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The Impact of the 2019 Brazilian Pension Reform on Survivor Benefits

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Agenda

1. The Big Picture
2. Pension Reform
3. The Model
4. Results
5. Final Comments



1. The Big Picture – The 2019 Brazilian Pension Reform

Jair Bolsonaro's administration (2019-2022)

- Pension Reform was approved in 2019
- Most comprehensive reform in recent years
- Changes in contribution rates, eligibility criteria, formula for calculating benefits



1. The Big Picture – The Brazilian Pension System

Civil Servants

Military

Private Sector - General Social Security Regime (RGPS)

- PAYG-DB
- Old-age, survivors and disability benefits
- Employees, self-employed, household and rural workers

Workers covered	52 million (25% of population)
Beneficiaries	36 million (17% of population)
Revenue	USD 82 billion
Expenditures	USD 128 billion
Deficit	USD 46 billion (3.3% of GDP)



2. Pension Reform | RGPS – Main features

Before the 2019 reform – Old Situation

1. Length of contribution pension:

- **Condition:** 35/30 years of contribution (M/W)
- Pension Factor: **Value** = 80% Average Earnings * Pension factor (f)
- Rule 86/96: f is optional if (Age + Length of contribution) \geq (86/96) (W/M)

2. Age pension

- **Condition:** 65/60 years old (M/W) + 15 years of contribution
- **Value** = 70% of average earnings + 1% per additional years of contribution
- **Contribution rates:**
- Employee: 8 - 11% earnings + Employer: 20%



2. Pension Reform | RGPS – Main features

After the 2019 reform – Current Situation

1. Just one type of old-age benefit

- **Condition:** 65/62 (M/W) years old + 20/15 (M/W) years of contribution
- **Value** = 60% Average Earnings + 2%* additional years of contribution
- **Contribution rates: (More progressive)**
- Employee: 7.5% - 14% earnings + Employer: 20%



2. Pension Reform | RGPS – Main features

Conditions	Age (years) of the beneficiary(ies) (y)	Duration of benefit (years)	Value of survivor benefit	
			Old situation	Current situation
Worker made 18 contributions or more before dying and marriage/stable relationship lasted at least 2 years	$y < 21$	3	100%*old-age, regardless of the number of beneficiaries	50%*old-age + 10%*Number of beneficiaries, up to a maximum of 100%
	$21 \leq y \leq 26$	6		
	$27 \leq y \leq 29$	10		
	$30 \leq y \leq 40$	15		
	$41 \leq y \leq 43$	20		
	$y \geq 44$	Lifetime		



3. The Model

- Definition of representative individuals
- Identification of the profile of workers and family structure
- Use of the official mortality table separated by gender
- Projection of financial variables (income, contribution, benefits) for different periods, based on old and current rules
- Calculation of actuarial annuities to compute pension indicators
- Base scenario: worker is a man whose survivor benefit is reverted to his wife, who is five years younger. There is no reversion for children



3. The Model - Annuities | Contributions

- **Income:** $W_{x+n-1} = W_x \cdot (1 + w)^{n-1}$ $x = 20$
 $W = 1, 2 \text{ and } 3 \text{ times the minimum wage}$
- **Contribution:** $C_{x+n-1} = W_{x+n-1} \cdot (c + 20\%)$ $w = 2\%$

immediate increasing
temporary annuity

$$\ddot{a}_{x:\overline{n}|} = \sum_{k=0}^{n-1} v^k \cdot {}_k p_x$$

- **Present Value of Income**

$$PVI = \sum_{k=0}^{n-1} W_{x+k} \cdot v^k \cdot {}_k p_x$$

- **Present Value of Contribution**

$$PVC = \sum_{k=0}^{n-1} C_{x+k} \cdot v^k \cdot {}_k p_x$$



3. The Model - Annuities – Benefits

- Value of Old-Age Benefit : V_{x+n}

lifetime constant
deferred annuity

$${}_n|\ddot{a}_x = \sum_{k=0}^{\omega-x-n} v^{n+k} \cdot {}_{n+k}p_x$$

- Present Value of Old-Age Benefit

$$PVO = \sum_{k=0}^{\omega-x-n} V_{x+n+k} \cdot v^{n+k} \cdot {}_{n+k}p_x$$



3. The Model - Annuities – Benefits

- Present Value of the Survivor Benefit

$$PVS = \beta \cdot \sum_{k=0}^{\omega-x-n} V_{x+k+n} \cdot v^{n+k} \cdot {}_{n+k}p_y \cdot {}_{n+k}q_x$$

deferred reversionary
annuity

$${}_n|\ddot{a}_{x|y} = \sum_{k=0}^{\omega-x-n} v^{n+k} \cdot {}_{n+k}p_y \cdot {}_{n+k}q_x$$



Replacement Rate

$$RR = \frac{V_n}{W_{n-1}}$$

4. Results

Old Situation

Initial Income	Gender	CT	Retirement Age	RR (%)
1 MW	F / M	30 / 35	50 / 55	45.5 / 52.3
	F / M	42 / 45	62 / 65	89.4 / 95.3
	F / M	47 / 50	67 / 70	119.7 / 129.8
3 MW	F / M	30 / 35	50 / 55	45.5 / 52.2
	F / M	42 / 45	62 / 65	86.9 / 90.9
	F / M	47 / 50	67 / 70	112.7 / 119.3

Current Situation

Initial Income	Gender	CT	Retirement Age	RR (%)
1 MW	F / M	42 / 45	62 / 65	77.5 / 72.9
	F / M	47 / 50	67 / 70	80.8 / 76.3
	F / M	50 / 53	70 / 73	82.6 / 78.2
3 MW	F / M	42 / 45	62 / 65	75.7 / 70.1
	F / M	47 / 50	67 / 70	76.7 / 70.9
	F / M	50 / 53	70 / 73	72.4 / 68.3



Required Rate
 $ReqRate = \frac{PVOS}{PVI}$

4. Results

Old Situation

Initial Inc.	Work./Benef.	CT	Ret. Age	ReqRate _{OA} (%)	ReqRate _s (%)	ReqRate _T (%)	ER(%)
1 MW	M / F	35	55	27.9	10.2	38.1	28.2
	M / F	45	65	30.8	14.5	45.3	28.3
	M / F	50	70	32.4	17.3	49.7	28.4
3 MW	M / F	35	55	27.9	10.2	38.1	30.9
	M / F	45	65	25.8	12.2	38.0	30.2
	M / F	50	70	18.1	9.7	27.8	29.7

Current Situation

Initial Inc.	Work./Benef.	CT	Ret. Age	ReqRate _{OA} (%)	ReqRate _s (%)	ReqRate _T (%)	ER(%)
1 MW	M / F	45	65	23.6	6.7	30.2	29.5
	M / F	50	70	19.1	6.1	25.2	29.7
	M / F	53	73	16.7	5.7	22.4	29.8
3 MW	M / F	45	65	22.6	6.4	29.0	33.1
	M / F	50	70	17.7	5.7	23.4	32.5
	M / F	53	73	14.6	5.0	19.6	32.2



Internal Rate of Return

$$PVC = PVO + PVS$$

4. Results

Old Situation

Initial Income	Work./Benef.	CT	Retirement Age	IRR(%)
1 MW	M / F	35	55	0.6
	M / F	45	65	0.9
	M / F	50	70	1.1
3 MW	M / F	35	55	0.4
	M / F	45	65	0.4
	M / F	50	70	-0.1

Current Situation

Initial Income	Work./Benef.	CT	Retirement Age	IRR(%)
1 MW	M / F	45	65	0.0
	M / F	50	70	-0.3
	M / F	53	73	-0.6
3 MW	M / F	45	65	-0.3
	M / F	50	70	-0.7
	M / F	53	73	-1.0



5. Final Comments

- Reduction of pension indicators
- Reduction in the rates needed to finance survivors' benefits greater than the reduction in the rates to old-age benefits
- Reduction of distributive aspects



Thank you for your attention!

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