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**Pension Reforms in Mauritius: Fair and Fast—
Balancing Social Protection and Fiscal Sustainability**

by Mauricio Soto, Vimal Thakoor, and Martin Petri

I N T E R N A T I O N A L M O N E T A R Y F U N D

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Pension Reforms in Mauritius: Fair and Fast— Balancing Social Protection and Fiscal Sustainability

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Abstract

Despite important past reforms, the ageing population of Mauritius threatens the sustainability of its pension system. This paper examines how pension spending might increase without reforms and discusses reforms options. The findings suggest that unifying the retirement age and indexing it to life expectancy would contribute most significantly to secure and sustainable pensions. The poverty reducing objective of the universal pension can be improved by better targeting. The old age protection objective of the National Pension Fund could be strengthened by increasing contribution and replacement rates. Implementing changes faster should result in less drastic future changes and fairer outcomes.

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Contents	Page
Abstract	1
I. Introduction	3
II. The Pension System in Mauritius.....	5
III. Demographic and Fiscal Challenges.....	8
A. Demographic Outlook.....	8
B. Fiscal Outlook	9
IV. Reforms Options.....	13
A. Basic Retirement Pensions.....	14
B. Civil Service Pension Schemes—Defined Benefit	16
C. Civil Service Pension Schemes—Defined Contribution.....	17
D. National Pension Fund.....	18
E. National Savings Fund	19
V. Concluding Comments.....	20
References.....	23
Tables	
1. Main Pension Schemes in Mauritius in 2013	5
2. Impact of Introduction of DC Scheme for New Entrants to the Civil	10
Figures	
1. Projected Public Pensions Spending on BRP and CSDB	3
2. Projected Pensions Spending in 2015	7
3. Demographic Trends.....	8
4. Baseline Projection for Basic Retirement Pension (BRP), 2015–2100	9
5. Baseline Projection for Civil Service Defined Benefit Scheme (CSDB), 2013–2100	11
6. NPF Assets and Annual Real Rate of Return, 2015–2100	12
Appendix	
Methodology to Simulate Pension Spending.....	22
References.....	23

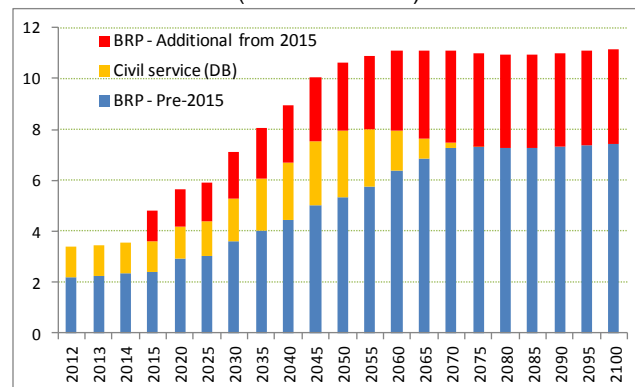
I. INTRODUCTION

Mauritius' population aging is projected to increase public pension expenditure. The share of the population age 60 years and older in the total population will increase from 13 percent in 2013 to 30 percent in 2050. This will lead to pension spending pressures, mainly reflecting noncontributory benefits provided to all citizens above age 60 (the Basic Retirement Pension, BRP) and relatively generous civil service pensions.

Reforms introduced to date will partly contain the growth of pension expenditure in the civil service, but the universal old-age scheme remains unreformed. The retirement age is being gradually increased from 60 years in 2008 to 65 years in 2018 for civil service and private occupational pensions, which are managed by the National Pension Fund (NPF). The civil service defined benefit (CSDB) pension scheme was closed to those who joined the public sector after 2012, and new civil servants, local government, and public enterprise employees participate in a funded defined contribution (CSDC) scheme. However, key aspects of the new scheme, including institutional set-up, distribution rules, and investment strategy are yet to be finalized. Moreover, no reforms were applied to the BRP, where the eligibility age remains at 60 years. The 50 percent ad hoc increase in BRP pensions in December 2014 escalates spending pressures.

Over the next few decades, fiscal spending pressures will arise mainly from the BRP and the transition cost related to the new civil service scheme, but the NPF will likely also face financial shortfalls. Despite reforms, public pension spending¹ is projected to increase from 3.7 percent of GDP in 2013 to 5 percent of GDP in 2015 and exceed 11 percent of GDP by 2060 (Figure 1). The transition to the DC system still leaves

Figure 1. Projected Public Pensions Spending on BRP and CSDB
(Percent of GDP)



Source: IMF staff estimates.

¹ This paper focuses only on the BRP and CSDB components of public pension spending. The other components (widows, invalidity, and orphan pensions) are not discussed as they have different objectives. These programs have traditionally varied at around 20 percent of BRP spending.

unaddressed the transition cost over 2015–2050, which is estimated at 16 percent of 2015 GDP. Also, without reforms, the projected shortfalls of the NPF could become a government liability. These developments will take place as the authorities aim to scale up infrastructure and social spending, while meeting the legally-mandated debt ceiling of 50 percent of GDP from 2018.

This paper provides an overview of the fiscal and social challenges emanating from the different public and private pension schemes and proposes some reform options. It uses a template devised by the IMF’s Fiscal Affairs Department to simulate pensions spending.² While the overall pension expenditure of a country is often a matter of national preference and a reflection of the authorities’ policies, too rapid an increase in pensions spending can pose fiscal risks or crowd out other priority expenditures. In this context, a number of reform options could help counter the impact of aging on expenditure. Phasing in these reforms when the financial health of the various systems remains relatively sound can prevent a significant build up of pressures and avoid the need for drastic future measures.

The main reforms proposed focus on containing eligibility and managing generosity. Given the ageing population and the projected decline in the workforce, a phased harmonization and increase of the retirement age across all pension schemes is likely to be the most effective containment measure. In this context, consideration should be given to indexing the retirement age to life expectancy to deal with both the declining workforce and the increasing dependency ratio. Another option is to reexamine limiting the BRP for those above a certain income threshold (means-testing). Other parametric reforms, particularly those related to the way pensions are indexed, can also be effective in containing generosity.

The NPF appears relatively sound until about 2050, but it is projected to show a substantial deficit over the longer term. The near term projections reflect the fact that the system is yet to fully mature and the NPF is still accumulating assets. However, the NPF is eventually projected to run a deficit and run down its assets, raising the prospect that the state will have to bear a share of the NPF’s pension payments. Moreover, the NPF’s finances are very sensitive to the projected rates of return, which is another risk factor.

An ageing population also increases the risk that demands for raises in the BRP become more frequent. This can arise if occupational pensions, particularly related to the NPF, are deemed inadequate or do not cover a large proportion of retirees. This can be a significant risk for those in the informal sector. To ensure the reforms are implemented in a sustainable manner, the process should be depoliticized, possibly through the setting up of an independent body, to encourage broad buy-in and mitigate the risks of reform reversals.

²The baseline simulations used in this paper yield similar results as the World Bank developed PROST model, which is in the process of being adopted by the authorities.

The remainder of this paper is structured as follows. Section II provides an overview of the pension system in Mauritius. Section III considers the demographic context and the challenges for the pension system. Section IV presents some reform options that could potentially contain the projected rise in the costs of pensions. Section V concludes.

II. THE PENSION SYSTEM IN MAURITIUS

Mauritius' pension system includes several schemes that can be grouped in three categories: the Basic Retirement Pensions (BRP); occupational compulsory pensions; and voluntary pensions. Table 1 summarizes the schemes analyzed in this paper, including information as of December 2013.³

Table 1. Main Pension Schemes in Mauritius in 2013

	Basic Retirement Pension (BRP)	Civil service pension scheme (CSPS)		National Pension Fund (NPF)	National Savings Fund (NSF)
		Entrants before 1/1/13	Entrants after 12/31/12		
Coverage	Universal	Civil service		Private sector	Private sector
Funding	Pay-as-you-go	Pay-as-you-go	Funded	Funded	Funded
Contribution (% of wages)	Non-contributory	6% for worker	6% for worker and 12% for employer	3% for worker and 6% for employer	2.5% for worker
Benefit formula	Flat	2.0 percent per year for entrants before 8/1/2008, 1.7 percent per year for others, up to 66.6 percent of wages	Tentatively account balance at retirement, details to be finalized	Point system (11 points earned=1 pension point), roughly equivalent to 0.8 percent per year	Lump-sum withdrawal at retirement
Pensionable age	Age 60	Age 63 in 2014, increasing to age 65 by 2018			
Beneficiaries in 2013					
Thousand	183.2	72.2	-	131.3	7.7
Percent of pop. 60 and older	107.5	42.4	-	77.1	4.5
Average annual benefit in 2013					
Thousand Rs	44.9	74.2	-	15.3	48.0
Percent of GDP per capita	15.3	25.2	-	5.2	16.3
Expenditure in 2013					
Billion Rs	8.2	5.4	-	2.0	0.4
Percent of GDP	2.2	1.5	-	0.5	0.1
Contributions in 2013					
Contributors			3.6	318.7	378.8
Billion			0.0	2.7	1.3
Percent of GDP			0.0	0.7	0.4
Size of fund in 2013					
Billion				80.0	16.7
Percent of GDP				21.8	4.6

Note: In December 2014, the average BRP was increased to Rs 65,000 per year (or 22.1 percent of GDP per capita).

- **The BRP** is a noncontributory pension payable to every Mauritian citizen aged 60 years and older. The BRP consists of a fixed monthly amount that varies according to the age of the recipient and is updated annually, in principle according to nominal wages, although sometimes it is only adjusted for inflation. In 2013, about 183,000 beneficiaries received an average benefit of nearly Rs 45,000 per year, or 15.3 percent of GDP per

³ Other categories of benefits are also available, including for widows, invalids, orphans, guardians, children, social aid, food aid, income support, and inmates. These benefits are out of the scope of this paper.

capita. This was increased to Rs 65,000 per year and 22.1 percent, respectively, in December 2014. The central government finances expenditures on the BRP through a grant to the National Pension Fund (NPF), which administers the program. Access to the BRP is universal and it is a poorly-targeted program to combat poverty.

- **Civil Service Defined Benefit (CSDB):** Civil servants who joined before December 2012 participate in a DB scheme (CSDB). Active employees contribute 6 percent of their earnings towards this scheme, and the government is responsible for any deficit. The retirement age is being gradually increased to age 65 by 2018. For civil servants who were appointed before July 2008, the pension amount is computed as $1/600^{\text{th}}$ of pensionable earnings for every month of service, subject to a maximum of $400/600^{\text{th}}$ (about 67 percent). For those appointed between July 2008 and December 2012, the pension amount is computed as $1/690^{\text{th}}$ of pensionable earnings on retirement for every month of service subject to a maximum of $460/690^{\text{th}}$ (about 67 percent). There are special accrual rates for members of the judiciary, for medical and dental professionals, among others. Civil servants are also paid a lump sum upon their retirement. In 2013, there were about 72,000 beneficiaries who received an average benefit of nearly Rs 74,000 per year (or 25 percent of GDP per capita). CSDB pensions are adjusted annually the same way as civil service salaries are adjusted.
- **Civil Service Defined Contribution (CSDC):** The defined benefit scheme was closed to civil servants who joined after December 2012. New entrants are enrolled in a DC system to which they contribute 6 percent of their earnings and the government contributes 12 percent to individual pension accounts. Details of the new scheme, including the institutional set-up, distribution rules, and the investment strategy, are yet to be finalized. As of March 2014, about 3,600 civil servants had enrolled in the scheme and the fund has accumulated assets of less than 0.01 percent of GDP.
- **The National Pension Fund (NPF)** is a funded defined benefit scheme for private sector employees funded by mandatory contributions from employees (3 percent of earnings) and employers (6 percent of earnings), as well as by the returns from the investments of the fund. Self-employed workers can also join voluntarily. The retirement age for NPF participants is also being gradually increased to 65 years by 2018. Benefits are accrued based on “pension points”. The amounts contributed are divided by the cost of a point each year. At retirement, the sum of pension points accumulated over the work life is multiplied by the current value of a point. The cost and value of pension points are designed to grow in line with wages. With a contribution rate of 9 percent, the current cost-value ratio of 11 to 1 implies a pension of about 33 percent of earnings (replacement rate) after 40 years of contributions (Vittas, 2003).⁴ However, in reality the NPF adjusts the value of the points in order to improve its sustainability and thus the true replacement

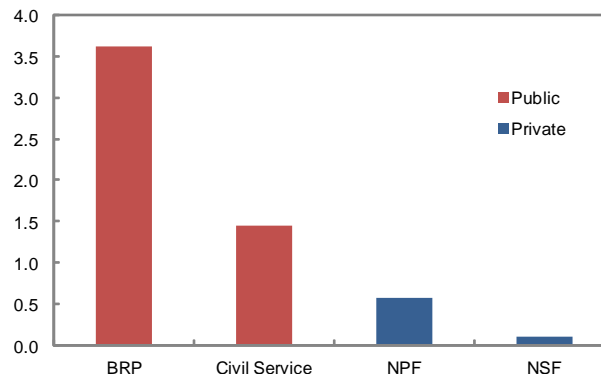
⁴ More specifically, 40 years of contributions * 9 percent of wages * 1/11 value per point = 33 percent.

rate is substantially lower. Also, there is a maximum contribution limit, which further lowers the replacement rate for higher earning individuals. The NPF had around 131,000 beneficiaries in 2013 and expenditures on benefits amounted to about 0.5 percent of GDP, implying an average benefit of Rs 15,300 per year (or about 5 percent of GDP per capita). As of end-2012, the total assets of the NPF amounted to 22 percent of GDP. The bulk of the portfolio is allocated to Mauritian government bonds (around 60 percent) and around 20 percent is allocated to foreign investments. While the NPF is theoretically privately funded, should the NPF be unable to meet its obligations, contingent liabilities would arise for the government.

- **The National Savings Fund (NSF)** is a compulsory defined contribution scheme funded by mandatory contributions from employees (2 percent of earnings). The NSF provides a lump sum at retirement age, which is determined by past contributions and the performance of investments of the fund, subject to a “no-capital loss” guarantee (the beneficiary cannot receive a lump-sum smaller than the amount of contributions paid into the account). In 2013, about 7,700 beneficiaries received an average lump-sum payment of about Rs 48,000 (16.3 percent of per capita GDP). Total assets of the NSF amounted to 4.6 percent of GDP as of end-2012. The NSF portfolio is heavily concentrated on government securities, with over 75 percent of assets allocated to government bonds and T-bills.

Altogether, public pension expenditure in Mauritius is projected to reach 5 percent of GDP in 2015, with 3.6 percent of GDP devoted to the BRP, and 1.4 percent of GDP to the civil service defined benefit scheme (Figure 2). In comparison, pension expenditure, financed by the NPF and the NSF, would reach about 0.7 percent of GDP. These comparatively low values reflect the fact that these systems are yet to mature.

Figure 2. Projected Pensions Spending in 2015
(Percent of GDP)



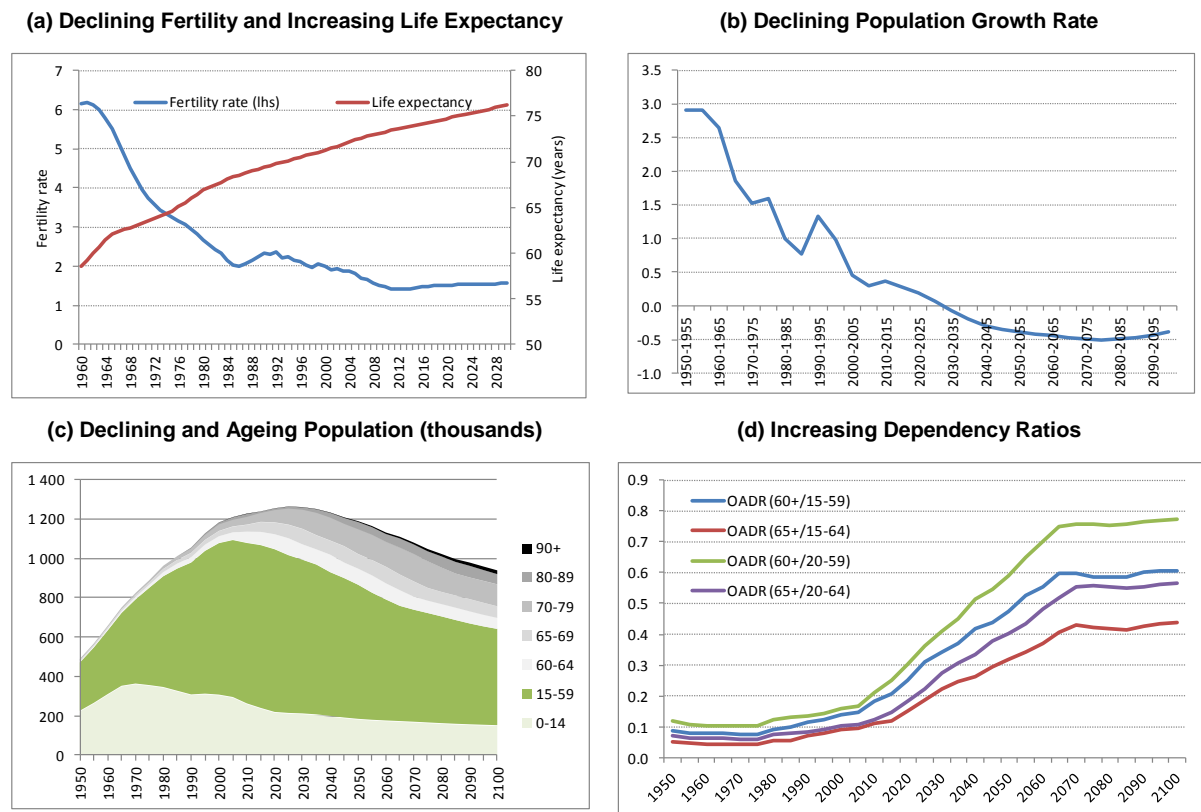
Source: IMF staff estimates.

III. DEMOGRAPHIC AND FISCAL CHALLENGES

A. Demographic Outlook

Mauritius was among the first African countries to start a demographic transition in the early 1960s (IMF, 2015). The fertility rate has declined from 6 children per woman in 1960 to about 1.5 children per woman in 2010 (Figure 3a). This is the main driver behind the decline in population growth from about 3 percent per year in 1960 to about 0.3 percent per year today. On current trends, the population is projected to shrink after 2030 (Figure 3b). At the same time, life expectancy at birth has increased from 59 years in 1960 to above 73 years in 2010. The combination of declining fertility and increasing longevity initially contributed to a “demographic dividend”, resulting in higher growth due to an increasing share of working-age population in the total population.

Figure 3. Demographic Trends



Source: UN and IMF staff calculations.

Looking forward, Mauritius faces an ageing and declining population (Figure 3c). This transition implies important challenges. Since fertility rates are projected to stabilize under the natural replacement rate, the total population is expected to peak at about 1.3 million in the next decade, and decline to 0.9 million by 2100—a 30 percent reduction. At the same time, the share of the elderly in the population is projected to increase steeply: the share of

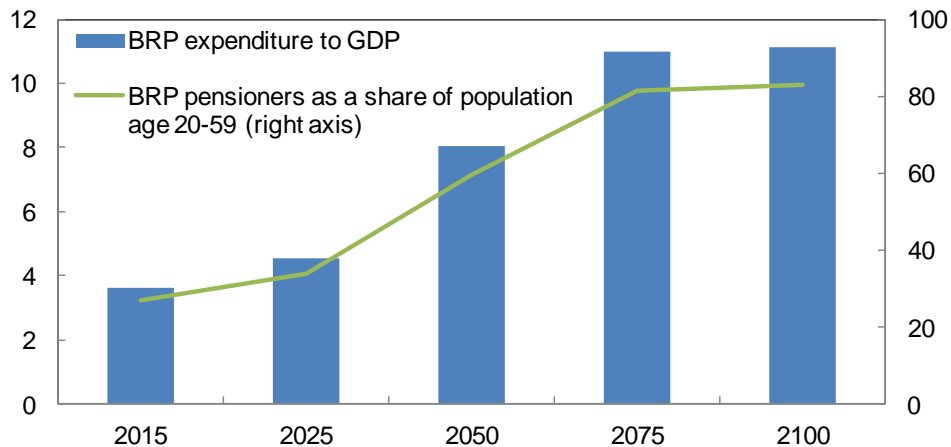
the population aged 60 years and older will increase from 13 percent of the total population in 2013 to 30 percent in 2050, and will reach 35 percent by 2100. This will worsen the dependency ratios significantly between now and 2070 (Figure 3d).

B. Fiscal Outlook

Basic retirement pension

The baseline scenario assumes that BRP benefits grow in line with wages (reflecting the anti-poverty objective of the program) and that eligibility remains universal for individuals aged 60 and older (Appendix I provides details on the projection methodology). Under this scenario, reflecting population aging, the current BRP spending of 3.6 percent of GDP is projected to increase rapidly over the coming decades by roughly 4½ percentage points over 2015–2050 and another 3 percentage points over 2050–2100 (Figure 4). This rapid increase could threaten the overall long-term sustainability of public finances—the present discounted value (PDV) of the projected expenditure is about 457 percent of 2015 GDP (172 percent over 2015–2050 and 285 percent over 2051–2100). These amounts would not be financeable with the current tax system, and it is unlikely that Mauritius would want to increase taxes to be able to spend some 11 percent of GDP per year in universal pensions that are paid more than proportionally to the better off—about 48 percent of benefits go to the richest 40 percent of the population (David and Petri, 2013).

Figure 4. Baseline Projection for Basic Retirement Pension (BRP), 2015–2100



Source: IMF staff calculations.

Note: The baseline scenario assumes that BRP grows in line with wages and eligibility age remains constant at age 60.

Civil service defined benefit and defined contribution schemes

For the civil service pension scheme for those who joined the service prior to January 1, 2013, the baseline scenario assumes that civil servants will extend their careers in line with

the increase in the retirement age.⁵ This implies that the ratio of the average civil service pension to the average wage will remain constant over time.⁶ The baseline also assumes that the civil service age profile is similar to that of the general population and takes into account the legislated increase in the retirement age over 2009–2018. To account for the closing of the CSDB to new entrants, the baseline assumes that in 2012 all of the civil service employees aged 20–59 are covered by the scheme, while only 40 percent of civil service will be covered by 2030. By 2055 all of those who entered the civil service before 2013 are assumed to have retired. This implies that until about 2045 all of the civil service pensioners will receive a pension from the CSDB. Between 2045 and 2075 there will be a mix of retirees, with some receiving CSDB benefits and others receiving CSDC benefits. By 2080 all of the civil service retirees are projected to receive pensions from the DC scheme (a person who entered at age 30 in 2013 would be 97 in 2080).

Table 2. Impact of Introduction of DC Scheme for New Entrants to the Civil Service after 2013, 2015–2100

	Present discounted value (percent of 2013 GDP)			Percent of GDP				
	2013	2050	2013					
	-2050	-2100	-2100	2013	2025	2050	2075	2100
<i>Before introduction of DC scheme for new entrants in 2013</i>								
Expenditure (CSDB pensions)	66	115	182	1.5	1.6	3.2	4.4	4.5
Revenue (employee contributions to CSDB)	7	6	13	0.2	0.2	0.2	0.2	0.2
Surplus/deficit	-59	-109	-168	-1.2	-1.4	-3.0	-4.2	-4.3
<i>After introduction of DC scheme for new entrants in 2013</i>								
Expenditure (CSDB pensions)	66	22	88	1.5	1.6	3.1	0.0	0.0
Expenditure (government contributions as an employer to CSDC)	11	13	24	0.0	0.4	0.5	0.5	0.5
Revenue (employee contributions to CSDB)	1	0	1	0.2	0.0	0.0	0.0	0.0
Surplus/deficit	-75	-35	-110	-1.2	-2.0	-3.6	-0.5	-0.5
<i>Impact introduction of DC scheme for new entrants in 2013</i>								
Expenditure	11	-80	-70	0.0	0.4	0.3	-4.0	-4.1
Revenue	-6	-6	-12	0.0	-0.2	-0.2	-0.2	-0.2
Surplus/deficit	-16	74	58	0.0	-0.6	-0.5	3.7	3.8

Source: IMF staff calculations.

Note: The baseline scenario assumes the average CSDB benefit grows in line with wages, eligibility increases gradually to age 65 by 2018 and remains constant thereafter, and that the size of the civil service as a share of the working age population remains unchanged.

The introduction of the DC scheme for new entrants substantially improved the long-term fiscal outlook. Overall, the net impact of the reform was a *reduction* in the present discounted value (PDV) of the pension deficit of nearly 58 percent of 2013 GDP (last row of Table 2).⁷

⁵ This may be somewhat optimistic since many civil servants retire earlier than anticipated. This behavior might have to be addressed through early retirement penalties.

⁶ Combined with a shrinking workforce relative to the total population, this implies that the average CSDB pension relative to GDP per capita would increase from 15 percent in 2013 to about 19 percent in 2100.

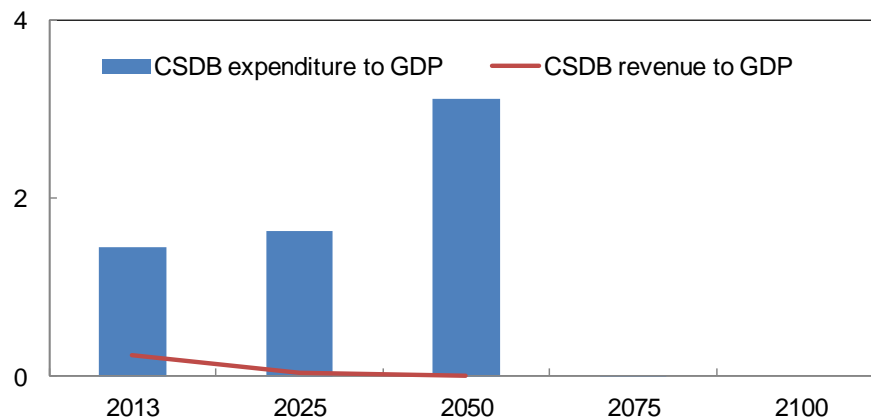
⁷ The discount rate used for the PDV calculations is 5 percent.

Prior to the reform, over 2015–2100 the PDV of the CSDB pension expenditure was 182 percent of 2015 GDP, and the PDV of the CSDB revenue (employee contributions) was 13 percent of 2015 GDP. The reform reduced the PDV of public pension expenditure (CSDB expenditure plus CSDB pension contributions) to 112 percent of 2015 GDP, but also reduced the PDV of contribution revenue to 1 percent of GDP.

Importantly, although the 2012 reform *reduced* the PDV of the pension deficit in the long-run, it is also projected to *increase* the deficit over the next few decades. This largely reflects a “transition cost”, expenditure on CSDB pensions will remain relatively unchanged for the next four decades, but expenditure to prefund the CSDB will increase and CSDB revenue will decrease. This transition cost is substantial—the projections suggest that the reforms result in increased deficits of some ½ percent of GDP per year over 2025–2050 before achieving large savings from 2075–2100 onwards. Therefore, to minimize the impact of this reform on public debt, some combination of fiscal adjustment outside of pensions and further reforms to the CSDB might be required.

The baseline projection implies a relatively flat expenditure profile for the CSDB over 2015–2020 at about 1.4 percent of GDP, largely reflecting the impact of the increase in the statutory age of retirement. CSDB pension expenditure is projected to increase to a peak of 3.1 percent of GDP in 2050 reflecting population aging, and then approach zero after 2080 when all of the civil service pensioners would be covered by the CSDB scheme (Figure 5).

Figure 5. Baseline Projection for Civil Service Defined Benefit Scheme (CSDB), 2013–2100



Source: IMF staff calculations.

Note: The baseline scenario assumes the average CS-DB benefit grows in line with wages, eligibility increases gradually to age 65 by 2018 and remains constant thereafter, and that the size of the civil service as a share of the working age population remains unchanged.

The CSDB scheme includes a 12 percent contribution of the government as employer, which is projected to increase public expenditure—however, the CSDB accounts are designed to be privately owned, outside of the general government. Fiscal expenditure from these

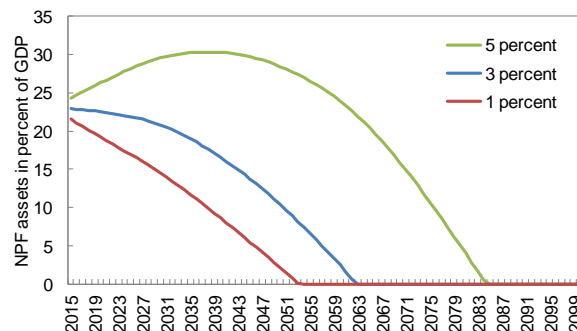
contributions is projected to increase from 0 percent of GDP in 2012 to nearly 0.3 percent of GDP in 2020 to about 0.5 percent after 2055, when all of the civil service would be covered by the CSDC scheme. In addition, government revenue from employee contributions to the CSDB (about 6 percent of wages) will be shrinking over time from about 0.2 percent today to under 0.1 in 2025 to zero by 2055.

National Pension Fund (NPF)

The main fiscal risk associated with the NPF is one of contingent liabilities. In the event this scheme is unable to meet promised benefits, the government might need to provide at least partial funding to mitigate the impact on future pensioners (for example, in order to prevent these pensioners from falling into poverty). It is thus in the interest of the regulators to minimize these risks, including by periodically monitoring the funding status of these plans to ensure that the PDV of projected benefits is not greater than the sum of the assets on hand plus the PDV of projected contributions. Moreover, the design of the system should be monitored so that it provides sufficiently high replacement rates to keep pensioners out of poverty as poverty inducing replacement rates form another aspect of contingent liabilities.

Under the baseline projections, the NPF is not sustainable over this century. Assuming a constant ratio of benefits to the average wage, the NPF would exhaust its funds by 2063 (under our assumption of 3 percent real return on assets). It would either have to lower benefits, increase contributions, or receive a government subsidy to cover promised benefits with employee contributions and returns from assets. Depending on the rate of return on assets (Figure 6), which is an extremely important variable, the NPF's assets might last until 2054 with a 1 percent real return or until 2085 with a 5 percent real return. Only assuming a 5 percent return results in growing balances over the 20 years. The need to introduce reforms to these systems to ensure that benefits do not fall precipitously is further exemplified by the fact that absent reforms, by 2100 the NPF will only be able to meet about 37 percent of projected benefits from the projected level of contributions. Furthermore, to ensure sustainability of these schemes over the long run, the government should strengthen the

Figure 6. NPF Assets and Annual Real Rate of Return, 2015–2100
(Percent of GDP)



Source: IMF staff calculations.

governance structure of the NPF to achieve a good balance between risks and returns, including by enhancing its investment capacity and sole responsibility to the pensioners.

In sum, the demographic outlook suggests a declining and aging population for most of this century in Mauritius. The most important source of long-term fiscal pressures is the BRP, which is projected to increase by about 4½ percentage points of GDP over 2015–2050 and by another 3 percentage points over 2051–2100. In addition, although the reform of the CSDB will reduce the fiscal cost of providing pensions to civil servants in the long term, it will impose a sizeable cost over the next few decades (about 0.6 percent of GDP per year over 2025–2050). Finally, despite providing relatively low replacement rates, the NPF is projected to eventually run out of assets, which absent reforms could result in the materialization of contingent liabilities for the government, particularly to finance benefits after 2060.

IV. REFORMS OPTIONS

There are several options available to offset the projected increase in public pension expenditure, while ensuring equitable outcomes. Mauritius could draw lessons from public pension reforms in other countries, which typically have focused on a combination of measures. For traditional pay-as-you-go systems (such as the BRP and remaining CSDB), these measures can be categorized in three broad categories: reducing generosity, tightening eligibility, and increasing incentives to remain in the labor market (IMF, 2011). In a few cases, these reforms have been accompanied by introducing a funded component, typically under a framework of privately-funded individual retirement accounts:

- Reforms aimed at reducing the generosity of pensions systems often aim to reduce the replacement rate. This is achieved by either lowering accrual rates, or adjusting the base used to calculate final pensions. Some countries (Germany) have built in sustainability factors, while others have automatic changes in the pension formula such as through notional returns (Austria, Italy, Sweden).
- Eligibility can be tightened by increasing the retirement rate or through targeting. The increase in retirement age for civil service pensions is a step in this direction, as was the failed introduction of targeting for the BRP in 2004. In a context where life expectancy is projected to increase, linking the retirement age to changes in life expectancy not only reduces the fiscal burden, but also ensures more people remain eligible to work in a context of a declining working age population.
- Incentives to remain in the labor market can be increased by either tightening eligibility to early pensions or increasing the attractiveness of late retirement through actuarially fair pension payments. Legal changes against age discrimination can also support older workers seeking jobs.

- Other countries, in addition to reforming their existing pay-as-you-go system, introduced a funded component to replace or complement the existing pay-as-you-go schemes (including Bulgaria, Chile, Mexico, and Sweden). While there are potential fiscal advantages from such changes, these typically take several decades to accrue. The main reason is the transition cost—the need to pay for accrued benefits under the pay-as-you-go system while at the same time diverting revenue away from the pay-as-you-go to the privately funded schemes as these start to develop. Moreover, some of these changes shift risks from the government, which is able and capable to bear them to the individuals, who may not be, and this will likely result in lower risk adjusted benefits for the individuals given the same cost for the government.

Of these options, containing eligibility through increasing retirement ages has several advantages for Mauritius. From a fiscal perspective, further increases in the retirement age would raise revenue by increasing the years of contribution as people work longer, and reduce expenditure by limiting the number of years pensions are paid out. Beyond the fiscal considerations, prolonging work lives could also boost economic growth by promoting higher employment levels and consumption (IMF, 2011). Nevertheless, the social safety net should be strengthened to protect those who are unable to work longer, for example for health reasons. Our simulations assume only 50 percent of people who are eligible to work following an increase in retirement age will choose to do so.

Other measures to increase fertility and the working population could also be considered. Anything that will increase the workforce is likely to be helpful in reducing the relative cost of supporting the old age population. In this context, the government could consider subsidizing parental leave or paying new parents pension contributions for a limited period. Other measures might include the encouragement of immigration, particularly of high skilled workers, to mitigate the impact of the projected decline in the working age population (Svirydzienka and Petri, 2014).

One key objective of the reforms remains ensuring that the elderly have sufficient resources during retirement and do not fall into poverty, particularly when the BRP is their only source of income. This reinforces the need to use measures at containing eligibility and furthering incentives to remain in the labor market, while minimizing the impact on replacement rates. In this light, another option is to reexamine limiting the BRP for those above a certain income threshold (means-testing). The reform options are described for each component of the pension system below, starting with the BRP, which is projected to be the most costly from a fiscal perspective.

A. Basic Retirement Pensions

Increasing the age of BRP eligibility could yield some NPV savings of 198 percent of 2015 GDP. One important factor behind the rapid projected increase in BRP expenditure is population aging. At the current age of eligibility of 60 years, the rising share of the

population over age 60 in the total population would raise the number of BRP beneficiaries—over 2015–2050, the number eligible BRP individuals is projected to more than double while the total population is projected to increase by only 0.5 percent. Part of this reflects substantial expected improvements in longevity. For example, the average number of years an individual aged 60 is expected to live is projected to increase at a rate of 10½ months per decade, from 18.9 years in 2010 to 22.9 years in 2050 to 26.7 years in 2100. For the BRP, this implies an increase on the average number of years over which pensions have to be paid. One attractive option to counter these improvements in longevity is to increase retirement ages and align it with the CSDB and NPF retirement age of 65, and then index the retirement age to life expectancy at age 60.⁸ This option would help contain the explosive path of expenditure projected in the BRP—relative to the baseline, this option will reduce public expenditure in the BRP by 3.3 percentage points to 4.7 percent of GDP in 2050 and by 6 percentage points to about 5.2 percent of GDP in 2100. Over the long term, increasing the age of BRP eligibility would have a substantial impact on fiscal sustainability, by reducing the present discounted value of BRP expenditure from 457 percent to 259 percent of 2015 GDP.

Implementing benefit targeting might result in NPV savings of 136 percent of 2015 GDP and still preserve the poverty-reducing objective of the BRP. BRP benefits are available at age 60 to all Mauritian citizens, provided they meet minimum residency requirements. One option to reduce the fiscal burden of the BRP is to introduce some means-testing to reduce benefits. This can be done by gradually phasing out the BRP for those above the 25th percentile of the income distribution (the BRP amount would be reduced from 100 percent for those in the 0–25th percentiles to zero for those above the 50th percentile).⁹ If combined with the increase in the eligibility age, this option would reduce BRP expenditure by an additional 2.9 percentage points in 2050 and by nearly 3.2 percentage points in 2100.

The focus on those with low incomes would help to preserve the poverty-reducing aspects for those who rely mostly on the BRP, whereas the BRP contributes only a small share for the income of those who are better off. It would be critical to maintain a relatively simple administration of the system, which requires developing the proper information systems and administrative protocols. Such phased and graduated approach would be important to muster social support for this measure. The savings from means-testing the BRP could be used to subsidize NPF contributions of workers with low wages. Subsidizing the NPF contributions of low-wage earners could increase labor market participation incentives for this population

⁸ The indexing should be done in a way that keeps the ratio of average working years to average retirement years constant so as to yield an automatic sustainability factor. Aligning retirement ages would also reduce the incentive to retire early for the other systems and might result in administrative savings.

⁹ One of the problems of the failed 2004 attempt at targeting was that the benefit went from 100 percent to zero above a certain threshold, which distorts incentives around that threshold and was perceived as being unfair. A gradual phasing out of the benefits should address this problem.

and help reduce poverty.¹⁰ The subsidy would need to be phased out for higher earners in order to reduce the potential cost. The NPF minimum contribution limit would need to be adjusted to allow for this subsidy and administrative safeguards would need to be put into place to limit abuse. The financial position of the NPF would not be affected since the subsidy would be paid by the government.

Reviewing the indexation of benefits would be detrimental to the poverty reducing objective of the BRP. Under an alternative scenario in which benefits grow in line with prices instead of wages, BRP expenditure is projected to decline from 3.6 percent of GDP in 2015 to 1.3 percent of GDP in 2050 and 0.2 percent of GDP by 2100. This scenario might seem more affordable, but this comes at the expense of rapidly declining benefits relative to GDP per capita—from 22.5 percent in 2015 to less than 0.5 percent in 2100. Thus, this option might not be desirable because it would eliminate the ability of the BRP to alleviate old-age poverty.

B. Civil Service Pension Schemes—Defined Benefit

Delinking CSDB pension indexation from wages of the civil service could result in NPV savings of some 25 percent of 2013 GDP. Currently, CSDB pensions increase in line with the post held last by the pensioner. This is administratively cumbersome and costly. One option is to link pension spending increases to broad wage and inflation indices. For example, indexing pensions to an equal mix of economy-wide wages and prices would reduce the PDV of CSDB spending by 11 percentage points of GDP. Linking pensions only to prices would reduce the PDV of CSDB by 25 percent of 2013 GDP.¹¹

Indexing the retirement age to increases in longevity would also yield important savings. This could be done by continuing the increase in the retirement age beyond 2018 in line with longevity developments (as suggested for the other systems). This implies raising the age of retirement from age 65 in 2018 to around age 68 by 2050—most individuals covered by the system will be retired by then. Relative to the baseline this option will reduce public expenditure in the CSDB by 0.2 percentage points in 2030 and by 0.6 percentage points in 2050. Over the long term, this reduces the PDV of CSDB expenditure by 10 percentage points of 2013 GDP.

Broaden the pensionable base from the final earnings to the average of the last 10 years would be helpful. This would slightly reduce the generosity of pensions and would help avoid

¹⁰ An NPF contribution subsidy for low-wage workers could work similarly to an earned-income tax credit as it would help increase the take-home pay for low wage workers and increase their incentives to participate in the labor market.

¹¹ Subject to fiscal sustainability, some link to wages would likely be desirable since the CPI facing pensioners tends to be higher than that facing the general population, because of the higher weight of services for pensioners' CPI.

final year increases in wages and promotions to increase pensions, common in pension systems that depend on final earnings. Relative to the baseline, this option would reduce the PDV of CSDB expenditure by 4 percent of 2015 GDP.

C. Civil Service Pension Schemes—Defined Contribution

A new system was introduced for those joining the civil service after December 31, 2012. The initial idea was for this system to function on an individual accounts, defined-contribution basis. However, most of the details have not been finalized, thus there is scope to improve some of its architectural features to provide adequate pensions with better risk-sharing between the government and its employees. There are three main options in descending order of risk-sharing:

First, merge the new system into the NPF. This option would deposit the new CSP contributions to the NPF (reformed as suggested below), which would provide benefits to CSP participants under the same parameters as those offered to the private sector. The main advantage of this option is that it would leverage on the existing infrastructure. Moreover, it would allow for full mobility between public and private sectors, and increase fairness by providing homogeneous benefits to all private and public workers. However, this option would ideally reconsider contribution rates for the private sector NPF participants. One possibility is to gradually raise the NPF contributions by 1 percent per year from 9 to 18 percent of wages over the next 9 years so as to harmonize contribution rates.¹²

Second, convert the new system into an independently funded defined benefit scheme. Given that the new CS system is at its beginning, it would be possible to design a sustainable DB system with the same contribution parameters, but allowing for better risk sharing between the pensioner and government, increased investment returns through pooling and increased investment horizons, and also reduce administrative costs. The key for this system would be to provide a level of benefits that are consistent with the contributions received and the returns expected on those contributions. Important design questions are also related to the resilience of the system to shocks, in particular how benefits would be adjusted if and when funding deficiencies appear. One advantage of this option is that, by designing the scheme from scratch, its parameters and investment policies can be chosen carefully to contain fiscal risks, including prudent investment rules and built-in adjustments to automatically maintain the scheme actuarially sound over the long term. However, a potential issue is that this system could be perceived as a public system, which could mount pressures to increase benefits or relax the regulations, effectively making the system a pay-as-you-go system with greater fiscal costs.

¹² This is desirable in any case as discussed below in the NPF section.

Third, implement an individual account, defined contribution system. Under this option, pensions will depend on the contributions and investment returns of individual accounts.¹³ The main advantage of this option is that it can make the fiscal cost of pensions more predictable—in theory, the only cost would be the government contribution as an employer. However, this implies a transfer of risks to employees, including those related to low returns and increased longevity. If these risks are realized and pensioners receive inadequate benefits, the government might have to provide support with additional fiscal costs. More importantly, there are serious challenges with implementing these types of systems, including the need to enhance financial literacy and improve the capacity to regulate and supervise the financial sector, to ensure that retirement savings are properly invested and effective annuity products are available at retirement. The international experience suggests that these systems tend to have higher administrative costs that result in lower pensions for the participants.

In any case the new CSP scheme would require enhanced oversight and its investment capacity and financial independence would need to be ensured. To secure the success of the scheme over the long run, the government should create an independent supervisory capacity with fiduciary responsibility to participants only. Moreover, sound investment management (currently provided by SICOM) needs to continue and be improved further, with an investment strategy reflecting the longevity of the scheme.

D. National Pension Fund

Indexing the retirement age to increases in longevity would yield savings of 15 percent of 2013 GDP. This could be done by continuing the increase in the retirement age beyond 2018 in line with longevity developments (as for the other systems), from age 65 in 2018 to about age 68 in 2050, to age 72 by 2100. Relative to the baseline with a 3 percent real return on assets, this option will extend the year of exhaustion of NPF assets beyond 2100.

Review the point system and ensure its proper implementation. The current parameters transform every 11 contribution points into 1 retirement point. Using a contribution rate of 9 percent this implies a target replacement rate of 33 percent of the pensionable salary base after 40 years of contributions. In principle, contribution and pension points should be adjusted in line with average wage growth, but in practice the adjustment is often done ad hoc and in line with prices to preserve the sustainability of the NPF, but at the cost of lower replacement rates for participants. Replacement rates of 33 percent are already low by international comparison, and therefore it is important to apply the system as designed to achieve the replacement rates targeted and adjust the system's other parameters to achieve

¹³ A notionally defined contribution system with investment pooling and compulsory annuities paid by the system would be similar to a DB system in terms of risk sharing but with a tighter link between contributions and benefits.

sustainability. Increasing the maximum contribution limit might also be useful to increase replacement rates for higher earning participants.

Contribution rates could be raised from 9 percent to 18 percent for a target replacement rate of 66 percent. This would align the contribution rate with that of the new civil service system. Moreover, with higher replacement rates old age poverty would be lower, which is socially desirable and lowers the government's contingent liabilities. Also, higher contribution rates imply higher forced savings, which would have macroeconomic benefits given Mauritius' low savings rate. The increase in the contribution rate could be phased in over 9 years by increasing the rate by one percentage point each year. Thus, a part of each year's salary increase would be channeled to the NPF, which should be less disruptive than a one-time increase in the rate. Given that the benefits of higher contribution rates accrue to the employee through higher and more sustainable pensions, consideration should be given to shifting the burden of the increase to the employee. This would also be beneficial from a competitiveness point of view.

Pension benefit might be adjusted mainly in line with prices rather than wages for better sustainability. Currently, pensions are supposed to be adjusted in line with wages, but in practice they are adjusted more in line with prices. It would be useful to define the system transparently, so that participants can predict their pension increases accurately. Subject to sustainability concerns, consideration could be given to increasing pensions slightly faster than by wages only to take into account the different CPI facing pensioners (described above).

The investment management of the NPF needs to be strengthened to be able to achieve the targeted real returns. The NPF has achieved high historical returns, but in the context of low real world interest rates it will be challenging to achieve such returns going forward. Currently, the investment capacity of the NPF is limited and its governance arrangement need to be strengthened. Creating a professional and independent investment office with fiduciary responsibility only to NPF participants would be important. Initially, it would likely be advisable to achieve greater diversification of the investment portfolio with low-cost passive index-like investment products. Over time as the capability of the investment office is strengthened other strategies could be considered to the extent that risk-cost-return considerations are satisfied.

E. National Savings Fund

The NSF could be merged into the NPF to simplify the pension system and help achieve higher replacement rates. For example, channeling the NSF's 2 percent contribution rate would help reduce the transition period to higher NPF contribution rates. Moreover, the contribution of the NSF to old age security is less efficient than that of the NPF because some participants immediately spend their lump sum NSF payment rather than saving it for old age. Finally, merging the NSF into the NPF would provide some administrative savings.

V. CONCLUDING COMMENTS

The ageing of the Mauritian population is starting to weigh on government finances and these pressures are bound to increase. A range of reforms, with different economic and social impacts could be implemented to mitigate the projected increase in pension spending. The projected increase in pension spending for Mauritius (in a no-reform scenario) is significant and not compatible with the projected spending in other areas, particularly infrastructure and geriatric health care, and the government's debt law. As such, reforms are unavoidable. To the extent these are delayed, the cost, particularly for taxpayers and pensioners, would be higher. However, phasing in these reforms over time could make it more palatable—both from political and social considerations—and require less drastic measures, which would be perceived to be fairer. While the appropriate mix eventually depends on the country authorities, it is important to build a national consensus across all political parties as regard the pertinence of these measures.

Unifying and linking the retirement age to life expectancy is the most important measure for pension sustainability. Ultimately it is one of the fairest measures because it is reasonable that people work longer when they can expect longer retirement periods. This measure could stabilize the workforce in the near-term, particularly in view of the projected decline in the working age population. However, a decline in the workforce in the latter half of the century is unavoidable, and this would also have implications for the country's productive and growth potential—without measures to increase the workforce. At the same time, increases in the retirement age should be accompanied by measures that protect the incomes of those that cannot continue to work. Older workers should be protected by disability pensions where appropriate and social assistance programs to ensure that increases in retirement ages do not raise poverty rates.

Increases in the statutory retirement age should also be accompanied by steps to limit early retirement and encourage longer working lives. This can be done through financial incentives that are actuarially fair in the case of extension and either fair or with a small penalty element for those that retire early voluntarily.¹⁴ Another way to limit early retirement is to phase out the complex classification system that allows certain occupations and professions to claim benefits early. It would also be important to strictly control alternative pathways to retirement such as disability pensions, for instance by conditioning disability pensions on strict medical evaluations. In any case, benefits claimed prior to the retirement age should be reduced to reflect the longer period over which they will be received.

¹⁴ The reason one might have penalties for early retirement that are slightly more than actuarially fair is that people might be myopic and not realize that retiring on a low pension might leave them in or close to poverty in retirement, particularly if pensions are only adjusted by inflation.

Some form of targeting will likely be needed to protect the poverty-reducing objective of the basic retirement pension. Without targeting the program would become unaffordable given population ageing (particularly since equivalent tax increases do not seem advisable). This would also be fair since the better off part of the population does not need a poverty pension. Yet it is important to ensure that those at the lowest income level are adequately protected and pensions achieve its original objectives—that of ensuring the elderly are not in poverty during retirement.

For civil servants, consideration should be given to merging the new system with the NPF and limiting future costs of the old system. Since the new system is young, it should not be too controversial to merge it with a reformed NPF, which would also encourage mobility between the private and public sector. For the civil servants in the old defined benefit system, it would seem reasonable for them to share partially in the pension reform efforts that are demanded of others by adjusting the pension indexation rules and the calculation of the last salary.

Increasing the contribution rate for the National Pension Fund would also support higher pension payments during their retirement and help reduce poverty for private sector employees. Beyond the fiscal impact, these reforms would also contribute to increasing national savings, particularly if no additional taxes are levied as part of the reforms. In this context, the National Savings Fund could be merged into the NPF to help with the increase in the contribution rate. Moreover, it will be extremely important to improve the investment capacity and governance structure of the NPF to ensure that the investment returns on which the NPF's sustainability relies are achieved in practice. Regular actuarial reviews with automatic adjustment parameters would be useful to keep the NPF sustainable.

These reforms are also necessary to anchor the long-term sustainability of government spending in Mauritius. However, some of these reforms also tend to be deeply unpopular, particularly when implemented during crisis situations. Mauritius can currently afford to phase in these reforms gradually and put the pensions system on a sustainable footing without drastic measures. To facilitate the implementation of these measures, consideration could be given to putting in place an independent committee to depoliticize the debate.

Other measures to increase fertility and the working population could also be considered. Limiting the decline in population would not only help improve its pension system, it could also sustain growth and contribute to higher long-term living standards for all Mauritians.

Appendix I. Methodology to Simulate Pension Spending

The template used was designed by the IMF's Fiscal Affairs Department. To simulate pension spending, we start with the following identity which decomposes the drivers of pension expenditure (PE) into three main categories: the replacement rate (ratio of average pensions divided by average wages); aging (measured by the old age dependency ratio); and the coverage (the number of pensioners as a proportion of the population 65 and older).

$$\frac{PE}{GDP} = \underbrace{\frac{Expenditure}{Pensioners} / \frac{GDP}{WAP}}_{\text{Replacement rate}} * \underbrace{\frac{Pensioners}{WAP}}_{\text{Old-age dependency ratio}} * \underbrace{\frac{Pensioners}{Old\ age\ population}}_{\text{Coverage}}$$

Using this simple identity, it is possible to calculate the change in pension spending as a share of GDP between two years (t_1 and t_2). For any year t , let $O(t)$ be the old-age dependency ratio, $C(t)$ be the coverage ratio, $R(t)$ be the replacement rate. Assuming a constant total compensation share in GDP over time, $\frac{PE}{GDP}(t_2) = \frac{PE}{GDP}(t_1) * \frac{O(t_2)*C(t_2)*R(t_2)}{O(t_1)*C(t_1)*R(t_1)}$.

Assumptions:

- *Population data* until 2100 is taken from the UN Population Database.
- *Active population* includes all those aged 20–59.
- *Old age population* includes all above 60, but pensioners include actual beneficiaries.
- *Coverage* is 1 for BRP, it is less than 1 for the civil service as the retirement age is gradually increasing to 65 years. This allows us to capture the reforms of 2008.
- *Participation rate remains constant* around 2010 levels (of 70 percent).
- *Share of compensation to GDP* remains broadly constant at around 40 percent.
- *Real GDP grows by 4 percent.*
- *CPI inflation is at 4 percent in the long run.*

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