.53%	7.5%	7.5%	2.8%	2.8%	59.0%	21.9%
FY16-17	2.86%	10.0%	10.0%	6.9%	6.9%	70.0%	30.4%
FY17-18	4.15%	10.0%	10.0%	5.6%	5.6%	79.6%	37.7%
FY18-19	3.93%						

Sources: Government of Punjab, Punjab Pension Fund, Finance Department, Report on Ballooning Pension Liabilities and Proposed Remedial Measures.

Figure 5. Punjab: Composition of Pension Benefits FY2010-2018  
(percent)

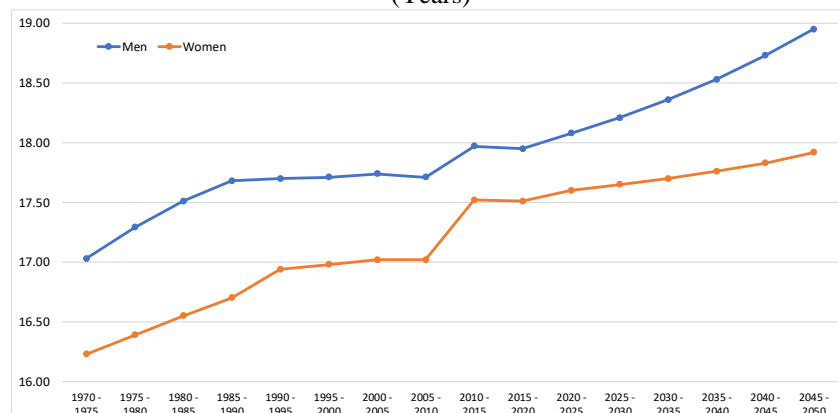


Source: Government of Punjab, Punjab Pension Fund, Finance Department, Report on Ballooning Pension Liabilities and Proposed Remedial Measures.

**Life expectancy at the age of eligibility for retirement benefits has increased since the civil service pension system has been in place and is projected to increase further in the future** (Figure 6). Most civil servants can retire after 25 years of service regardless of age and some are eligible to retire at age 60.

<sup>11</sup> Distinct increases were given to specific groups of workers and retirees. As such, the percentage increases are estimated by the Government of Punjab.

Figure 6. Life Expectancy at Age 60 (Years)



Source: UN World Population Prospects, 2017.

**Medical allowances, which are not part of pension rules, were introduced in 2010 to replace reimbursement on account of purchase of medicines by retired Government Servants and the local purchase of medicines by hospitals for outdoor patients.**

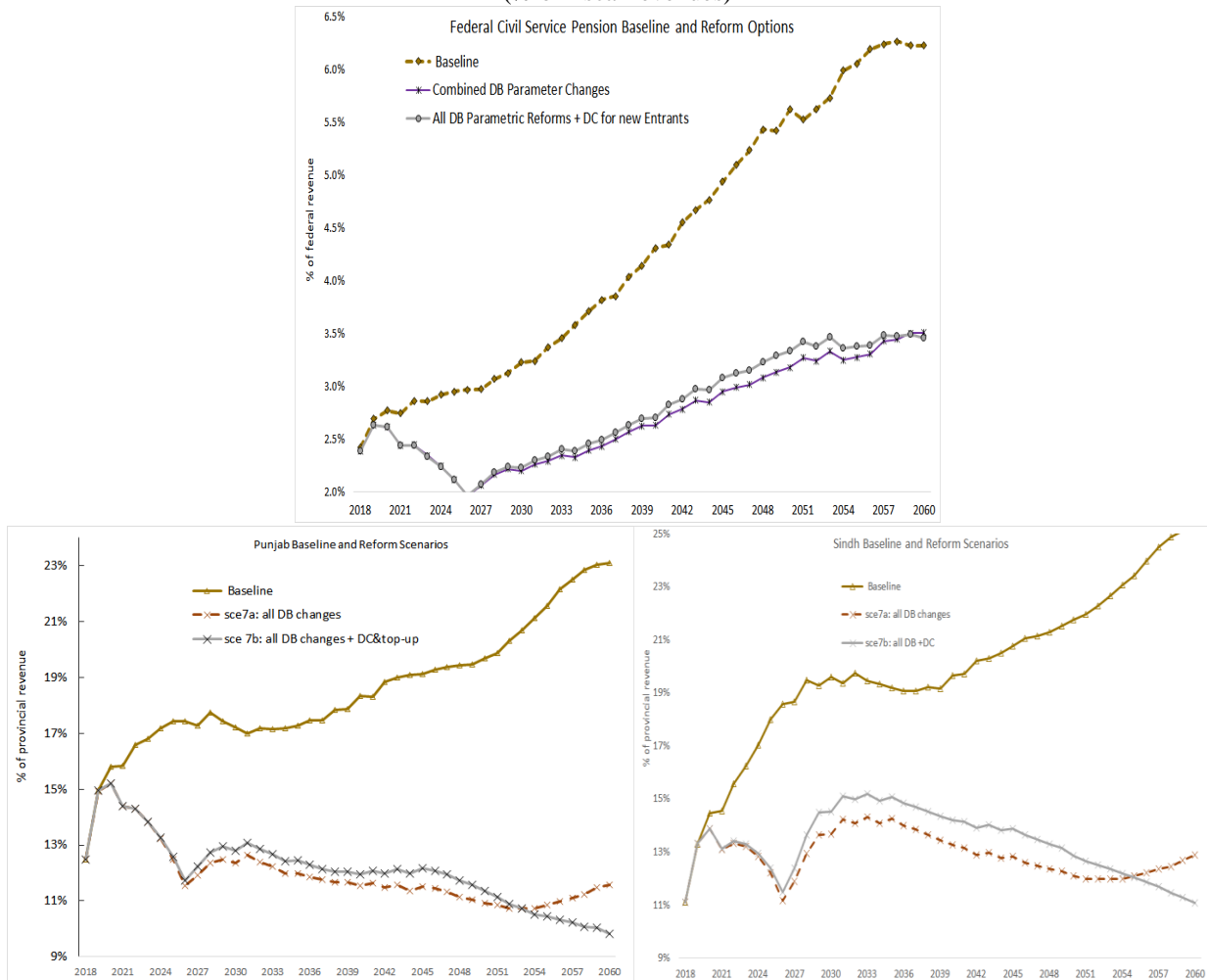
**Benefits for survivorship (Family Pension) increased substantially from 2010-2018.** In 2009, the family pension benefit was increased from 50% of the worker's pension benefit entitlement to 75%.

**Baseline projections suggest that civil servant pensions will absorb an increasing proportion of fiscal resources and an important determinant of the growth in cost is the indexation of benefits** (Figure 7). In Punjab, costs which were about 12% of provincial fiscal revenues in 2018 are projected to quickly rise to about 16% of revenues by 2021. Over time, *the trajectory of the projected cost will very heavily depend upon the indexation of pension benefits.*<sup>12</sup> For example, if the Government of Punjab were to limit the increase in pension benefits to the growth in the consumer price index, the projections suggest that the cost of civil service pensions could be limited to about 16% of fiscal revenues until about 2055.<sup>13</sup> On the other hand, if pensions were to grow at the same rate as covered wages (we believe they may have from 2011-2019), pensions would continue to absorb more and more of fiscal revenues, growing from about 16% in 2020 to more than 26% in 2055. This is a substantial impact that needs to be addressed through reform measures to ensure that there are sufficient fiscal resources for other essential priorities. Other means of moderating pension fiscal costs including reducing the growth in headcount and other parametric and structural reforms as outlined below.

<sup>12</sup> The projections assume that all benefits, including old-age benefits, post-retirement and allowances, and medical benefits for retirees all grow at the level of price growth, wage growth or half wage and half price growth.

<sup>13</sup> The projections include a number of key assumptions, including the assumption that federal and provincial fiscal revenues will continue at the same proportion of GDP as they were in 2018. In addition, over the long-term, the projections are sensitive to real wage growth and headcount growth assumptions (See Annex 1 for details).

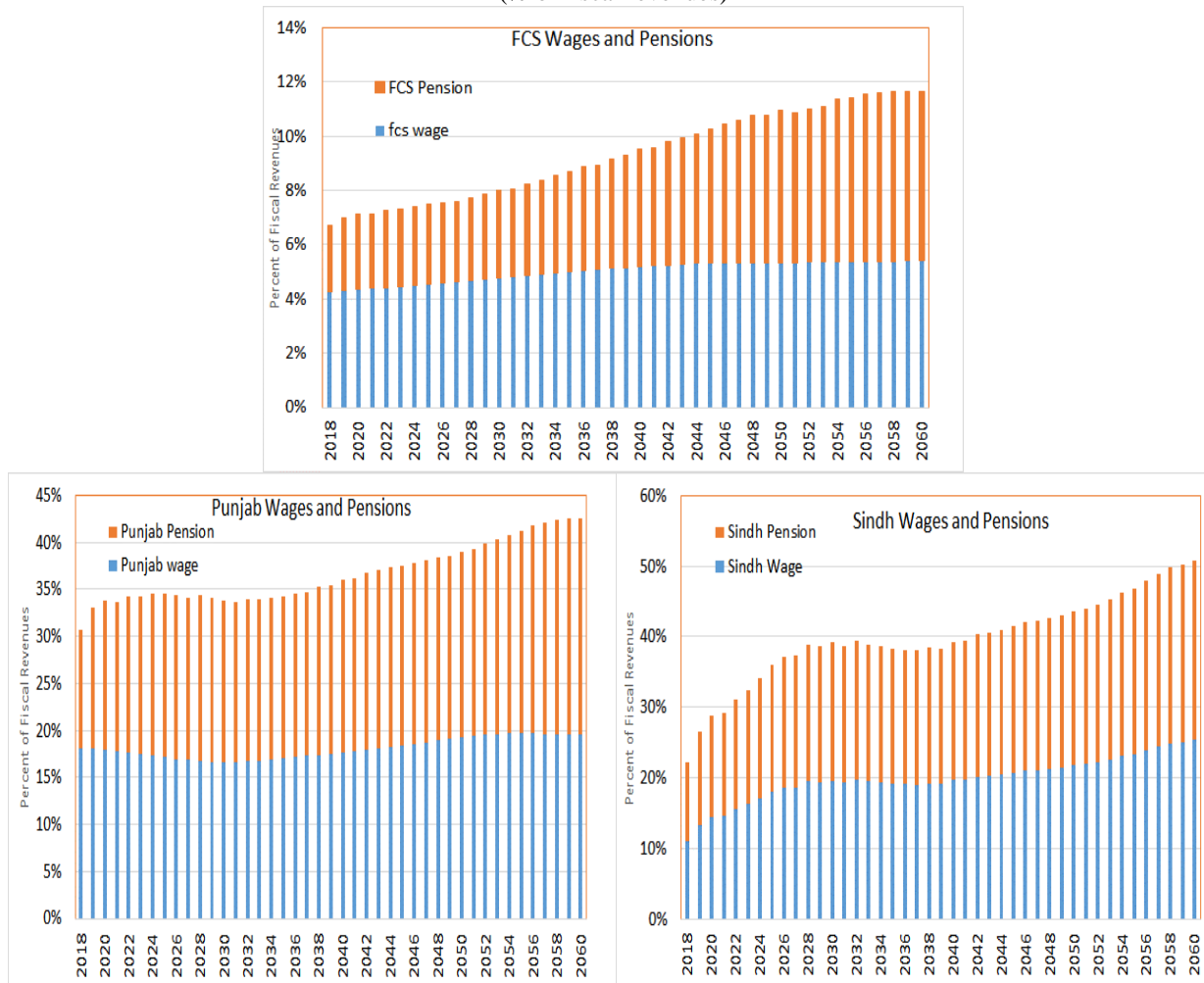
Figure 7. Projected Civil Service Pension Baseline Costs – FCS, Punjab and Sindh (% of fiscal revenues)



Source: PROST projections.

**The sustainability of both basic salaries and pensions are also of concern** (Figure 8). Notably, basic salaries and pensions are projected to increase in Punjab from about 25% of provincial revenues in 2020 to over 50% in 2060 while in Sindh are projected to increase from about 32% of revenues in 2020 to about 42% in 2060. In both provinces the cost of pensions is projected to soon overtake basic salaries as a proportion of public expenditures. Civil service compensation and pension benefits will therefore crowd out other public expenditures.

Figure 8. Projected Civil Service Wage and Pension Costs – FCS, Punjab and Sindh (% of fiscal revenues)



Source: PROST projections.

Note: These figures do not include projections of non-wage allowances which would add to the fiscal costs. The projections of wages do not reflect any analysis of wages or the wage profile but do reflect the assumptions in the PROST model for wage growth and new hires.

**There is a tradeoff between limiting fiscal costs on the one hand and the benefit level of retirees on the other** (Figure 9). Limiting pension increases to CPI growth would reduce the level of pension benefits when viewed as a proportion of covered wages (Figure 10). This is because covered wages are assumed to grow substantially faster than prices which is consistent with the GDP growth assumptions in the projections. At the same time, limiting the increase in benefits to price growth will reduce the average replacement rate, when calculated as a proportion of the average covered wage.

Figure 9. Balancing the Tradeoffs between Sustainability and Adequacy

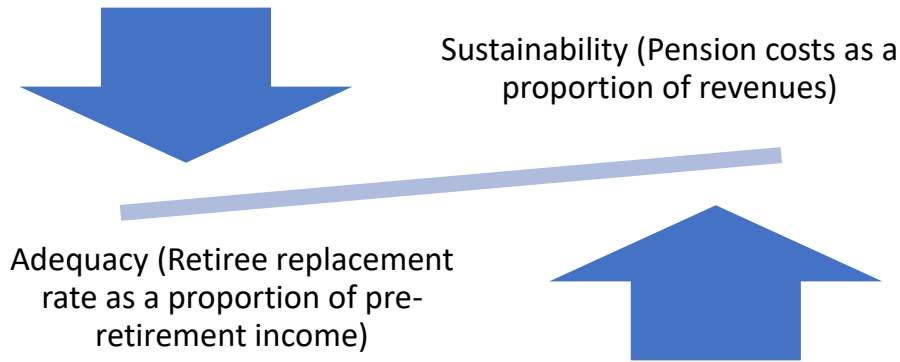
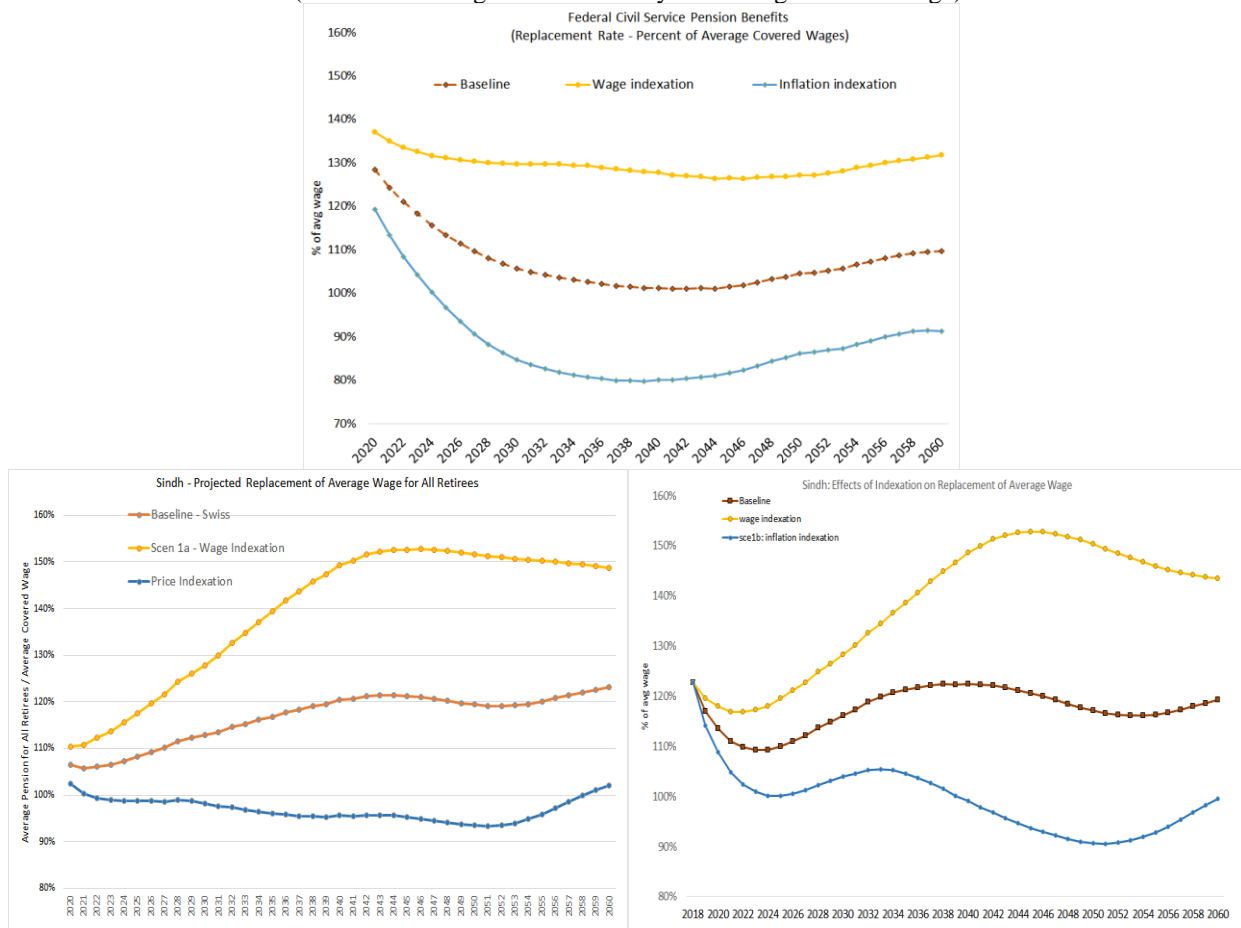


Figure 10. Projections of Replacement Rates (Percent – Average Benefits each year/Average covered wage)



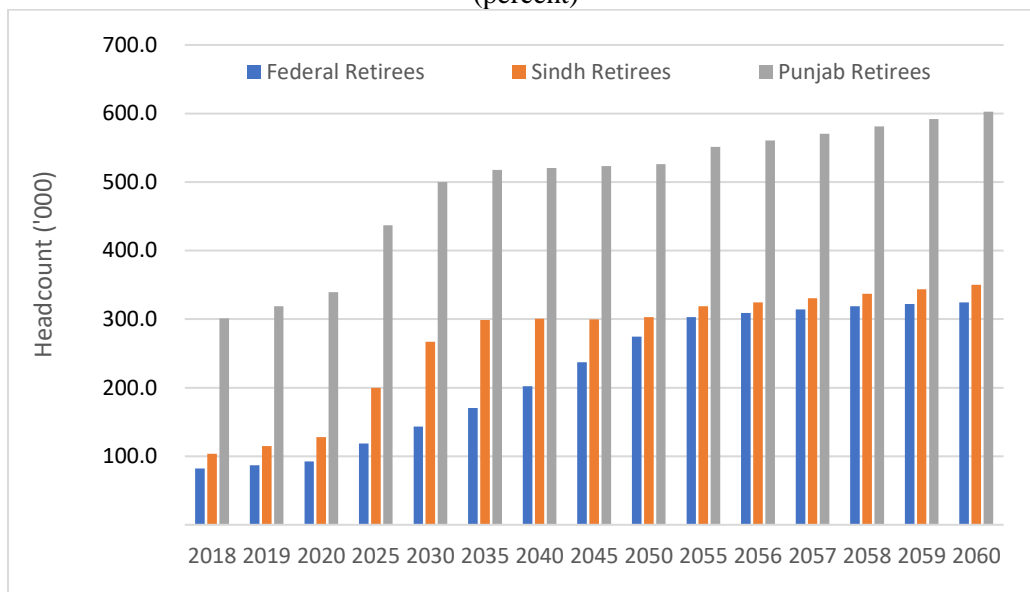
Source: PROST projections.

Note: The replacement rate figure for baseline year in all three cases is simply equal to average pension (from pensioner data) divided by average wage (from contributor data). In case of FCS and Sindh the pensioner data we received excluded the PPO pensioners who are likely older and receive lesser pensions. Therefore, exclusion of PPO pensioners has the effect of raising the average pension. Hence in FCS (which has the largest proportion of PPO pensioners missing from the data) we see RR as high as 130% of average wage in base year.

**There are several dynamics which are driving the cost and replacement rates indicated.** The retiree headcount is projected to increase precipitously by over 65% for Punjab in just 10 years, by 2030 (Figure

11). This results primarily because of historic increases in the headcount of civil servants, along with their age distribution. Lesser important though worth mentioning is the projected increase in life expectancy of the retiree population. Another dynamic which is increasing costs is that new retirees have high average individual replacement rates of 122% while older retirees have lower replacement rates. As the newer retirees replace the older retirees, the costs are projected to increase.

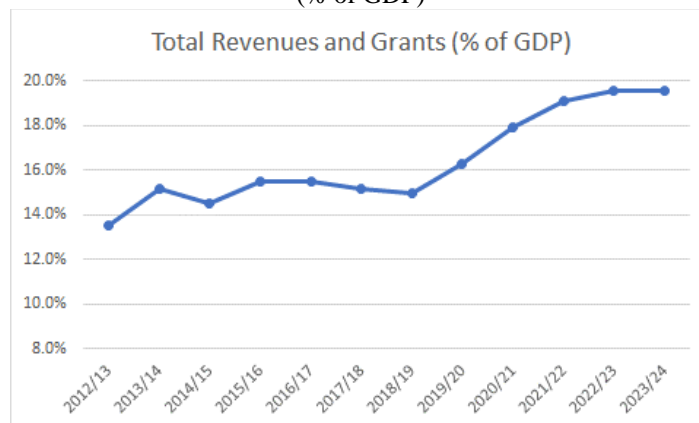
Figure 11. Projected Retiree Headcount (percent)



Source: PROST projections.

*It is possible that the limited fiscal envelope at a federal and provincial level could improve over time thereby making the increases in pensions costs less fiscally challenging.* For example, IMF Staff projections suggest that fiscal revenues and grants for Pakistan will increase from 15% of GDP in 2019 to more than 19% in 2024 (Figure 12).<sup>14</sup> Over many years however, these increases would be insufficient to adequately finance the projected growth in costs of pensions if not reformed.

Figure 12. Actual and Projected Fiscal Revenues and Grants (% of GDP)



Source: IMF: Request for an Extended Arrangement under the Extended Fund Facility, June 20, 2019, Table 1, p. 27.

<sup>14</sup> We have not included such increases in revenues and grants in the projections model.

**Adequacy – Although Pakistan has one of the most generous civil service pension systems in the world when viewed in terms of income replacement for basic wages, the system is far less generous when viewed in respect to replacement of total pre-retirement compensation.** On average, new retirees earn more in pensions than from basic wages prior to retirement. The effective accrual rate which had been 2.33%/year of service was gradually increased to an estimated 4.09% (for 30 years of service) by the addition of multiple allowances at and after retirement. This includes, for example, a pensions allowance for medical care which equates to an accrual rate of about 0.4%/year. It also includes allowances for cost of living increases, which in most countries are only provided after retirement and often simply adjust the total benefit by an automatic indexation factor. Non-medical allowances therefore amount to an accrual rate of about 1.36% of basic wages.

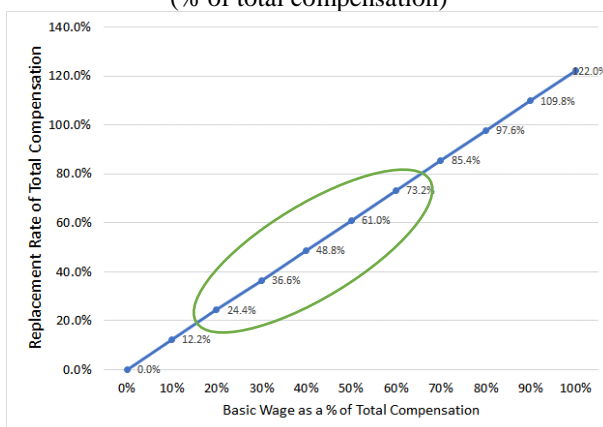
**Box 2: Adequacy of Compensation for Civil Servants**

Civil service pensions both provide old-age income protection for qualifying civil servants and are an integral part of the overall package of compensation. Adequacy of pension benefits are often measured by individual replacement rates or relative replacement of the average wage. Such metrics however, fail to indicate how adequate the package of compensation is, including pensions, when compared with individuals in the labor force with equivalent skills, training and professional qualifications. Such an assessment of compensation equivalency can inform policy makers about the relative incentives through compensation for different grades of civil servants. Moreover, it can be used to determine the importance of pension benefits in the relative incentives for civil servants to work in their positions.

Although such an assessment would be useful in Pakistan, we do not have sufficient data to undertake such a study. In particular, the level and variation of allowances is very important to civil service compensation in Pakistan. We would need detailed information about the monetary value of allowances to do such a study.

**Only by a thorough analysis of total compensation including allowances can the authorities understand the adequacy of pensions and formulate a sound reform program.** The variation in the importance of allowances makes pensions inequitable – adequate for some and likely inadequate for others (See Figure 13). It is next to impossible to formulate a robust reform program without a better understanding of non-wage compensation and formulating a pay-reform strategy to at least partially include allowances in the wage base.

Figure 13. Average Replacement Rates as a Proportion of Total Compensation (% of total compensation)



Source: Bank calculations.

Note: The 122% average replacement rate for basic salary was derived from PROST calculations. We do not have data on the distribution between basic wages and total compensation though several counterparts have estimated that it could be between 20% and 50% of the total.

***Predictability and risk - Although the pension benefit is initially generous, it is also difficult to predict and subject to risk.*** This is primarily because there is no automatic indexation of benefits and because the benefit is calculated based on an individual's final salary. In addition, the projected growth in the fiscal costs of pensions subjects retirees to a concern to sponsor's risk—that the full benefit may not be fully forthcoming, particularly if in a downturn there were to be a shortfall in fiscal resources.

***Equity and fairness – There are several elements of the pensions benefit formula which can be considered less than optimally equitable or fair:*** (i) Employment of a final salary to determine pension benefits on average provides those workers with higher pensionable wages at retirement with higher replacement of lifetime wages. In other words, higher wage workers at retirement generally have had much steeper growth in their earnings so they also get a higher pension in retirement; (ii) there is no adjustment to the benefit based on the age of retirement. A worker can retire after 25 years of service at any age and receive the same benefit (based on years of service) as a worker who retires at age 60. Someone for example who retires at age 50 receives 10 extra years of benefits without penalty when compared to someone who retires at age 60<sup>15</sup>; (iii) the factor used to determine the commutation is not based on an up-to-date annuity factor (based on current mortality data for civil servants and prevailing discount rates) and based on restoration rules. This means that the worker who opts for commutation receives a benefit which is materially different from the present value of their projected full annuitized pension benefit.

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<sup>15</sup> About 63% of all new retirees in Punjab in 2018 were below age 60. There is marked difference across grades with only 27% of retirees below age 60 for grades >17, and 67% of all retirees below age 60 for grade < 17.

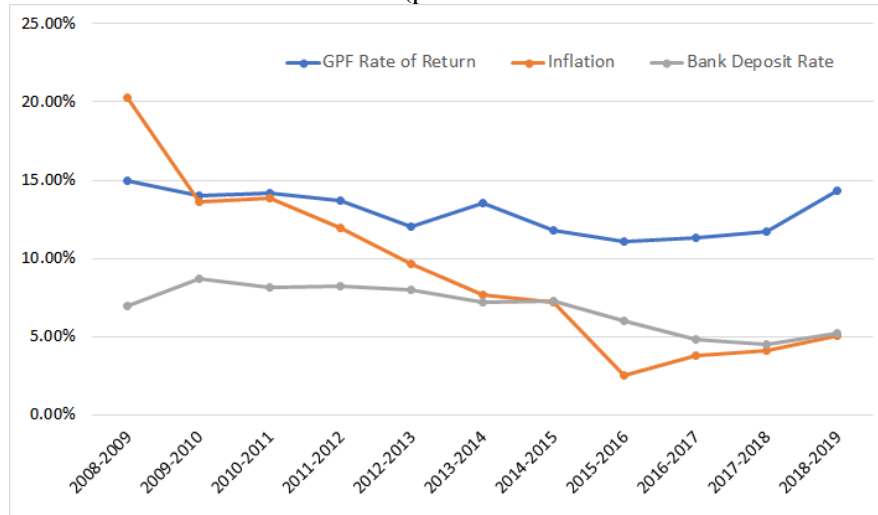


Table 4: Evaluation of Civil Service Pension Scheme Parameters and Proposed Reform Options

Parameter	Existing Rules	Summary Evaluation	Options for current workers	New Entrants
Accrual rate + post-retirement allowances	Effective accrual rate of 4.1%/year (2.7%/year basic + 1.4%/year post-retirement allowances)	<ul style="list-style-type: none"> <li>The effective replacement rate (with post-retirement allowances) of 122% is fiscally unsustainable.</li> <li>The generous replacement rate provides strong incentives to leave service after 25 years, depending upon the level of allowances.</li> <li>The large proportion of the benefit formula established as allowances creates substantial uncertainty for retirees.</li> </ul>	<ul style="list-style-type: none"> <li>Parametric reforms including reduction in the marginal accrual rate.</li> </ul>	Participation in a new hybrid Defined-Contribution & defined-benefit scheme.
Benefit indexation	Benefit adjustments are ad-hoc and not linked to increases in consumer prices.	Ad hoc post-retirement adjustments have been generous but subject workers and retirees to the risk that their benefits will lose their purchasing power.	Automatic indexation for the old-age and family benefits at a level of the growth in the national consumer price index.	Phased-withdrawal or Price-indexed annuity.
Family pension (survivor)	75% of worker or retiree's pension + minimum	Effective replacement rate (with post-retirement allowances) adds to unsustainable fiscal burden.	Multigenerational eligibility could be restricted and lump-sums provided in lieu of annuitized benefits for certain survivors	Accumulated balances could be distributed & a life-insurance policy established for survivors
Retirement age	60 or any age with 25 years of service	(i) workers receive the same replacement rate regardless of the retirement age and anticipated life expectancy; (ii) as healthy life expectancy has increased at age 60, more and more workers are capable of working longer, such as to age 65; and (iii) the age-wage profile of retirees suggests that those in grades 1-17 have much earlier retirement patterns than those in grades 18+.	<ul style="list-style-type: none"> <li>60-65 subject to actuarially-fair reduction for retirement before retirement age.</li> <li>Gradual increase in ret. age from 60 to 63 and eventually to 65 with subsequent adjustments in accordance with changes in life expectancy.</li> </ul>	Defined-contribution scheme is sustainable.
Reference wage	Final month's basic wage.	The final month's reference wage subjects workers to adverse risks, creates poor incentives and is inequitable between lower wage and higher wage workers.	<ul style="list-style-type: none"> <li>Increase the reference wage period from one month to 10 years (and eventually lifetime average) at a rate of one year per year.</li> <li>Adjust or "valorize" reference wage based on average annual growth in civil service wages.</li> </ul>	Not applicable
Commutation parameters + restoration	Up to 35% commutation + restoration.	<ul style="list-style-type: none"> <li>Commutation is sufficiently high that many retirees are not protected against poverty in retirement.</li> <li>Commutation factor is not actuarially fair.</li> </ul>	Establish actuarially fair commutation factors.	Commutation only for balances above specified thresholds.

*There is also a subtle regressive subsidy in the returns which are attributed to the General Provident Fund (GPF). The GPF tends to provide higher proportions of income replacement for higher income workers. For example, a worker who contributed 3% of wages and retired at age 60 would receive a lump sum equivalent to an individual replacement rate of about 6.2% while a worker who contributed 8% of wages and retired at age 60 would receive a lump sum equivalent to an individual replacement rate of about 16.4%.<sup>16</sup> Although the higher wage worker receives a higher replacement rate, the same worker also contributes more of their income to the scheme. The regressive subsidy is in the returns generated by the GPF which are higher than equivalent bank deposit rates and have been positive in real terms over the past 10 years (See Figure 14).*

Figure 14. GPF Return Rates  
(percent)



Sources: Periodic Announcements by Comptroller General of Accounts.

#### IV. Reform Options

*The authorities will need to weigh the tradeoffs and fiscal constraints in considering different reform options -- tradeoffs between the size of benefit promises and the ability of the authorities to afford and sustain the financing of such promises (See Figure 9). We categorize reform options into: (i) parametric reforms to the benefits and qualifying conditions; and (ii) a structural reform that introduces a contributory Defined-Contribution pension for new entrants and young civil servants on a voluntary basis.<sup>17</sup> In addition, the authorities will need to strengthen delivery systems to support both the existing scheme design and the reforms proposed.*

##### A. Parametric Reforms to benefits and qualifying conditions

*The reforms below could reduce fiscal costs while at the same time improve the equity and predictability of benefits:*

**1. Automatic CPI benefit indexation.** Establishment of a framework for annual automatic adjustments of pension benefits on a percentage basis according to the growth in the Consumer Price Index would: (i) protect retirees from loss of purchasing power during retirement; and (ii) ensure that all retirees are subject to the same indexation percentage so that some would not be better than others on a percentage basis. This will have the effect over time of reducing costs and reducing the effective replacement rate.

<sup>16</sup> These calculations assume that the worker works continuously from age 25 to age 60, has real wage growth of 2% and has a real return on the GPF balances of 4%.

<sup>17</sup> We have not modeled voluntary switching of young civil servants to the proposed DC scheme.

*The projection results suggest that indexing future growth in pensions and post-pension allowances to the growth in the CPI can enable the authorities to stabilize the costs at about 15-16% of provincial revenues for the next 35 years (Figure 7). In this way, only this one change in parameters can stabilize the finances of the civil service pension scheme.*

**2. Gradually increase in the normal retirement (eligibility) age for civil servants from age 60**, phase-out the option for retirement after 25 years of service, and establish an actuarially fair reduction for receipt of benefits prior to retirement age or increase for receipt after retirement age (Modeled in section 3 below, See Figure 16). At the same time, the benefit formula which limits benefits to 70% of basic wage after 30 years of service will need to be replaced by one which explicitly uses an accrual rate.<sup>18</sup>

Generally civil service schemes set the eligibility age by also considering the nature of the work involved, the life expectancy at retirement, and the overall finances of the scheme. As a result, there is no benchmark eligibility age that should be considered. The authorities should consider an increase in the eligibility age by considering the anticipated years in retirement for civil servant retirees and the fiscal burden of the age chosen. Most countries increase the eligibility age gradually in an effort not to have adverse effects on individuals close to retirement. For example, some countries may increase the eligibility age at a rate of 6 months per year so that the provision that enables workers to retire after 25 years of service (sometimes as early as at age 45), could increase to age 60 only over 30 years.

One option that we understand the authorities are considering is moving from age 60 to age 63 as is being considered by the government of Khyber Pakhtunkhwa. This modest increase is supported by the small increase in life expectancy at life expectancy at age 60 indicated in Figure 6. Many countries have increased the pension eligibility age to 65 and we would also recommend that the authorities consider such a parameter in the medium-term. It is also important to note that applying an actuarially fair reduction or increase in the retirement benefit is a means of enabling individuals to have added flexibility to retire at the age which is most appropriate to their own circumstances and needs.

The total implications of a gradual increase in the retirement age are complex and include both the effects on pension costs as well as wage and other benefit costs as summarized below (Table 5): During a transition period, total wage and pension costs go up as more is spent on wages and allowances even though the pensions cost may be slightly reduced. Over time, increasing the retirement age moderates pension costs, to the degree that new hires have been adjusted during a transition period.

Table 5: Summary of Effects of a Gradual Increase in the Retirement Eligibility Age

<b>Effects on Wages or Pensions</b>	<b>Fiscal Effect</b>
Effects of wages for workers who work longer than anticipated	<ul style="list-style-type: none"> <li>• Wage bill goes up during transition for workers whose total compensation is higher while working than while retired.<sup>19</sup></li> <li>• Wage bill goes down during transition for workers whose total compensation is lower while working than while retired.</li> </ul>
Effects of wages for workers hired during the transition	New hires have to decline by the number of individuals who work longer each year during the transition. If new hires are not reduced, then the savings from increasing the retirement age can be lost.

<sup>18</sup> The PROST projections assume that when the retirement age is increased, individuals are able to accrue more years of service.

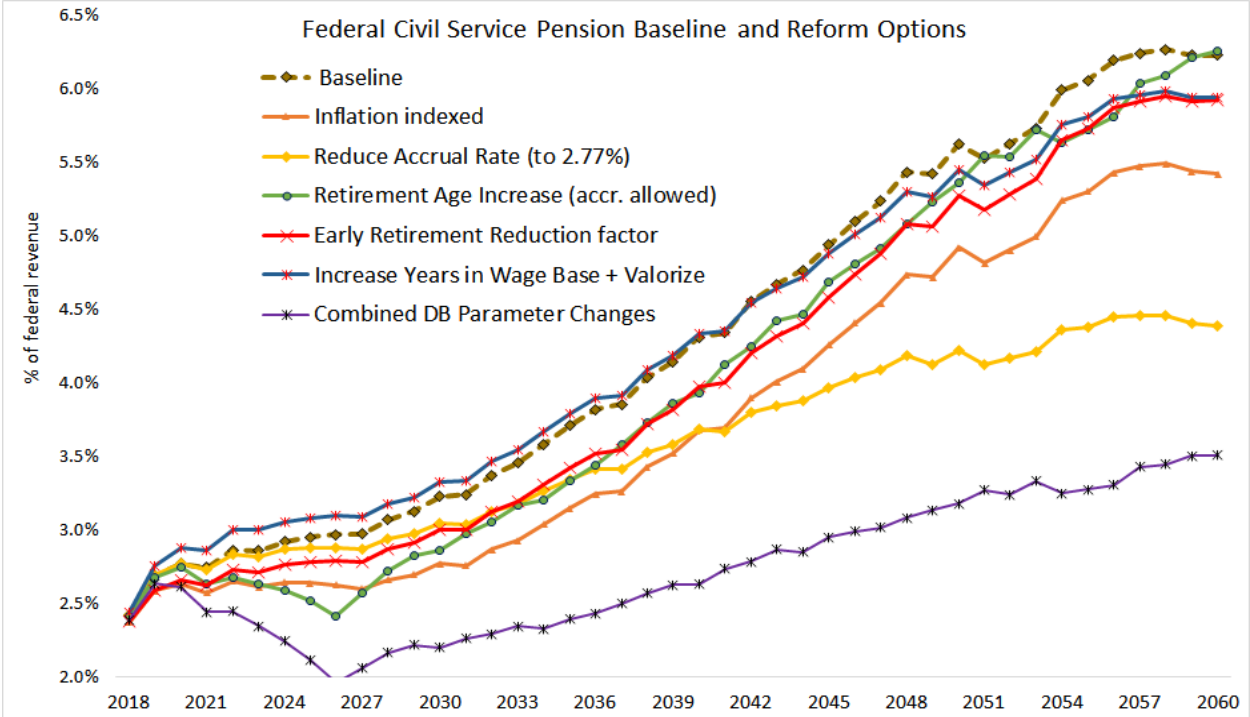
<sup>19</sup> As discussed earlier, average replacement rates for full term workers are 122% of basic salaries however basic salaries vary substantially as a proportion of total compensation. As such, workers with basic salaries which are greater than 81% of their total compensation would receive a benefit in retirement greater than their compensation while working while those with basic salaries below that would receive a benefit in retirement lower than while working.

Effects on pensions costs	<ul style="list-style-type: none"> <li>• Pension costs are reduced for retirees working longer as a result of a reduction in the number of years of life expectancy at retirement.</li> <li>• These costs are partially offset by: (i) workers who accrue more years of service in determining their benefit; and (ii) workers could have a higher salary basis.</li> </ul>
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*The projected effect of increasing the retirement age from 60 to 63 would be to reduce pension costs by between 0.5% and 1.0% of fiscal revenues over the projection period* (Figure 15, Figure 16, Figure 17). A sharp decline in costs for just for pensions is projected in the short-term as new retirees are kept in the government’s employ. As indicated, the savings in pensions can be offset by increases in the civil servant wage bill unless hiring is reduced to offset the reduction in new retirees. After the initial drop, the savings from the increase in the retirement age are projected to be less than 1% of fiscal revenues though do increase after many years. One of the reasons for the limited fiscal savings in this scenario is that we modeled an option of having individual who retire 3 years later accrue an additional 3 years of service.

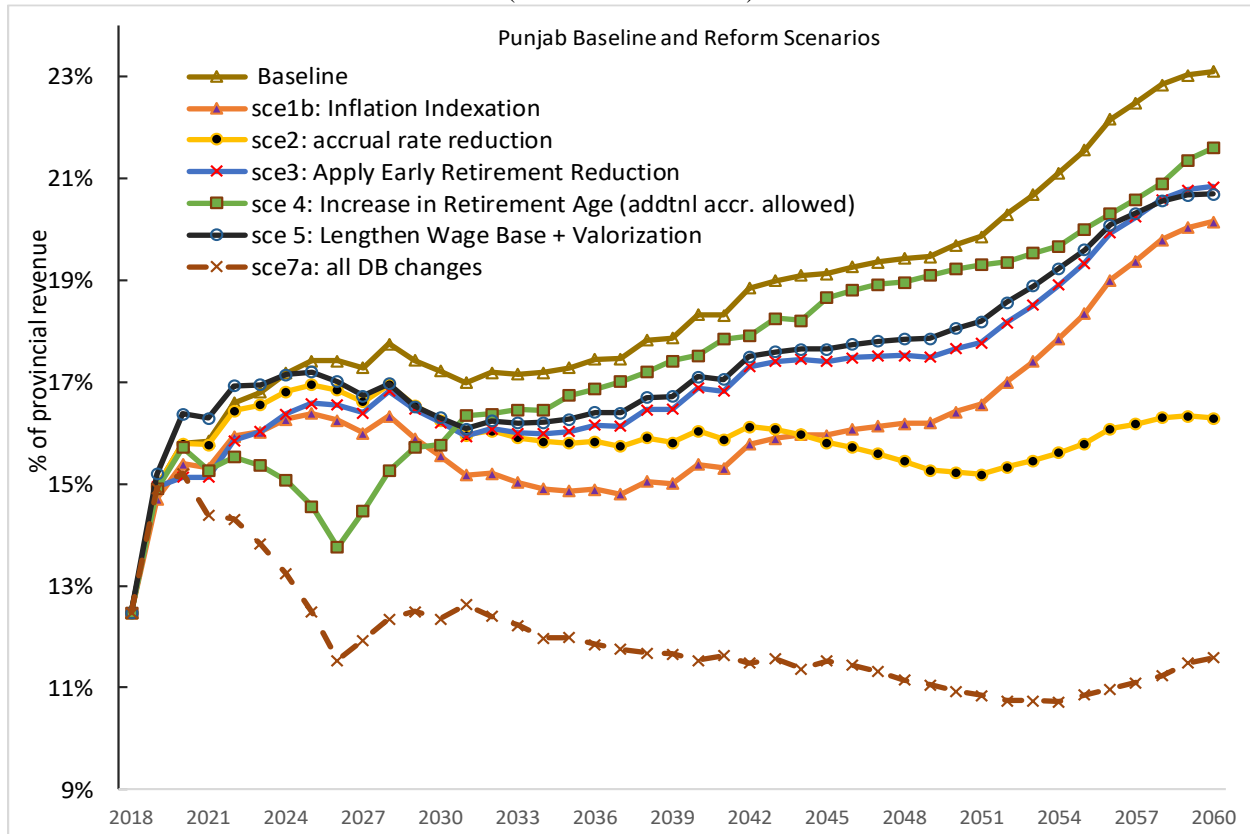
We would also recommend a further increase from age 63 to age 65 in about 2055, depending upon changes in the life expectancy at retirement age. This would have an impact on the retirement benefit at retirement for workers in the hybrid scheme who would have a longer period to accumulate contributions and therefore receive a higher replacement rate (see Section “B” below)

Figure 15. FCS: Projected Civil Service Pension Costs with Parametric Reforms (% of Fiscal Revenues)



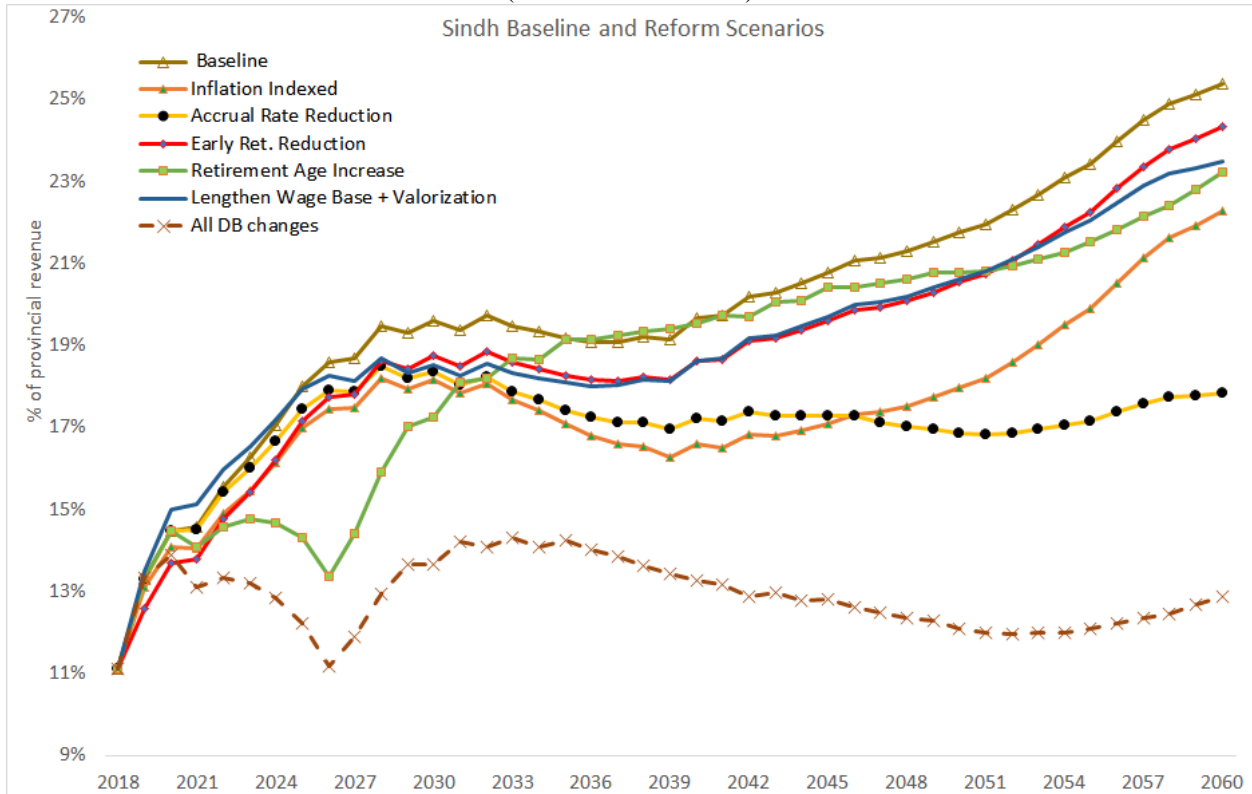
Source: PROST. See Annex 1 for details on the PROST projection scenarios.

Figure 16. Punjab: Projected Civil Service Pension Costs with Parametric Reforms (% of Fiscal Revenues)



Source: PROST. See Annex 1 for details on the PROST projection scenarios.

Figure 17. Sindh: Projected Civil Service Pension Costs with Parametric Reforms (% of Fiscal Revenues)



Source: PROST. See Annex 1 for details on the PROST projection scenarios.

**3. Apply an actuarially fair reduction factor for those who retire prior to retirement age.** Applying an actuarially fair benefit reduction is a means of providing more equitable adjustment for those who choose to retire early as opposed to those who continue working to age 60. Applying an actuarially-fair reduction to the pension benefit would result in a reduction in an individual’s benefit of about 3-4% per year prior to age 60 (Table 6). The projected cost savings would be up to 1% of provincial fiscal revenues, albeit such savings would require over a decade to realize. There are important distributional effects to take into account when considering this change. There is marked difference across grades with only 27% of retirees below age 60 for grades >17, and 67% of all retirees below age 60 for grade < 17. This means that enactment of an actuarially-fair reduction would disproportionately affect lower grade, lower wage civil servants.

Table 6: Punjab: Actuarially Fair Benefit Reductions by Retirement Age

Age at retirement	53	54	55	56	57	58	59	60
Reduction factor	21.0%	18.0%	16.0%	13.0%	10.0%	7.0%	4.0%	0.0%

Source: PROST calculations.

**Box 3: What is Inequitable about Early Retirement without Penalty?**

Currently, a worker who retires at age 45, for example, with 25 years of service receives a benefit of about 101% of his or her final salary and will receive it for the remainder of their life (life expectancy is 30.2 years at age 45). On the other hand, a worker who retires at age 60, for example with the same 25 years of service receives a benefit for the remainder of their life (life expectancy is 17.8 years at age 60). Moreover, about 63% of all new retirees in Punjab in 2018 were below age 60. Although the worker who retires at age 60 generally has 30 years of service and therefore a higher pension, the worker receives such a benefit for a much smaller period in retirement. As a result, the present value of the benefit at age 60 is much smaller than at age 45. This in many jurisdictions has led to the imposition of an actuarially fair penalty for those retiring early and an actuarially fair supplement for those who retire after the retirement eligibility age. This has the effect of essentially providing an equitable adjustment between those who retire early and those who continue working to age 60 or later.

**4. Reducing the accrual rate for service.** One means of reducing costs is to reduce the accrual rate from the current effective 4.09% per year of service to a level which can moderate pension expenditures over time. The level of the reduction in the accrual rate needs to be aligned with any inclusion of existing wage allowance into the pensionable wage base under consideration. By comparison, the effective accrual rate in the pensions law is 2.33%/year.<sup>20</sup> Moreover, the post-retirement allowance provided for medical care is a benefit which represents an accrual rate of about 0.4%/year for a total of 2.73%/year.

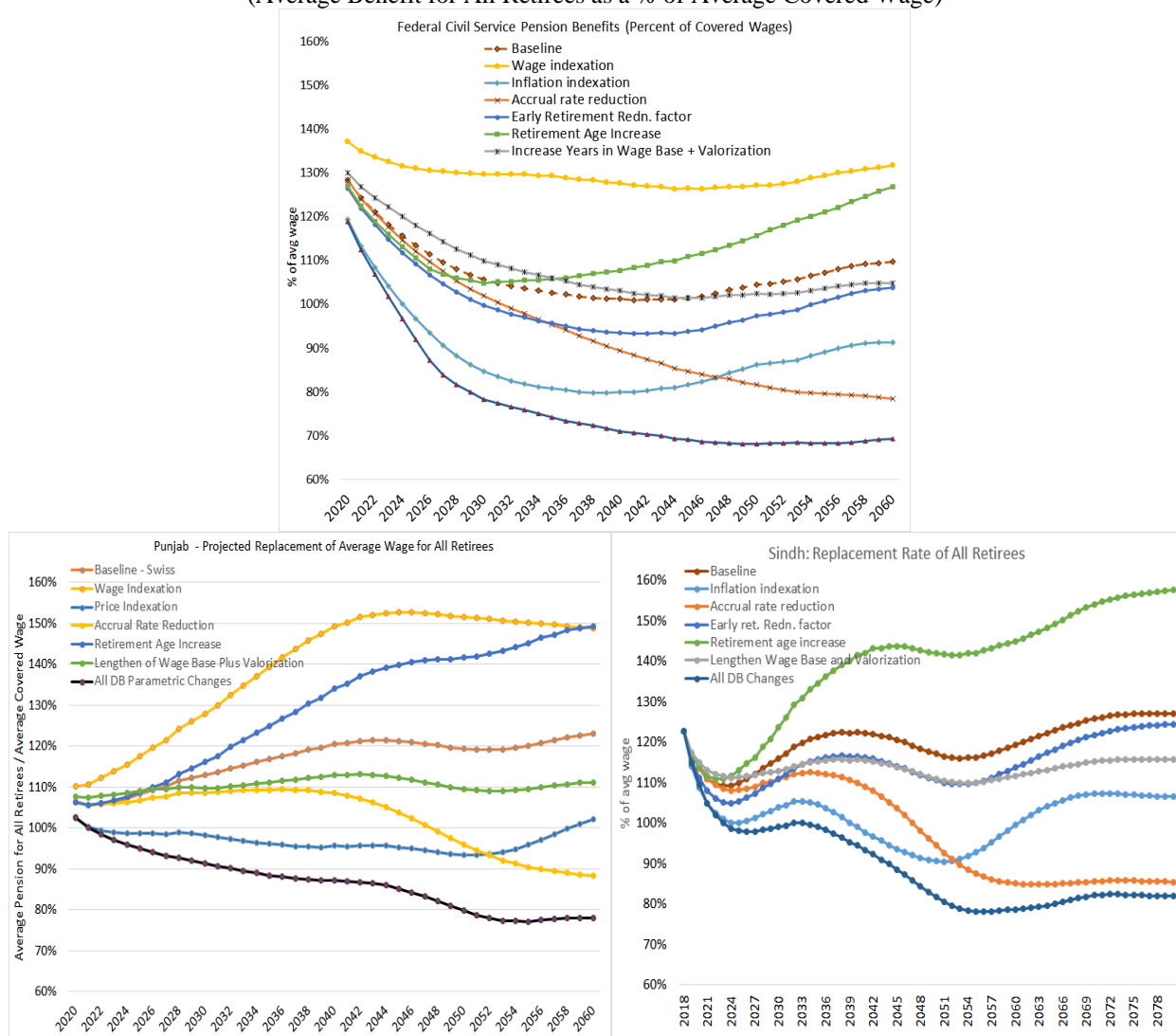
*We modeled the effects of reducing the marginal accrual rate from 4.1% to 2.73% as an indicative parameter* to simulate the implicit accrual rate in the law (2.33%) with the addition of 0.4% for health. A preferable option would be to reduce the accrual rate to 2.33% and to provide the health benefit separate from pensions as had earlier been the case. This accrual rate would only be applied to service after the reform date. An accrual rate of 2.33%/year is very high by international standards and even high by regional standards.

Projections suggest that this reduction in the accrual rate can stabilize the finances of the civil service pensions but only after about 12-15 years when the impact of the accrual rate reduction begins to offset historical increases in new hiring (Figure 16). Cost reduction over time logically also reduces the average benefit measured as a percent of average covered wage (Figure 18). This parameter was also chosen to be consistent with the court decision ensuring the protection of post-retirement allowances. It is also possible to model other parameters of lesser or greater reductions in the marginal accrual rate.

<sup>20</sup> The law indicates that an individual is entitled to a benefit equal to 70 percent of his or her final wage after 30 years of service which is effectively 2.33%/year.



Figure 18. Projected Civil Service Pension Benefits  
(Average Benefit for All Retirees as a % of Average Covered Wage)



Source: PROST. See Annex 1 for details on the PROST projection scenarios.

**5. Extending the period of the wage basis for calculating pensions.** Workers can be shielded from the effect on their pensions of material changes in collective or individual wages prior to retirement by smoothing the wage base that it used to calculate an individual’s pension. This can be accomplished by gradually changing the pensionable wage base from the current final salary to 10 years and eventually to a lifetime average and indexing or “valorizing” the wage base to the growth in the average wage of public sector employees.<sup>21</sup> This also reduces the benefit from promotions or wage adjustments immediately prior to retirement and therefore has an important incentive effect which discourages this practice.

*Projections suggest that there is a modest financial impact of extending the period of the wage basis for pensions calculations, although much of the impact is in improving incentives and equity. Over time, the cost savings is about 1% of fiscal revenues when measured against the baseline (Figure 18) and the replacement rate is also projected to be reduced somewhat relative to the baseline.*

**6. We suggest that the authorities consider a combination of some or all of the parametric reforms indicated above and that further simulations are modeled according to additional parameters.** The

<sup>21</sup> PROST projections assumed a gradual increase to a 10 year average at a rate of increase of one year per year.



parameters in the simulations are meant as a starting point for further consideration of policy reforms. By modeling scenarios with alternative parameters, the authorities can better align benefit promises to the anticipated fiscal constraints and the objectives for compensation of retired civil servants. As indicated above, the authorities will need to consider the tradeoffs and fiscal constraints in weighing different reform options.

***The simulations are intended to illustrate the medium and long-term fiscal impact and impact on benefit adequacy of the different parametric reforms proposed.*** The parametric reforms should be considered together as there are multiple interactive effects of the reforms on both financing, adequacy and incentives. As indicated in Figure 16, enacting all of these parameters is projected to stabilize the pension finances at about 12-13% of provincial revenues, albeit reduce the average benefit from about 100% of the average wage in 2018 to about 80% by 2060 (Figure 18).

**We also suggest that the authorities consider the parametric reforms below which have not been modeled:**

- ***Revision to the commutation benefit calculation.*** The commutation of benefits needs to be changed to reflect: (i) revised life expectancy data; (ii) the 2015 court decision which required the restoration of full pension rights after about 12 years for current and future retirees; and (iii) the impact of post-retirement allowances, including informed assumptions about indexation. Unfortunately, we could not model the financial effects of this change without greater clarity over how to treat post-retirement allowances in the calculation. Nevertheless, we do support careful consideration of revisions to the commutation factor applied in the calculation of commuted benefits.
- ***Reduction in the permitted level of commutation and restoration.*** The 2015 supreme court decision to retroactively provide for benefit restoration had a substantial impact on the fiscal affordability and sustainability of the civil service pension system. Moreover, the decision substantially improved the retirement benefits for many retirees. The authorities may want to consider reducing the permitted level of commutation (currently 35% of pension benefits), depending upon how the commuted benefit is calculated (see above).
- ***Possible inclusion of select allowances into the pensionable wage base.*** As indicated, non-pensionable allowances make up an uncertain proportion of total emoluments for civil servants. The large variability in the allowances across grades of workers and even across workers in the same grade suggests that measures which include allowances in the wage base will have material distributional effects. For example, it is widely believed that many workers in higher grades receive much higher proportion of their total compensation in the form of non-pensionable allowances. Such workers could have very significant increases in pension replacement rates relative to workers with lower wages and allowances. We cannot propose more specific treatment of allowances with respect to the pensionable wage base without detailed data on the distribution of allowances to support evidence-based policy options.
- ***A recommended approach is to link the broadening of the pensionable wage base to include select allowances on the one hand to the reduction in the accrual rate on the other.*** This can be done in a way that both gradually reduces the overall replacement rate and, at the same time, removes the disparities in replacement rates between workers with similar levels work histories and compensation.

#### B. Establishment of a Hybrid Contributory Defined-Contribution Scheme

***One option which over time could partially address the problem of unsustainability would be to replace the current unfunded defined benefit scheme with a contributory Defined-Contribution scheme.*** As discussed below, the scheme may need a non-contributory defined-benefit top-up to create stronger convergence between the replacement rates for new entrants and older workers (see below). A contributory and funded-defined contribution design would have the following benefits:

*Pre-funding part of its obligations to workers would have both positive and negative fiscal effects* (Figure 19):

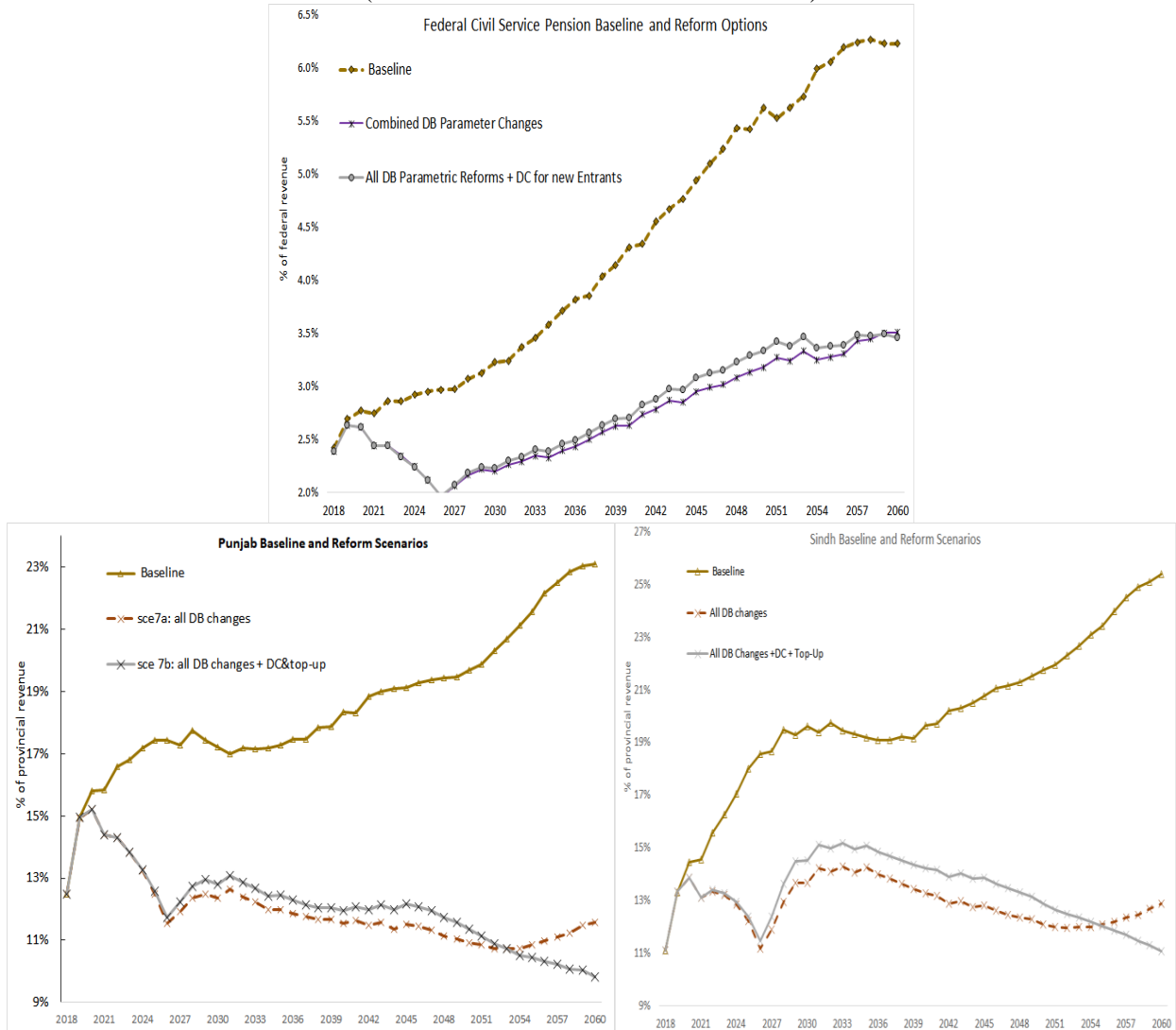
- Over the initial period of 25-35 years, the Government would be responsible for both financing existing retirees from the budget and also making contributions on behalf of both workers and retirees (transition costs);<sup>22</sup> This is graphically illustrated as the difference between the reformed DB and hybrid schemes in Figure 19<sup>23</sup>;
- After 25-35 years, the fiscal costs would drop substantially, namely because benefits under the funded scheme would be paid from the reserves of the scheme and not from the current budget (Figure 19);
- The Government would be responsible for paying interest on government securities held by the reserve funds. Although the projected stock of invested securities is not that large relative to GDP, it is important to note that the infrastructure and management systems would need to be in place for effective investment management (Figure 20).

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<sup>22</sup> The duration depends on parametric reforms enacted.

<sup>23</sup> The reformed DB scheme refers to having incorporated all the parametric reforms proposed and modeled.

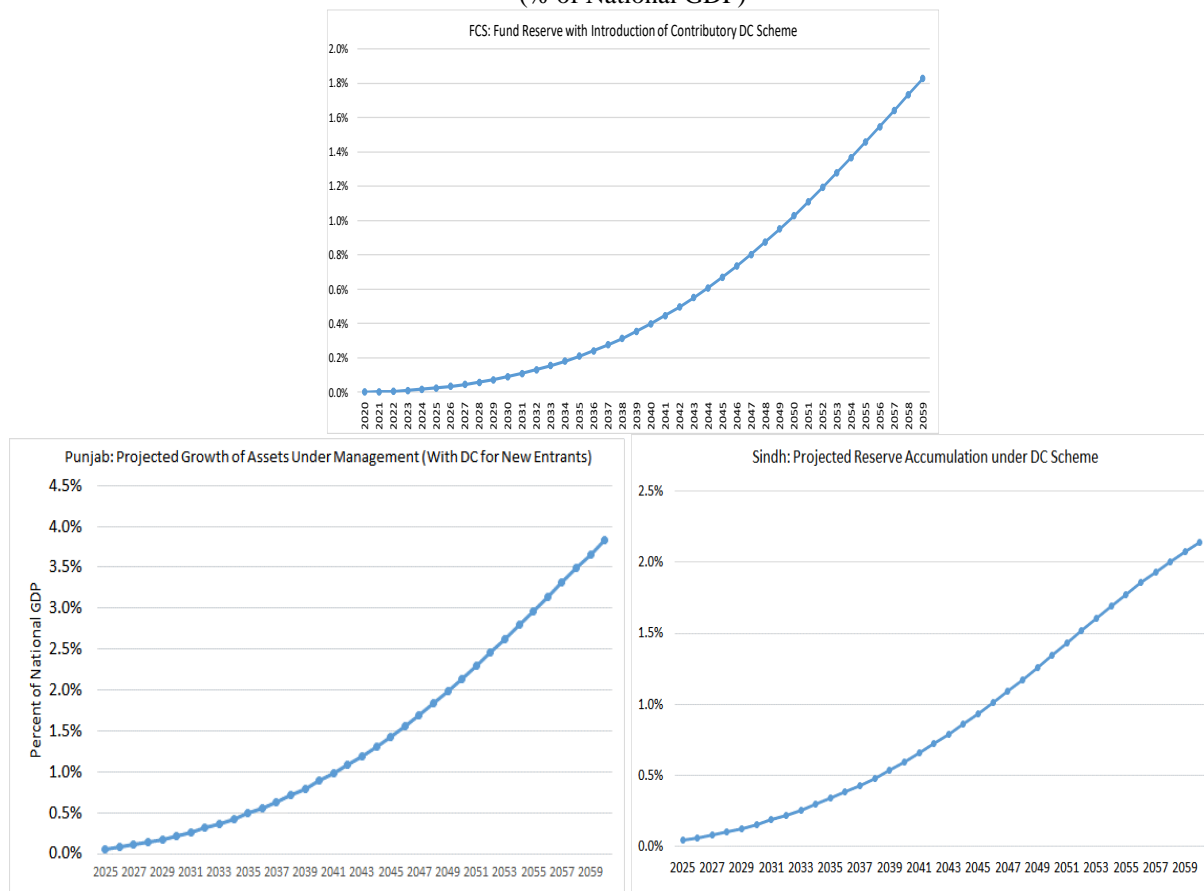
Figure 19. Projected Pension Costs w/Parametric and Structural Reforms – FCS, Punjab and Sindh (% of Federal or Provincial Fiscal Revenues)



Source: PROST.

- If the experience of the provincial pension funds provides some guidance, it is possible if not likely that the Government will find it difficult to make transfers to the DC accounts when there is fiscal pressure or, alternatively, such funds would be recycled into Government debt affecting the domestic debt indices.

Figure 20. Projected Growth of Pension Assets with DC Scheme for New Entrants (% of National GDP)

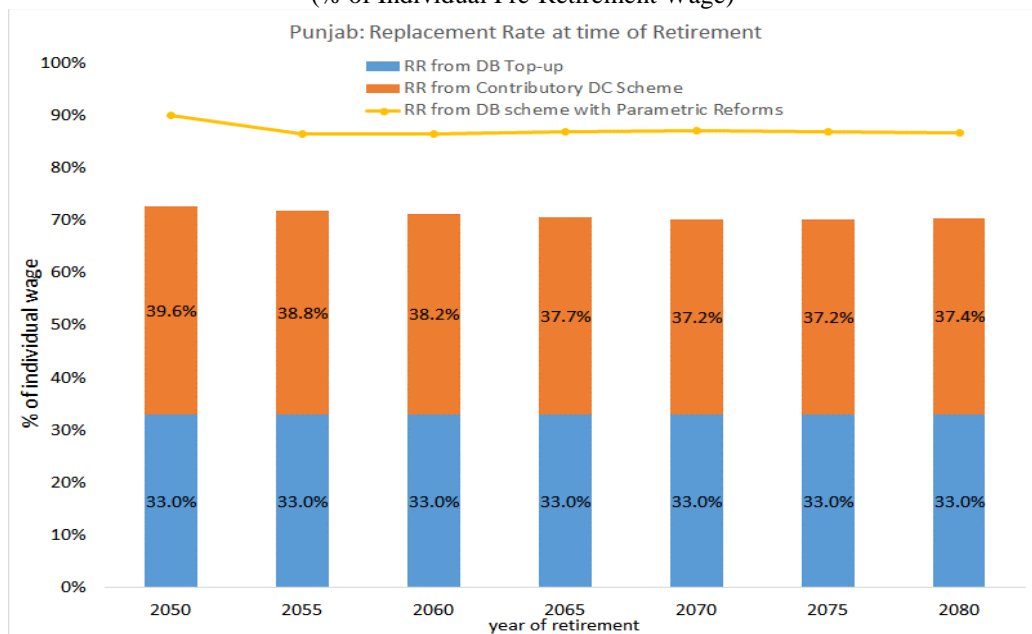


Source: PROST.

*It may be most expedient and practical to consider offering such a hybrid defined-contribution scheme to new civil servants and, possibly younger cohorts on a voluntary basis.* This approach may also legally avoid the issue of whether workers with existing pension provisions in their employment contracts can have a material change in the computation of their pension benefits. Moving from a non-contributory to a contributory scheme will require measures to ensure that workers' compensation after making pension contributions is either compensated or not too adversely impacted.

*It may be useful to consider a non-contributory DB "Top-up" to bridge the gap between the anticipated replacement rate under a contributory DC scheme with a 20% contribution rate on the one hand, and the replacement rate projected to be offered under a reformed DB scheme on the other.* Figure 21 below illustrates this point. In the case illustrated, the DC scheme with a total contribution rate of 20% yields an individual replacement rate at retirement of 37-38% while the DB scheme with a 1.0% per year accrual rate yields a replacement rate of about 33%. Together this yields an individual replacement rate of about 70-71% verses about 88% under the non-contributory DB scheme with parametric reforms outlined. Of course, the authorities may want to consider the same design albeit with different parameters.

Figure 21. Punjab: Individual Replacement Rate for a DC Scheme for New Entrants (w/DB top-up)<sup>24</sup>  
 (% of Individual Pre-Retirement Wage)



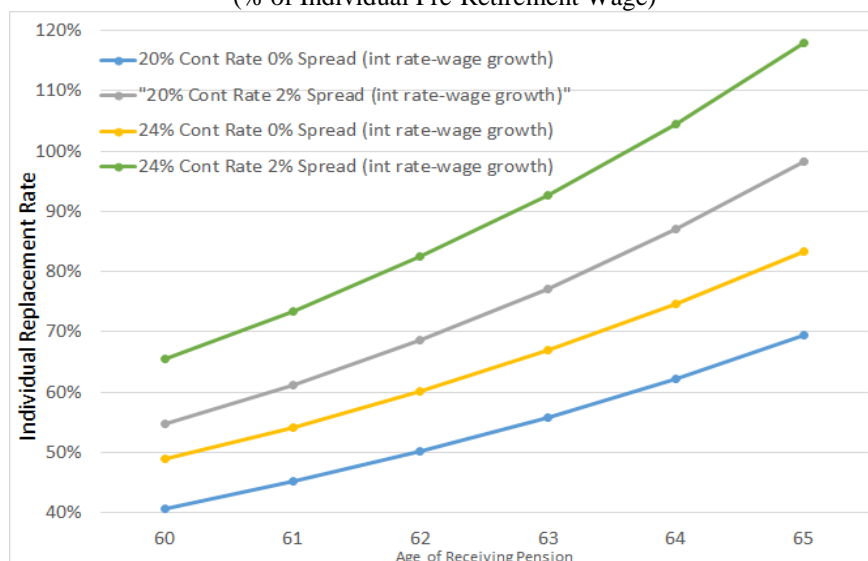
Source: PROST.

Note: This is the individual replacement rate for a male who begins work at age 30 and retires at age 63 in the years indicated. It is very important to note that this simulation includes the individual effect of a rise in his or her wage/age profile which in effect adds an additional 3-4% growth rate to the wages in addition to the assumed overall wage growth during the period. This effectively results in a lower interest rate on invested funds than the individual rate of wage growth. All of the inflation, wage growth and rate of return assumptions are indicated in Table 8.

**It is also important to note that the replacement rate provided by the DC scheme will depend upon:** (i) the contribution rate, (ii) the contribution density of the worker, (iii) the real returns on assets under management and the relationship between these real returns and real wage growth, and (iv) the administrative costs. Figure 22 below illustrates different individual replacement rates at different ages, assuming continuous work beginning at age 30. It simulates 20% and 24% contribution rates and shows the replacement rates at rates of return minus individual wage growth of 0%/year and 2%/year. The figure provides a strong illustration of the impact on the replacement rate of increasing the retirement age, which results from more years of contributions, more years of accumulations and less years in retirement. The figure also shows the important impact on

<sup>24</sup> The case of Punjab is illustrative. It is important to note that the individual replacement rate modeled for FCS and Sindh was exactly the same as in Punjab. The replacement rates in FCS and Sindh for the DB “top-up” and for the reformed DB scheme were only very slightly different from that of Punjab.

Figure 22. Differences in Rep Rates from Ret. Age & Spreads between Returns and Wage Growth (% of Individual Pre-Retirement Wage)



Source: Bank calculations.

Note: Assumes continuous contributions beginning at age 30; assumes an inflation rate of 2.0% and a real wage growth of 2.0%; assumes 0.2% administrative costs deducted from fund balances each year. Assumes unisex mortality tables for Pakistan.

*It will also be important to consider the following parameters for this scheme as follows:*

- **Contribution rate.** The authorities will need to consider different employer and employee contribution rates, weighing the affordability of the contributions against the potential replacement rate at retirement. Logically, the higher the contribution rate the proportionately higher the replacement rate will be at retirement.

Introducing employee contributions for new employees while others have no contributions, results in a net reduction in pay for new employees. For example, adding a 10% employee contribution requirement for all new entrants (in addition to an employer contribution of 10%) would have the effect of effectively reducing net pay by 10%. Importantly, it would also segment workers into two classes depending upon their starting dates. One means of mitigating such effects which some authorities have done is to align the introduction of employee contributions with the introduction of civil servant salary adjustments.

- **Benefit design.** A defined-contribution scheme could support a price-indexed annuity at retirement age based on the individual balance at retirement, life-expectancy at retirement and prevailing interest rates. A price-indexed annuity could ensure retirees against longevity and inflation risk and would be fully sustainable as the contributions would be used to support the benefits. The authorities would also need to consider design options and parameters to retain some level of survivorship benefits under the revised design.
- **Hybrid Defined-Benefit design.** The authorities will need to consider the accrual rate and qualifying conditions for the hybrid DB “top-up” if that option is chosen.

- **Benefit eligibility age.** The benefit eligibility age should be aligned with that of other civil servants. Some provision for partial early withdrawal could be established such as from unemployment, serious medical issues or disability.<sup>25</sup>
- **Potential linkage to GPF.** In principle, the new scheme could include EPF balances for participating civil servants. This however would need the supporting institutional requirements as discussed below.

#### **Box 4: India’s Civil Service Pension and Structural Pension Reform**

The Indian authorities set out in the late 1990s to identify options to reduce the long-term cost of the India’s civil service pension scheme and to expand private sector pension coverage. The New Pension Scheme (later renamed National Pension System) started operation in 2004 and the old civil service pension scheme was closed to new entrants and all accrued rights under the old scheme were protected for existing civil servants. The new scheme for government employees was a funded defined-contribution scheme contributory with a 20% contribution rate (10% employer and 10% employees). From the scheme design ensured broad access and very low administrative costs. Investment management was by design made very simple with few asset classes and passive investment management. All accounts are fully portable and operate through a easily accessible platform.

Importantly, the Indian authorities established an independent regulator whose exclusive responsibility is for pensions, the Pension Fund Regulatory and Development Authority (PFRDA). A separate institution, the NPS Trustee Bank was established to receive participant contributions and transfers. A Central Recordkeeping Agency was established to manage members’ accounts, as well as provide information on individual accounts at a low cost. Later in the process, the scheme was able to utilize India’s unique identification system to ensure unique attribution of individual accounts.

In 2009, the NPS was extended to private sector workers on a voluntary basis. In 2010, the government established a matching contribution of Rs. 1,000 a year for individuals making contributions between Rs. 1,000 and 12,000 per year (NPS-lite). The fees for basic retirement savings accounts were low. In addition, “aggregators” were provided incentives to motivate informal sector enrollment. Participation in the matching scheme has been limited. The so-called unorganized sector was found to be very heterogeneous with a broad income distribution and individuals of all ages and education levels.

In 2018 the authorities increased the contribution rate from 20% to 24%.

Source: Richard Jackson, 2018. Meeting India’s Retirement Challenge, and PRFDA website, <https://www.pfrda.org.in/index1.cshml?lsid=92>.

### C. Additional Options to Strengthen Financing

*Many civil service schemes in both developed and developing countries have faced challenges in developing effective pre-financing strategies* whereby the Treasury can set aside scarce fiscal resources earmarked for future pensions when there are pressing immediate fiscal needs.

*The capitalization of provincial pension funds aimed at ensuring partial pre-funding of pension obligations and using the returns on investments of the funds to partially finance future pension obligations.* However, three challenges have weakened the effectiveness of this strategy: (i) the required level of allocation from the provincial treasury have not been transferred in accordance with the strategy’s intent; (ii) the liabilities have grown so dramatically over the past decade that the provincial pension funds

<sup>25</sup> We do not recommend provision for early withdrawal for home ownership, but we do suggest consideration of the possibility of use of some of a contributor’s funds for a partial guarantee against privately financed home mortgage loans.

would need much greater and unaffordable levels of transfers to have an impact; and (iii) many of the funds' investments are in Government entities so that the "returns" on investment are merely transfers from one government entity to another. These capitalization strategies may continue to prove challenging in view of Pakistan's fiscal constraints.

***Two options which can assist in managing the fiscal impact of pension expenditures:***

1. ***A common framework should be established for actuarial reporting both at the provincial level and for the Federal Civil Service scheme.*** Key elements should include: (i) the adoption of common assumptions and a process of agreeing on these assumptions; (ii) a common timetable which should likely be every two years in view of the materially changing parameters; and (iii) projections of projected annual fiscal requirements, as are current included in the Actuarial assessments. At the same time, the actuarial assessments should inform the budgetary allocations.
2. ***It is possible to establish an investment pool which "pre-funds" pension liabilities, much in the same way as has been initiated for the GPF and at a provincial level for provincial pension liabilities.*** Such a pool could be warehoused in the separate custodial entities and invested in non-marketable securities "civil service pension bonds" which could have an interest rate which mirrors long-term treasury bond rates. Each of the respective treasuries would agree to legal obligations to pay the amount of such obligations and the pension liability to would result from the actuarial assessments above. The advantage of this approach is that it would establish a transparent vehicle for recording pension liabilities, establish a legal obligation for provinces and the Federal scheme to make pension payments, and reduce the risk of partial default through the transparency in the process. The disadvantage is that these non-marketable securities could and likely would increase the borrowing costs of Government because purchasers of Government bonds would more readily factor in the anticipated requirements of such non-marketable bonds.

***General Provident Fund.***<sup>26</sup> The GPF does somewhat diversify the sources and risk characteristics of old-age income support for civil servants. Two reform options warrant consideration:

- The rate of return on individual accounts should be prescribed by a formula based on a clearly identifiable market-based index. For example, this could be the average return over the previous 12 months of Government securities with a 10 or more year tenure. Such a uniform market-based index would remove the additional fiscal subsidy which is provided when the ad-hoc rate is above the market rate on Government securities.
- It would also be useful to consider the adoption of a uniform contribution rate for all workers in the context of the review of overall compensation.

## **V. Institutional Reform Needs**

***We have not undertaken an institutional evaluation though do notice some institutional challenges going forward.*** Pakistan is fortunate to have a centralized database of records on individual personnel data as well as central records on retirees and beneficiaries although the latter is not comprehensive. Going forward, it will be necessary to report additional information to the Directed Credit System (DCS) and make the necessary software changes to support it including provision for monthly reporting of basic salaries and individual accounting of historical salaries.

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<sup>26</sup> We are not commenting in this report on the financing strategies or the investment management functions in the GPF investment funds or in the provincial pension investment funds. We did not receive detailed data on the GPF balances, contributions or withdrawals.



***Both parametric reforms and the establishment of a contributory defined-contribution scheme require investments in supporting infrastructure and delivery systems to support the implementation of the design options.*** Establishment of a contributory defined-contribution scheme would require investments in infrastructure and delivery systems. There are broad areas of delivery systems required:

- Accounting, financial management and control, investment management, and disbursement systems.
- Establishment of a data management system and related communications for members accounts.
- Establishment of systems for oversight and supervision.
- Establishment of efficient contributions and benefit payments systems.

## **VI. Conclusions and Next Steps**

***This note has evaluated the civil service pension schemes in Pakistan evaluating reform options which could improve moderate the growth fiscal costs while at the same time improve the equity and predictability of benefits.*** Actuarial modeling was used to project the anticipated costs and benefits of several parametric reforms including changes to indexation, retirement age and the accrual rate. The report also suggested that the authorities may want to consider introducing a defined-contribution scheme for new entrants and pointed out that such a scheme could provide a foundation for a voluntary pension scheme for private sector workers.

***Moving forward with consideration of a reform program requires further analysis of wages and allowances.*** Only with such data can the authorities consider the essential issue of how to broaden the scope of pensionable compensation while also reducing the accrual rate. As such, it is likely that some measures will be needed in compensation reform as pre-requisites to pension reform measures. Further work will be needed, and additional data is required to include part of the non-pensionable allowances in the wage base for pensions and to make parametric changes to pensions to compensate for this change.

***Additional work will also be needed on the delivery systems needed to strengthen pensions payments and data linkages for better accountability.*** Moreover, establishing a contributory scheme for new entrants will undoubtedly have institutional implications not only for contributions but also for investment management.

***This report provides just a starting point for consideration of parametric and structural reforms.*** It has chosen parameters and transition programs as examples for further consideration by policy makers. The authorities will need to consider the tradeoffs between sustainability and benefit adequacy in further evaluating specific parameters of reform. They will also need to weigh the institutional requirements for any reform program considered.

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## Appendix 1 – PROST Modeling of Pakistan Civil Service Pensions (Federal, Punjab and Sindh provinces)

*This appendix describes the process used to establish a baseline for the financial projections of the Pakistan federal civil service scheme (FCS) (excluding military and SOE) and the projections for the provinces - Punjab and Sindh.* The pension rules for civil servants is the same at federal and provincial level. The macro assumptions and demographic assumptions used in the modelling are also assumed to be same for federal and provincial level and we list them in Section 1. The data caveats vary for each case and we discuss them in Section 2.

### *Section 1: Scheme rules and calculations in PROST*

*Pakistan’s Civil Servants Pension Scheme (CPS) is a non-contributory defined benefit scheme for permanent<sup>27</sup> public employees including civil servants, armed forces, provincial government employees, teachers, judiciary as well as employees of state-owned enterprises (SOE).* We do not include armed forces and employees of SOEs<sup>28</sup> in our analysis. As of June 2017, the benefits paid to civil servants excluding military was 99bln PKR, approximately 0.3% of GDP. The spending for the military in 2017 was an additional 0.8% of GDP. We would expect the expenditure on the military, as % of GDP, to grow over time as the system matures and life expectancy continues to rise. However, we cannot comment on the magnitude of pension obligations in the future for SOEs or military, in the absence of further data.

The pension expenditure (which includes old age, survivor, and medical allowances) for Punjab and Sindh as of 2018 were 175 bln and 92 bln PKR respectively. We received individual data on employees and pensioners for each of the provinces (see Section 2 for Data Caveats) and have modelled them in PROST.

Table 7: Punjab: Summary Table of Pension Expenditures<sup>29</sup>

Entity	Expenditure in PKR (as of date)	Expenditure as % of GDP
<b>Federal Civil service</b>	99 bln (as of 2017)	0.3% of GDP
<b>Military (not modelled in PROST)</b>	257 bln (as of 2017)	0.8% of GDP
<b>Punjab province</b>	175 bln (as of 2018)	0.51% of GDP
<b>Sindh province</b>	92 bln (as of 2018)	0.26% of GDP
<b>Other two provinces (not modelled)</b>		
<b>Total expenditure</b>	<b>PKR 623 billion</b>	<b>2.17% of GDP</b>

### **Calculations in PROST**

*The financial projections of the pension system were made using the Pension Reform Options Simulation Toolkit (PROST) an Excel-based software developed by the World Bank and licensed to country client users. The Toolkit has been enhanced over the years since its creation and the version used for this analysis is PROST 2015. The Toolkit follows the methodology depicted in Figure 23. for carrying out the projections and arriving at the inflows and outflows of a pension system.*

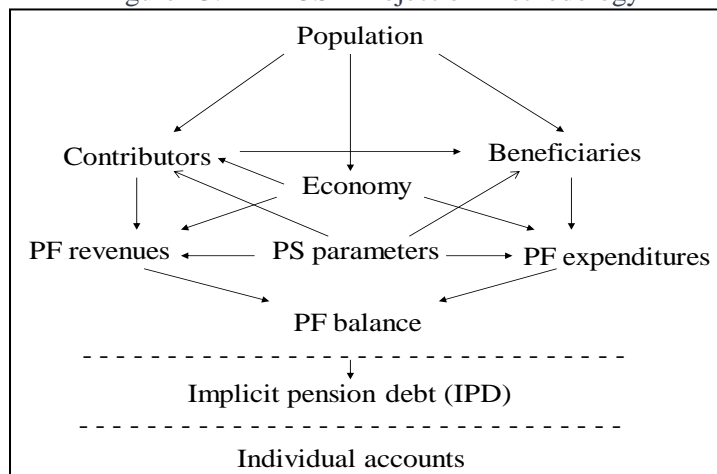
<sup>27</sup> There are a significant number of temporary workers at the provincial level who are not entitled to pension benefits. However, in the recent past a number of the workers were given permanent status which, if continues to occur, it would abruptly increase pension obligations. Our calculations exclude all temporary workers and possibility of them being given pension rights.

<sup>28</sup> We are unclear whether the aggregate expenditures reported at the federal level include or exclude pension expenses of SOEs. The data we received ‘Pension Fed.xlsx, has 99bln in expenditure including military and it is our assumption that some of it is SOE. However, we point out that we have not received a definite answer from counterparts on whether this is the case, and if so, how much of the 99bln is attributable to SOEs.

<sup>29</sup> Includes data not modelled in PROST.

*The base year for the analysis is 2017 for federal civil service and 2018 for Punjab and Sindh. The simulation period runs from 2017/18 to 2080. The total projection years were set to 65 years approximately to capture the full life cycle of those currently entering the pension system.*

Figure 23. PROST Projection Methodology



#### a) Demographic and economic assumptions

*UN population data and projections for Pakistan were used in the simulations.* Fertility is assumed to decline slightly from the current level of about 3.4 births (on average) per adult female to 2 births by 2060s and stay close to 2 births throughout the rest of the simulation period. Mortality at all ages is expected to decline over the projection period consistent with expectations in countries with similar levels of development.

*For the cash flows to reflect nominal values, PROST requires inputs of inflation assumptions.* The nominal cash-flows alone do not provide sufficient information for policy makers to analyze if the pension system is sustainable or not. To do so the cash-flows must be measured against an indicator that provides a benchmark to assess sustainability, and for this purpose, it is essential to project flow of GDP/ revenues. As the pension scheme is unfunded and expenditures are paid from tax revenues, we have shown all expenditures as percentage of projected revenue. It is our view that expenditures as % of revenue instead of % of GDP will help policymakers better assess the situation as is and what it could be, if share of revenue as a % of GDP continues to stay at current low levels.

*The IMF Country Report No. 17/212<sup>30</sup>, also referred to as Article IV was used as a basis for GDP/revenue<sup>31</sup> growth and inflation assumptions.* The IMF has projections for the period 2015 to 2023. After 2023, we assume that the revenue growth rate will gradually go down and reach 2% by 2080. See Table 8 for details.

*Wages grow due to the aging of the population (older workers on average earn higher salaries than younger workers) and also due to normal productivity growth.* Generally speaking, productivity is strongly correlated with overall economic growth. If the economy is doing well, then workers can be expected to achieve greater wage growth: this correlation may not be visible over short durations but will

<sup>30</sup>[https://www.imf.org/external/pubs/ft/weo/2018/01/weodata/weorept.aspx?sy=2009&ey=2023&scsm=1&ssd=1&ort=country&ds=.&br=1&c=564&s=NGDP\\_RPCH&grp=0&a=&pr.x=54&pr.y=8](https://www.imf.org/external/pubs/ft/weo/2018/01/weodata/weorept.aspx?sy=2009&ey=2023&scsm=1&ssd=1&ort=country&ds=.&br=1&c=564&s=NGDP_RPCH&grp=0&a=&pr.x=54&pr.y=8)

<sup>31</sup> We assume revenues as share of GDP remains constant throughout the projection period. In a productive growing economy, it could very well be the case that revenue growth surpasses GDP growth, in which case our expenditure projections would serve as the upper bound.

hold true over longer periods. Pakistan has in the past offered significant wage increases to CS and continues to do so.

**Productivity growth is expected to remain high during a period of high GDP growth.** However, there is likely to be a lag between GDP growth and wage growth. In the long run, productivity is assumed to converge to a steady state level of 2% per year. The real wage growth resulting from the productivity growth assumptions is shown in Table 8A-2.

**Inflation is extremely difficult to predict and is generally highly volatile in the short-term.** However, since inflation underlies all economic assumptions, i.e., both in-flows and outflows, the levels assumed per say are not critical to the analysis or the decisions being determined. In accordance with the above Article IV projections, it was assumed that inflationary pressures would remain during the period of strong economic growth and in the longer run will gradually converge to a steady state of 2%. See Table 8 for details.

Table 8 Real GDP Growth, Inflation, Wage Growth and Hiring Assumptions

	2019	2020	2021	2022	2030	2040	2050	2060	2070	2080
Real GDP growth	4.7%	4.9%	5.0%	5.0%	4.5%	3.6%	3.2%	2.8%	2.4%	2.0%
Productivity growth of min wage worker	4.1%	4.3%	4.4%	4.4%	3.9%	3.5%	3.1%	2.7%	2.3%	1.9%
Avg. Real wage growth	4.5%	4.8%	4.9%	4.9%	4.7%	3.6%	2.7%	3.1%	2.6%	1.9%
Inflation rate	5.0%	5.0%	5.0%	5.0%	4.5%	4.0%	3.5%	3.0%	2.5%	2.0%
Real investment returns (DC scheme for new entrants)		5.8%	5.9%	5.9%	5.4%	5.0%	4.6%	4.2%	3.8%	3.4%
Net rate of increase in workforce	1.0%	1.0%	0.9%	0.9%	0.7%	0.6%	0.4%	0.3%	0.2%	0.1%

Note: Net rate of increase is increase in hiring over and above the replacement of retired CS. We have assumed it to be equal to half of the population growth rate of Pakistan

## b) Count projections

**We received individual data on employees and pensioners for all three entities<sup>32</sup> from CGA office, which holds data on civil servants who receive payments through Direct Credit System (DCS) only.** Starting from [2017], data on all Civil servants (excluding military and SOE data) was consolidated and housed within CGA.<sup>33</sup> This data can be accessed by the provinces as well. As of 2017, all civil servants who received salary or pension through the direct credit system (DCS) into their bank accounts have records in the database. Individuals who continued to manually collect pensions from banks/post office i.e. the PPO pensioners are not in the database. The number of PPO pensioners varies across the entities with the federal government having the largest share of PPO pensioners<sup>34</sup> and Punjab and Sindh with less than 5% of their pensioners under PPO. We gather that the PPO pensioners are older pensioners who are slowly being transferred into the system<sup>35</sup> and since all current civil servants receive salary from DCS it is reasonable to assume the employee data is complete.

<sup>32</sup> For ease of reference, we will refer FCS, Punjab and Sindh as entities.

<sup>33</sup> This is being verified.

<sup>34</sup> We have not received reliable data from client on number of PPO pensioners at federal level and payments made to them. This has bearing on the reliability of projections at federal level, as discussed in Section 2.

<sup>35</sup> This exercise would be an important one to identify ghost pensioners (old age or survivor) and we advise collaboration between CGA and provinces in this effort.

Table 9: Counts of Workers and Retirees (data received from CGA)

	<b>FCS</b>	<b>Punjab</b>	<b>Sindh<sup>36</sup></b>
<b>Permanent Employees</b>	392,941	801,938	492,000
<b>Old age pensioners (DCS only)</b>	79,298	304,594	104,183
<b>Survivors</b>	39,981	153,198	66,565
<b>Others (disabled etc.)</b>	NA	15,228	2,075

Note: Data for FCS is as of June 2017 and those for Punjab and Sindh are as of June 2018. We had to remove a few observations for the analysis if the dob was erroneous or we were missing some imp variable but in no case were observations dropped greater than 2% of total.

**The first step in the PROST projection process is to estimate the number of contributors each year.** This involves making assumptions about how the number of civil servants will grow over time. It is recognized that employment in civil service does not always grow at the same rate as population. In economies with stable or declining population growth we assume no increase in the headcount of civil servants, only a replacement of civil servants i.e. replacement of positions for those who left civil service due to death, retirement or invalidity. However, since Pakistan continues to have modest population growth and since civil servants also includes teachers (hiring of which continues to grow as population increases) we have assumed growth in civil service positions at half the population growth<sup>37</sup> rate each year (See Table A-2). The net new civil servants who we assume to be hired each year are distributed across gender and ages based on recent hiring pattern of permanent civil servants in each of the entities. The median age of hiring tends to be between 25-27 for all three entities and gender balance among the new hires is about 78% males and 21% females, on average.<sup>38</sup>

**The next step in PROST projection process is to determine the numbers of beneficiaries viz old age pensioners each year.** The number of beneficiaries each year can be modelled in a number of different ways in PROST. For this analysis, we chose the “Flow of contributors from the previous year” method where Old age pensioners in each year is equal to all surviving retirees from last year plus a percentage of previous year’s contributors who are now eligible for retirement. The latter part is referred to as the retirement pattern. We estimate the retirement pattern from the data using the contributor profile and age/gender distribution of new pensioners. It is assumed that this retirement pattern holds true throughout the projection period.

**Survivors or Family pensioners are modelled as a constant percentage of contributors and pensioners, in the absence of necessary information for detailed analysis.** The lack of key variables in the data on family pensioners i.e. birth date of survivor and mapping of survivor(s) to deceased pensioners, makes it impossible to estimate age distribution of family pensioners and avg number of survivors per pensioner. Hence, we do not have any detailed analysis on survivor expenditures, despite their growing share in total pension expenditure.<sup>39</sup> Family pensioners constituted 9% of total contributors and pensioners in FCS, 14% in Punjab and 11% in Sindh. The recent survivors across the three entities receive on average 79% of average old age pension. In the absence of reliable and necessary information to project survivor expenditure, we have assumed that the share of survivor counts as % of ‘contributors + retirees’ as well as the Replacement Rate as % of average old age pension, stays constant over time.

<sup>36</sup> These data are preliminary and subject to revision.

<sup>37</sup> The assumption was agreed to with counterparts and takes into account the fact that while Pakistan has modest population growth, it will also incur economies of scale in public service so hiring of CS will likely be less than population growth rate

<sup>38</sup> The gender balance and median age of hiring is significantly different for grades below 17 and above 17.

<sup>39</sup> We have also raised concerns with the client over the count of survivor data and the mismatch in survivor expenditure between the individual data and expenditure reported in budget documents (See Section 2 for details).



### c) Cash inflows and outflows

*With the projection of the population, contributors, and beneficiaries complete, PROST proceeds to determine the cash in-flows (contribution revenue, investment income...) and out-flows (pension payments, miscellaneous payments, commutation...) of the pension system.* Since Pakistan's current CSP scheme is unfunded, i.e., pension payments are made from the treasury, there are no inflows to the scheme in the baseline and parametric reforms<sup>40</sup>. However, as the scheme is a Defined Benefit one, projections of wage and pension distributions are required.

*Earning profile by age/gender and count distribution by wage brackets.* In order to estimate the pension due at time of retirement one would need to estimate the wage history of each individual and aggregate it across individuals to get a wage matrix. PROST creates this wage matrix using two pieces of information (a) earning profile of current employees i.e. a distribution of wages by age and gender (b) Count of people by wage brackets i.e. how many people fall under each chosen wage brackets.<sup>41</sup> It is to be noted that for the purpose of this analysis we asked the client to give us basic salary<sup>42</sup> data as that is the basis for pension calculation in Pakistan.

*The average monthly basic salary from the individual data, for FCS, Punjab and Sindh were* PKR 21,808, PKR 26,528 and PKR 27,095 respectively. We found evidence of a steep earning profile (i.e. salary rises steeply with age), as has been found in wages of civil servants in other countries as well. The avg salary is significantly different for grade < 17 and those above grades 17. The senior grades (those above Grade 17) having salaries 3-4 times higher on average. The retirement pattern is also different between the junior and senior grades, with high rates of early retirement for junior grades. While we appreciate the stark differences between these two grades, we analyze the two grades together in one file in PROST. We do so for sake of simplicity when modelling reform options and because the higher grades while significantly different, are only 6% of all CS in each of the three entities.

*Pension profile by age/gender and count distribution by pension brackets* Just as is the case for wage distribution we require two key inputs into PROST to accurately estimate the pension matrix – the pension profile by age and gender (created from individual pensioner data) and count of pensioners in each chosen pension bracket. In the data on pensioners, each individual had his monthly pension broken into four categories – basic pension, pension increases, medical allowance, medical allowance increases.<sup>43</sup> For the purpose of calculations in PROST we include all these categories together and model them as old age pensions. The average total pension from the individual data, for FCS and Punjab were PKR 32,090 and PKR 29,000, respectively. We found very few observations (less than 2%) with total pensions (including pension increases, medical allowance and increases) less than minimum pension of 10,000 per month.

*The factors which affect average pension for old age pensioners are namely (i) the benefit formula for new pension calculations; and (ii) the assumed pension indexation policy.*

*The benefits are calculated using basic pension benefit formula as listed in the 'Manual on Pension Procedures' and in addition to basic pension, retirees (new and existing) receive pension increases announced in circulars issued by the Regulation Wing.* As per the 'Manual on Pension Procedures, an individual with 30 years of service receives 70% of final salary. This translates to an accrual rate of 2.33%

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<sup>40</sup> We model systemic reform as one of the reform options where new CS are in a DC scheme and one will see contributions/ fund reserves for the DC scheme.

<sup>41</sup> The wage brackets are chosen by us after looking at the distribution of wages, the minimum and maximum and dividing the brackets such that we have at least 3-7% of all individuals fall within each bracket.

<sup>42</sup> For a country like Pakistan where allowances before retirement are high and vary by grade, the distribution of basic and gross salary can be quite different. For the purpose of assessing adequacy and equity across grades, we'd recommend an analysis using gross salary data and comparing distributions of gross and basic salary.

<sup>43</sup> Some individuals also had special additional pension viz PKR 14000 per month, but we were told that going forward this benefit will be abolished.

for each year of service. The medical allowances and increase to medical allowances awarded to individuals is over and above the 2.33% accrual rate.<sup>44</sup> Individuals need a minimum of 10 years to qualify for pension therefore a person with 12 years of service would get 27.9% (2.33%\*12) of final salary as basic pension.<sup>45</sup> Individuals are allowed to commute up to 35% of their pensions as commutation (lump-sum) at time of retirement. The individuals who choose to receive commutation payments receive a reduced replacement rate, (see Box 1 for example) which are restored in 12 years for an individual retiring at age 60. The factor used to calculate commutation and the restoration age differs by retirement age and are listed as commutation factor table in the Manual (pg. 44).

***The Replacement Rate individuals receive may differ significantly between cohorts, between grades, and by age at retirement*** due to the distortionary post-retirement allowances and absence of actuarially fair factors to ensure fairness and neutrality. The Replacement Rate may vary substantially and often be inequitable because of two key reasons:

- (a) Distortionary pension increases announced on net pension – In the absence of an indexation policy for pensions, increases have been announced in some years for some cohorts and is also applied to all new retirees in addition to retired ones. These increases are applied to net pension so a retiree who takes commutation does not get any of these increases to their commuted lump sum and hence loses out.
- (b) No reduction factor for retiring before age 60- Civil servants are allowed to retire with 25 years of service and do not get a reduction in pension amount. Their RR is calculated based on years of service so the RR they receive is around 58.3% of final pensionable salary. However, given that they receive pensions for a longer duration than someone who retires at 60 it is unfair (and expensive) to allow early retirement without a reduction factor.

In Box 5 we have provided stylistic examples of two individuals to help reader understand how pensions are calculated for individual who retire early, choose to commute.

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<sup>44</sup> Our rough calculations suggest that including the medical allowance and increases would translate to an effective accrual rate of 2.83% for each year of service.

<sup>45</sup> The term basic pension in this paper is used to describe pension without any increases.



**Box 5: Inequity in Replacement Rates resulting from distortions in allowances and lack of actuarial neutrality**

**Assume a civil servant (Individual A) works for 30 years and retires at age 60 in 2016 and decides to commute 35% of his salary at time of retirement.**

Assume that Monthly final Pensionable salary<sup>46</sup> of A= PKR 100,000

Gross pension = 70% \* 100,000 = PKR 70,000

Net pension (after commutation) = 65% \* 70,000 = PKR 45,500

Cumulative Pension Increases<sup>47</sup> = PKR 25,655

Medical allowance = 20% \* 45500\*1.15 = PKR 10,465

Medical allowance increase = 25% \* 10,465 = PKR 2,616

Total commuted monthly pension for A<sup>48</sup> = PKR 45,500 + PKR 25,655 + PKR 10,465 +PKR 2,275 = PKR 84,236

Commutation (lump-sum) payment for A = 35% \* 70000\*12\*12.3719<sup>49</sup> = PKR 3,637,338

Effective commuted RR for individual A = 84% of basic salary starting from age 60

Total restored monthly pension for A when he is 72<sup>50</sup> = PKR 83,395 \*(1.10) ^12 + [the Restored Pension?]

**Assume a civil servant (Individual B) works for 25 years and retires at age 55. He decides to not commute his pension.**

Assume that Monthly final Pensionable salary of B= PKR 80,000

Gross pension = 58.3%<sup>51</sup>\* 80,000 = PKR 46,640 = Net pension

Cumulative Pension Increases<sup>52</sup> = PKR 26,298

Medical allowance = 20% \* 46640\*1.15 = PKR 10,727

Medical allowance increase = 25% \* 10,727= PKR 2,681

Total uncommuted monthly pension for A<sup>53</sup> = PKR 46,640 + PKR 26,298 + PKR 10,727 + PKR 2,681 = PKR 86,346

The effective uncommuted replacement rate for individual B = 107% of basic salary starting from age 55

**Indexation of pensions in Pakistan is on an ad-hoc basis which makes it hard to predict the indexation in future.** Since pension increases almost always coincide with salary increase circulars, we looked at the wage increases over the last 10 years and the corresponding pension increases. It is our educated guess that pensions increase in the past, though abrupt, were in line with inflation on average but over the last 2-4 years pension increases have been similar in magnitude to wage increases and are being given to retired and retiring cohorts. This implies that over the last few years pensions are being indexed to wage growth. In the absence of a clear policy guideline for future indexation we have assumed in the baseline, that pensions receive swiss indexation (100% inflation + 50% real wage growth)

***New and existing Pensioners receive numerous increases announced in multiple circulars that have caused RR at time of retirement to go up to 122-138% of final basic wage for a person who does not commute their pension.*** A pension circular has been issued every year over the last 10 years we analyzed, where increase is granted to new and existing pensioners (often varying in amount). Below is a snapshot of the increase announced in the 2015 circular. The pt.3 of the circular references past circulars where

<sup>46</sup> Pensionable salary is usually the basic salary and a few small allowances e.g. Personal pay, qualification pay, Senior post allowance. It does not include all allowances available to a salaried CS when working.

<sup>47</sup> A pensioner who retires in 2016 would get the following increases as per past circulars (15% increase announced in 2010, 15% increase announced in 2011, 7.5% increase announced in 2015, 10% increase announced in 2016). The 15% increase announced in 2010 applies to pension used to calculate medical allowance as well.

<sup>48</sup> Some individuals also get special additional pension of PKR 14,000 per month which will push uncommuted RR to 100% of basic salary

<sup>49</sup> The commutation factor from published table is 12.37 for individual age 60

<sup>50</sup> Assume pensions grow at rate of 10% nominal each year over next 12 years for sake of simplicity.

<sup>51</sup> As Individual retires with only 25 years of service his RR as per law would be 58.3% of his final salary.

<sup>52</sup> A pensioner who retires in 2016 would get the following increases as per past circulars (15% increase announced in 2010, 15% increase announced in 2011, 7.5% increase announced in 2015, 10% increase announced in 2016). The 15% increase announced in 2010 applies to pension used to calculate medical allowance as well.

<sup>53</sup> Some individuals also get special additional pension of PKR 14,000 per month which will push uncommuted RR to 100% of basic salary

increases to some cohorts were announced. This ad-hoc nature of providing increases to some cohorts in one year and others in next, in addition to the ad-hoc amount of increase (20% vs 7.5% vs 10%) cause significant distortions between cohorts. More importantly as these increases are cumulative the RR of pensioners increases significantly over the 70% in the law. It is almost impossible to chart the impact of all the increases on pension which is why we used the data to be our guide and deduced the uncommuted RR (including all increases and medical allowance) to be about 122-138% of final basic salary. Using the individual data, we plot average wage and average pension by age. As can be seen in Fig A-2, for Punjab<sup>54</sup> the average commuted pension at time of retirement is about 100% of basic salary (i.e. close to avg wage just prior to mandatory retirement age). Therefore, for a person who does not take the 35% commutation, the RR would be about 122-138% of basic salary and this is the RR we use in the PROST calculations.<sup>55</sup>

**Subject: - GRANT OF INCREASE IN PENSION TO PENSIONERS OF THE FEDERAL GOVERNMENT.**

The President has been pleased to sanction an increase @ 7.5% of net pension with effect from 1<sup>st</sup> July, 2015 until further order to all civil pensioners of the Federal Government including civilians paid from Defence Estimates as well as retired Armed Forces personnel and Civil Armed Forces Personnel.

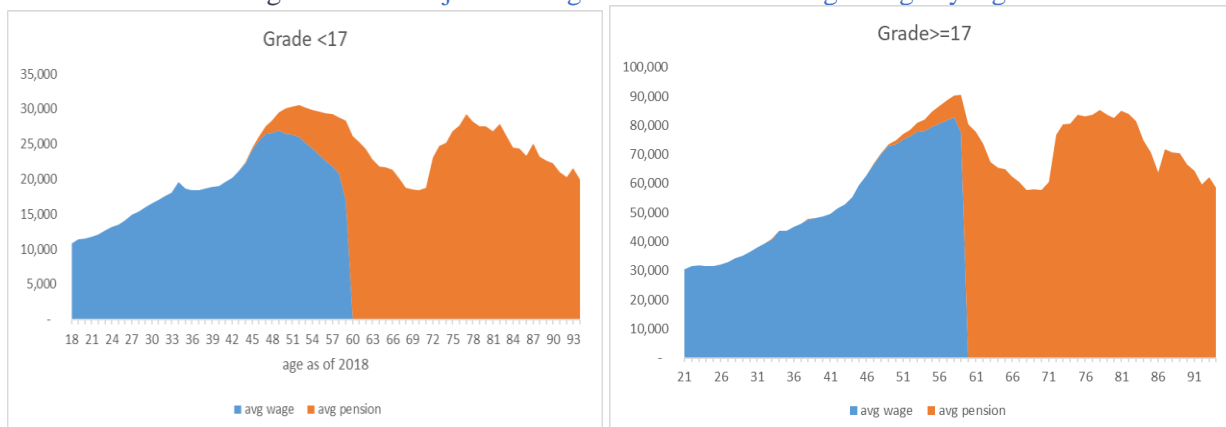
2. The 20% increase in pension as allowed vide para 1 of the Finance Division's O.M. No. F.4 (1)-Reg.6/2012-1144 dated 02-07-2012 shall be discontinued for those who would retire on or after 01.07.2015.

3. However, 15% increase in pension allowed vide para-1 (ii) of the Finance Division's OM. No. F. 4(1)-Reg.6/2010-721 dated 05.07.2010, 15% increase in pension as allowed vide para-12 (i) of Finance Division's O.M. NO. F. 1(5)-Imp/2011-419 dated 04.07.2011, 10% increase in pension as allowed vide para-1 of the Finance Division's O.M. No. 4(1)-Reg.6/2013-1375 dated 16.07.2013 and 10% increase as allowed vide para -1 of Finance Division's O.M. No 4(1)-Reg.6/2014 dated 07.07.2014 shall be admissible to the new pensioners who would retire on or after 01.07.2015.

4. The 7.5% increase in pension as mentioned at para 1 above will also be admissible to the future retirees who would retire on or after 01.07.2015.

5. For the purpose of admissibility of increase in pension sanctioned in this O.M. the term "Net Pension" means "Pension being drawn" minus "Medical Allowance".

Figure 24. Punjab: Average Pension and Average Wage by Age



*Note: This graph has been created using individual data received by client. We simply plot the avg basic salary and avg total pension by age in a stacked graph here. It can be seen in these graphs that there is a clear restoration of pensions around age 72 for both grades. Also comparing salary at age 59 and pension at age 60 we deduce that commuted RR is close to 95 percent and therefore uncommuted RR is likely around 122 % of final basic salary.*

<sup>54</sup> This same trend holds true for FCS and Sindh.

<sup>55</sup> This has been validated with the Regulations Wing, MoF for the assessment and range for RR.

Table 10: Summary of PROST Modeled Reform Scenarios –Federal CS, Punjab and Sindh

Scenario 1	Baseline (swiss indexation of pension)
Scenario 1a	Baseline but with wage indexation of pension
Scenario 1b	Baseline but with inflation indexation of pension
Scenario 2	Baseline + gradual reduction of accrual rate for service years after 2020
Scenario 3	Baseline + actuarially fair reduction factors applied to pension
Scenario 4	Baseline + gradual increase in retirement age with additional accruals
Scenario 5	Baseline + increase of wage base from final to avg 10 years of salary with wage valorization
Scenario 6	Baseline for existing CS + DC - hybrid scheme for new entrants
Scenario 7a	Baseline + all parametric reforms to DB scheme (Scenario 2; Scenario 3; Scenario 4; Scenario 5)
Scenario 7b	Scenario 7a for existing CS + DC - hybrid scheme for new entrants

**Scenario 2: Baseline + gradual reduction of accrual rate for service years after 2020.** – In the baseline the effective uncommuted accrual rate is 4.06 for each year of service (122%/30). This reform scenario requires a gradual reduction in accrual rate for years of service after the reform year (2020) such that by 2050 the accrual rate for all years of service is 2.73% (2.33% as required by law +0.4% in medical allowances). So, for example, if the reform passes in 2020 and an individual has 20 years of service and is planning to work for 10 more years his pension benefit formula, *cet. paribus* will be  $20 \times 4.06 + 10 \times (\text{row vector of gradually reducing accrual rate})$ . For a new entrant who joins the system in year 2020 and retires in 2050 the RR will be  $2.73\% \times 30 = 85\%$  of basic salary and the new entrant will not receive any of the RR increase granted to his predecessors as all his years of service are after the reform year.

**Scenario 3: Baseline + actuarially fair reduction factor** – All individuals who chose to retire before the mandatory age of 60 would receive an actuarially fair reduction factor applied to their pension, to take into account the fact that they receive pensions for longer duration. The factors are generated taking into account mortality and discount rates and the factors used for the calculation in this scenario are as below. For example, a person who retires at age 55 with 25 years of service would receive a 16% reduction in monthly pension relative to the person who retires at age 60.

Table 11: Actuarially Fair Reduction Factors by Age

<b>Age at retirement</b>	<b>53</b>	<b>54</b>	<b>55</b>	<b>56</b>	<b>57</b>	<b>58</b>	<b>59</b>	<b>60</b>
<b>Reduction factor</b>	21%	18%	16%	13%	10%	7%	4%	0%

Source: Bank calculations.

**Scenario 4: Baseline + increase in retirement age with additional accruals.** In this reform scenario we increase retirement age from 60 to 63, starting from 2020, at the rate of 6 months increase each year. Therefore by 2026 the retirement age in Pakistan is assumed to be 63 for males and females in Pakistan CS. We also allow for additional accruals in this scenario as employees would now work for longer years. Therefore, max accrual rate as per law in this scenario would be 77% after 33 years of service in 2026.

**Scenarios 6 and 7b** - Hybrid scheme details refers to the proposed scheme for new entrants viz 20% contribution rate DC + DB top-up. In this scenario, we assume a funded DC scheme is set up with a contribution rate of 20% (10% government, 10% employee) along with a non-contributory DB “top-up” scheme with an accrual rate of 1%/year of service. Retirement age is assumed to be 63 years for men and women. Pensions/annuities are indexed to inflation.

Defined contribution schemes are by definition funded as individuals and/or their employers pay contributions into an individual’s account, which accrues interest throughout the contribution period. At the time of retirement these individuals simply receive a lump sum or annuity, as the rules maybe. While these schemes are not subject to sustainability and equity concerns like a DB scheme, the Replacement

rates from these schemes are extremely sensitive to some factors (listed below). Assumptions behind projected RR from DC schemes should therefore be carefully examined.

- (a) **Assumed ‘Spread’ between real wage growth and real investment return** – It is not the absolute value of real investment return per say but it’s the spread between the wage growth and invst. return which matters when estimating RR at time of retirement. We believe a spread of 1.5% is a reasonable assumption and have used so for Pakistan, a 0% spread would be a conservative estimate.
- (b) **Earning profile of individual** – An individual’s wage growth pattern could be very different to growth in average wages in the economy, especially so in the case of civil servants where promotions happen frequently and are highly correlated with seniority. In such a case even if the spread between real wage growth and real invst return was 1.5%, the spread between individual wage growth and real invst return could be negative. In the case of Pakistan, we have seen that individuals, on average, had very high rates of wage growth per year (in the range of 8-10% nominal each year) as they got promotions as well as wage increases over the last few years. This steep age-earning profile we see in the data from Pakistan has bearing on the RR one can expect to get from DC schemes, provided this same rate of individual wage growth continues. Depending on whether one takes earning profile into account the RR from a 20% DC could vary between 40% to 60%, ceteris paribus.
- (c) **Annuity factors** – In our projections we use actuarially fair annuity factors which are easy to calculate using mortality rates from UN and they change over time as Life Expectancy increases. The important discussion here is whether countries have the capacity to create annuity markets in time for their retirees.
- (d) **Administrative costs** – This is once again a function of the size of the fund, regulation around investment etc. We have assumed 1% of returns as admin costs. Higher administrative costs would decrease the RR an individual can expect to receive.

## *Section 2: Data Caveats*

### *Federal Civil Service*

**Issue of PPO pensioners & SAEs-** Total expenditure excluding the military was 99bln as of 2017. We modeled 61 billion in expenditures in PROST, out of which we have received individual data only for 43 billion. Therefore, we do not model 38 billion at all and model 18 billion as a load factor to pension expense i.e. this miscellaneous expense will increase in line with pension expenditure. The load factor is too high in our view and we put it in on request of counterparts, but we need to better understand what kind of expenses (one-time or recurrent, percentage of pensions or flat) are included in them. Currently we assume them to grow as % of pension expenditure. It is also our concern that some of the 38 billion we do not have data on are PPO pensioners. If we are correct, and PPO pensioners are in fact excluded from the system then our estimates are biased towards higher expenditures as we are not taking into account the older pensioners who, by virtue of having lower avg pensions would push the average pension down in the model, if included. This issue will be discussed with counterparts in the upcoming mission.

**Punjab** –The counterparts clarified that as part of their actuarial exercise in 2015/2016 they had worked with actuaries to clean their data and had almost all of their PPO pensioners transferred into the DCS system. It is likely that we did not find any significant issues with the Punjab data because the authorities had spent time earlier with the actuaries.

**Sindh** –The data issues in Sindh have pertain to pensioner data. The recurring issue with Sindh pensioner data which we encountered was that the total expenditure from individual records, for each benefit type (old age pension, medical allowances, survivor) did not match the budget amounts under the corresponding benefit type. The counterparts believe that the reason behind the mismatch are the significant number of pensioners in Sindh who were PPO pensioners. In 2018-2019 they embarked on the process of bringing the PPO pensioners into the DCS system and therefore this was the first year when PPO pensioners were added into the individual records. This process was supposed to be completed by June 2019. The first set of data we received from the client as of June 2018, therefore were missing PPO pensioners. We received new data in June 2019, but we continued to find mismatches. On deeper inquiry conducted by the counterparts it was found that (a) the variation in individual data is significant on a month-to month basis hence it matters which month’s data was extracted and provided to us for the analysis (b) the month-to month variation was going down in the months of July, August. September 2019. If indeed the bringing in of PPO pensioners was causing the mismatch in data, then we expect an analysis in 2020 or later to not face the data troubles we did. Therefore, we highly recommend a cleaning of the data with actuaries as was done in case of Punjab and a pension modelling exercise conducted once again in a few years.

Since the pensioner data as of June 2019 was no better in resolving the discrepancy between individual and aggregate numbers, we decided to go with the 2018 numbers which we had worked on. Below is the data we received and the discrepancy, highlighted. It is our view that Sindh numbers could still be used as the basis of policy discussion as even with the issue with PPO pensioners the long run trend would still be fairly accurate as we have the employee data in good shape and benefit rules well understood.

Table 12: Compilation of individual pensioner data as of 2018 – Sindh

	Spending	Counts
old age pensions	45,045,296,018	104,183
Commutation payments year ending 30 Jun 2018	16,552,448,466	10,893
Survivor payments	16,724,104,609	66,565
Disability payments	609,219,650	2,075
<b>Total accounted for</b>	<b>78,931,068,743</b>	<b>183,716</b>

*Source: Data provided by Sindh authorities.*

Budget data on Sindh shows that as of 2018 total pension expenditure was 92.6 million out of which 45.4 mln is old age pension excl allowances, 25.2 mln is commutation payments, 7.7 mln is survivor payments and 6.7 mln is medical allowance (attributable to both pensioners and survivors). The rest 7.3 mln are other payments (LPR, gratuity etc) that are not modelled in PROST.

Comparing the numbers between individual data and aggregates we see two main issues (a) survivor expenditure in individual data is almost double that of the aggregate numbers. It should be noted that the individual numbers on old age and survivor expenditure include medical allowances, which is a separate line item in aggregate data. However, that still does not explain the discrepancy of this magnitude in the numbers (b) old age payments including medical allowances is lower in individual data than in aggregate (c) Commutation payments are also lower in individual data, but we feel it could be because the commutation data was not complete.

For the aforementioned reasons we modelled pension expenditure in PROST based on individual data we received and in the base year for Sindh we have 45 mln in old age expenditure, 16 mln in survivor expenditure (including medical allowances) and 25 mln in commutation payments.



## Appendix 2 – Regional Parameters

The following is a summary of regional designs and parameters:

- Overall design/financing** Bangladesh, Nepal, and Pakistan all have non-contributory defined-benefit schemes with benefits paid from the current budget. Afghanistan, Bhutan and Sri Lanka have defined benefit schemes with some level of contributions. Bhutan has a hybrid contributory scheme and The Maldives and India have contributory defined-contribution schemes.
- Integration w/PS schemes** Afghanistan, Bangladesh, Bhutan and Nepal have no mandatory private sector scheme. India and Sri Lanka have separate mandatory schemes for private sector workers. Pakistan’s scheme for private sector workers is limited to part of the formal sector. Maldives and India harmonized their schemes for public and private sector workers with DC reforms.
- Reference wage** Most DB schemes are final pay schemes with Afghanistan final 3 years and Bhutan final year.
- Retirement (eligibility age)** Bangladesh, Pakistan and Sri Lanka retain plans where one can retire with 25 years of service, regardless of age. Afghanistan, Maldives & India - age 65 in their new schemes. Bangladesh, Bhutan, India (pre-2004), Maldives (pre-2009), Nepal, Sri Lanka and Pakistan – age 56-60.
- Rep. rates (full career)** Range from 45% (India CC pre-2004) to Nepal and Pakistan (about 125%)

Table 13: Regional Comparisons of Parameters of Public Service Pension Schemes

	Afghanistan	Bangladesh	Bhutan	India (pre-2004)	India (post 2004)	Maldives (pre 2009)	Maldives (post 2009)	Nepal	Pakistan	Sri Lanka
<b>Design</b>	Defined-Benefit	DB & PF	DB & PF	Defined-Benefit	DC scheme for new civil servants	DB & PF	DC	DB & PF	Defined-Benefit	DB & PF (contributions for survivorship)
<b>Integration w/Private Sector Scheme</b>	No Mandatory PS Scheme	No Mandatory PS Scheme	No Mandatory PS Scheme	Separate	Harmonized & Integrated - 2009	No Mandatory PS Scheme	Integrated - 2009	No Mandatory PS Scheme	No Mandatory PS Scheme	Separate
<b>Adequacy &amp; Affordability</b>										
<b>Accrual Rate</b>	2.00%	4.26% of Basic Salary	1.33% for Civil Service, 1.36% for AF	1.51%	NA	2.50%	NA	2.00%	4.07% with post-retirement allowances	2.72% (approx)
<b>Replacement Rate after 30 Years of Service</b>	80%	96%	53%	45%	NA	60%	NA	NA	122%	82%
<b>Indexation</b>	ad-hoc	ad-hoc	CPI indexation up to maximum 5% p.a.	increases to price yearly & wages every 10 years	Various annuity options including one that grows at 3% per annum	0%	0%	Approx. 2/3 of civil servants' wage growth	Ad-hoc	Ad-hoc
<b>Contribution Rate</b>	16%	0%	22%	0%	20%	0%	14%	0%	0%	6%
<b>Pension payment + permitted commutation</b>	Life annuity, no commutation	Life annuity with compulsory 50% commutation	Life annuity after 20 years; lump sum or life annuity 10-19 years.	Life annuity with 40% commutation and restoration	Minimum annuitization of 40% of the balance at retirement	Life annuity	0%	Life annuity subject to a maximum of 7 years. No Commutation allowed	Life annuity with up to 35% commutation	Commutation and reduced pension (pension restored after 10 years)
<b>Reference Wage</b>	Avg of monthly wage and allowances over the final three years	Member's last pay drawn	Average civil service salary index for 12 months	Member's final 10 months of salary	NA	Member's final month of salary	NA	Member's final pay (annual or monthly?)	Member's final month of pay plus some special pay/allowances	Member's last month of pay
<b>Qualifying Conditions</b>										
<b>Vesting period (Years)</b>	10	5	10 Years	20		25	NA	25	10 Years	10
<b>Minimum retirement age/Length of Service (LOS)</b>	age 65	25 years of service; mandatory age 59	56, 58, 60; minimum 10 years los	age 60	age 60	20 years of service (no age requirement) 3/	Age 65	age 58	Age 60 with 25 years of service	Mandatory at age 60/25 years of service

Sources: Bank estimates.

*There are some reform initiatives going on in the region.* India and the Maldives adopted structural reforms in 2004 and 2009, respectively. India's only applied to new employees while the Maldives applied to all, with the monetization of accrued rights in the earlier defined-benefit scheme. Several countries have been adjusting parameters, such as the proportion which can be commuted. Nepal has legislated the design for a private sector scheme which aims to align with the public sector scheme while Bhutan is considering various options for doing so. Sri Lanka broadened the definition of the wage base for determining civil service pensions. Most countries in the region are strengthening the data management systems supporting civil service pension management and payment systems for disbursement.

### Appendix 3 – Glossary of Terms

This glossary provides practical definitions for key terms used in Pensions diagnostic assessment. It reflects a combination of legal, accounting, actuarial and accounting terms. The glossary is meant as a reference document to aid in the evaluation of Pensions and pension systems. It should prove to be a useful means of assisting novices and experts alike in navigating the pensions literature. The glossary has been prepared by staff of the Pensions Team drawing upon earlier works of the World Bank and OECD.<sup>56</sup>

*Accrual rate.* The rate at which pension entitlement is built up relative to earnings per year of service in a defined-benefit scheme. For example, one percent of the reference salary per year of applicable service.

*Accrued pension (benefit).* The value of the pension to a member at any point prior to or at retirement.

*Active member.* A pension plan member who is making contributions (and/or on behalf of whom contributions are being made) and is accumulating assets or rights to a future pension.

*Actuarial assumptions.* Various estimates that an actuary makes in formulating an actuarial valuation. May include assumptions related to changes in longevity, wage, inflation, returns on assets, etc.

*Actuarial fairness.* A method of setting pension benefits to equalize lifetime individual pension entitlements to lifetime individual pension contributions.

*Actuarial liability.* The amount calculated based on actuarial assumptions that represent the present value of the pension benefits accrued in a pension plan.

*Actuarial neutrality.* Concept evaluating a comparison of entitlements conditional on different ages of withdrawal of pension benefits. Actuarial neutrality requires that pension wealth for retiring a year later is the same as pension wealth when retiring today plus whatever pension is accrued during the additional year of work.<sup>57</sup>

*Actuarial reduction.* The amount of benefit decrease a pension plan member receives – calculated based on actuarial assumptions – in case of early retirement.

*Actuarial surplus.* In a situation when the actuarial liability is less than the actuarial value of a pension fund's assets, the measure of this value.

*Actuarial valuation.* A valuation carried out by an actuary on a regular basis, in particular to test current solvency or future funding of a pension fund by assessing the relationship between its assets with its liabilities.

*Actuary.* The person or entity whose responsibility, at a minimum, to evaluate present and projected future pension liabilities in order to determine the financial solvency of a pension plan, following recognized actuarial and accounting methods.

*Additional voluntary contributions.* Contributions to a pension scheme over and above the employee's mandatory contribution rate.

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<sup>56</sup> This glossary applies to both public and private sector schemes. It draws upon Robert Holzmann and Richard Hinz, *Old Age Income Support in the 21<sup>st</sup> Century*, The World Bank, 2006, and OECD, *Private Pensions: OECD Classification and Glossary*, OECD 2005. References also drawn from The Pension Ombudsman (Ireland), <http://www.pensionsombudsman.ie/cms/index.php> and the on-line Glossary of the UK Pensions Regulator <http://www.thepensionsregulator.gov.uk/Glossary.aspx>.

<sup>57</sup> See Queisser, M. and E. R. Whitehouse (2006), "Neutral or Fair: Actuarial Concepts and Pension-System Design", *OECD Social, Employment and Migration Working Papers*, No. 40, OECD Publishing.  
<http://dx.doi.org/10.1787/351382456457>



*Annuitant.* The person who is covered by an annuity and who will normally receive the benefits of the annuity.

*Annuity.* A specified income stream payable at stated intervals for a fixed or a contingent period, often for the recipient's life, in consideration of a stipulated premium paid either in prior installment payments or in a single payment. Within the category, there are *period certain annuities* (payable for a specified period that is fixed in advance of the start of the annuity) and *life annuities* (annuities which are contingent upon the survival of one or more lives). Within life annuities, there is a further distinction between single life annuities, joint life annuities, last survivor annuities and various combinations of types of annuities.

*Annuity factor.* The net present value of a stream of pension or annuity benefits.

*Average effective retirement age.* The actual average retirement age in a population, taking into account early retirement and special regimes.

*Beneficiary.* An individual who is entitled to a benefit (including plan members and dependents).

*Benefit.* Payment made to a pension fund member (or dependents) after satisfaction of qualifying conditions.

*Commutation.* A payout option given to a pension plan member to replace future payments by an immediate lump sum.

*Commutation factors.* Mathematical factors used to determine the amount a pension needs to be reduced in order to provide an associated lump sum benefit.

*Contribution base.* The reference salary used to calculate the contribution.

*Contributory pension plan (scheme).* A pension plan where the employer or the members have to pay into the scheme to receive pension benefits.

*Contribution ceiling.* A limit on the amount of earnings subject to contributions.

*Commutation.* Exchange of part of the annuity component of a pension for an immediate lump sum payment generally calculated using actuarial methods.

*Contracting out.* The right of employers or employees to use private pension fund managers instead of participating in a publicly managed scheme.

*Deferred annuity.* A stream of specified payments commencing at some future date.

*Defined benefit plan (scheme).* A pension plan with a guarantee by the sponsor, insurer or pension agency that a benefit based on a prescribed formula will be paid.

*Defined contribution plan (scheme).* A pension plan in which the periodic contribution is prescribed and the benefit depends on the contribution plus a return. Such a return may be the investment return on the individual's accumulated funds, a declared rate of interest or a rate tied to a defined index.

*Demographic transition.* Historical process of a major change in the demographic structure of the population of a country due to changing mortality and fertility rates or immigration/emigration patterns. Can include a transition for any reason, for example the transition as fertility and mortality rates decline, resulting in an increasing ratio of older to younger persons.

*Dependent.* An individual who is financially dependent on a member of a pension plan. Dependent is often legally defined term, typically including spouse, children and other relatives which may or may not be financially dependent on a plan member.

*Disability benefit.* A benefit payable to a plan member who meets the qualifying conditions, typically which are certification of an inability to work for medical reasons.

*Disclosure regulations.* Statutory regulations requiring the communication of information regarding pension schemes, funds, and benefits to pensioners, employers, employees, government authorities and the general public.

*Discretionary increase.* An increase in a pension benefit not specified by the pension scheme rules.

*Early leaver.* A person who leaves an occupational pension scheme without receiving an immediate benefit though is entitled to a benefit at a future date.

*Early retirement.* Retirement before reaching the pensionable age for receipt of full benefits often with eligibility for an immediate pension, on a reduced or unreduced basis.

*Earnings cap (ceiling).* A limit on the amount of the *reference wage* subject to contributions.

*Final average earnings (final reference wage).* See *reference wage*.

*Final salary scheme.* A type of defined benefit formula that uses the final salary at retirement to calculate the pension benefit

*Fully funded.* Term that refers to a pension fund that has assets equal to or greater than its liabilities on an ongoing basis.

*Funding.* Accumulation of assets in advance to meet future pension liabilities.

*Funding plan.* The timing and amount of payments of contributions or other subsidies aimed at meeting the cost of a given set of benefits under a defined-benefit scheme.

*Gratuity.* A term used in some jurisdictions to mean a benefit payable based on meeting some qualifying conditions. Examples include old-age and survivorship benefits for members who have not satisfied vesting requirements in contributory schemes.

*Hybrid scheme.* A scheme which combines the features of two or more types of pension design.

*Implicit pension debt (net).* The value of outstanding pension liabilities after subtracting pension reserves.

*Indexation (benefit indexation).* Increases in benefits by reference to an index (typically prices, wages or some combination of both).

*Indexed annuity.* Annuitized benefit which is variable according to changes in an index such as the consumer price index or an equity market index (see annuity).

*Individual account.* An accounting entry which specifies accumulated contributions and other accumulations in the case of defined-contribution schemes and contribution histories in the case of defined-benefit schemes. Individual accounts can also be individual asset accumulations in the case of funded schemes.

*Individual pension plans (Personal pension plans, voluntary personal pension plans).* Type of pension plan that is established and administered directly by a pension fund or a financial institution acting as pension provider without any intervention of employers. Individuals independently purchase and select material aspects of the arrangements. Access to these plans does not have to be linked to an employment relationship. The employer may nonetheless make contributions to individual pension plans. Some individual plans may have restricted membership.

*Inter-generational distribution.* Income transfers between members of a pension scheme that belong to different age cohorts.

*Intra-generational distribution.* Income transfers between members of a pension scheme within a certain age cohort of persons.

*Legal retirement age (normal retirement age).* The normal retirement age written into pension statutes, at which employees become eligible for full pension benefits, excluding early-retirement provisions.

*Mandatory contribution.* The level of contribution the member (or an entity on behalf of the member) is required to pay according to scheme rules.

*Moral hazard.* A situation in which insured people do not protect themselves from risk as much as they would have if they were not insured. For example, in the case of old-age risk, people might not save sufficiently for themselves if they expect the public system to come to their aid.

*Non-contributory pension scheme.* A pension scheme where the beneficiaries do not have to pay into the scheme.

*Nonfinancial (or notional) defined-contribution (plan).* A pension plan that has a benefit formula that mimics the structure of (funded) defined-contribution plans but remains unfunded (except for a potential reserve fund).

*Normal retirement age.* See *legal retirement age*.

*Occupational pension scheme.* An arrangement by which an employer or employers provide retirement benefits to employees.

*Old-age dependency ratio.* The ratio of older persons to working-age individuals. For example, the number of persons over 60 divided by the number of persons aged 15–59.

*Pay-as-you-go.* In its strictest sense, a method of financing whereby current outlays on pension benefits are paid out of current revenues from an earmarked tax, often a payroll tax.

*Pension coverage rate (active phase).* The number of workers actively contributing to a publicly mandated contributory or retirement scheme during a particular period, divided by the estimated potential number of workers that could or are mandated to contribute, e.g., the labor force or the working-age population. The same term can be applied to coverage under occupational plans as well.

*Pension coverage rate (passive phase).* The number of beneficiaries in receipt of old age pension beneficiaries divided by the estimated potential number of individuals above the eligibility age.

*Pension liabilities.* Balance of the obligations of a pension scheme accrued to current workers and retirees at a point in time based on past service and contributions.

*Pension lump sum.* A cash withdrawal from a pension plan generally with all or part of the benefits paid out in one payment. *Pension spending.* Total spending on pension benefits at the national level. Usually defined as spending on old-age retirement, survivor, death, and invalidity-disability benefits including both contribution based and non-contributory pension schemes.

*Pensionable earnings.* The portion of remuneration on which pension benefits and contributions are calculated.

*Phased-withdrawal.* Process by which an account accumulation is gradually disbursed based on the life expectancy at the age the withdrawal takes place.

*Portability.* The ability to transfer accrued pension rights between pension plans.

*Public sector pension scheme.* An occupational pension scheme for employees of a central or local Government, statutory and other semi-state bodies.

*Reference wage.* The fund member's earnings that are used to calculate the pension benefit in a defined benefit plan. This is typically the earnings of the last few years prior to retirement.

*Replacement rate.* The value of a pension as a proportion of a worker's wage during a base period, such as the last year or two before retirement or the entire lifetime average wage. Can be used to describe this relationship for an individual or the scheme membership.

*Retirement age.* See *normal retirement age*.

*Support ratio.* The number of workers required to support each pension beneficiary.

*Survivorship benefit.* Benefit provided to select surviving beneficiaries associated with a member who passes away during his or her worklife or retirement.

*Swiss indexation.* Indexation determined by 50% of the growth in prices and 50% of the growth in wages.

*System dependency ratio.* The ratio of persons receiving pensions from a certain pension scheme divided by the number of workers contributing to the same scheme in the same period.

*System maturation.* The process by which a pension system moves from being immature, with young workers contributing to the system, but with few benefits being paid out since the initial elderly have not contributed and thus are not eligible for benefits, to being mature, with the proportion of elderly receiving pensions relatively equivalent to their proportion of the population.

*Target replacement rate.* The targeted level of wage replacement at retirement for an average wage worker.

*Transition costs.* Costs of financing the benefits owed to retirees under a previous pension scheme while shifting to a prefunded scheme thereby not receiving contributions for current workers as well remitting contributions for workers to pre-fund future obligations.

*Valorization of earnings.* A method of revaluing past earnings during the reference period for benefit determination under a defined-benefit scheme. Reference earnings are adjusted using a factor such as average covered wage growth in order to compensate for changes in earnings over the reference period.

*Vesting period.* The minimum amount of time required to qualify for full and irrevocable ownership of pension benefits.

*Vested rights.* Full and irrevocable pension rights.

*Voluntary contributions.* An extra contribution paid in addition to the mandatory contribution to increase the future pension benefits.

*Voluntary occupational pension plans.* The establishment of these plans is voluntary for employers (including those in which there is automatic enrolment as part of an employment contract or where the law requires employees to join plans set up on a voluntary basis by their employers).