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Is it worth moving from Brazil to Spain or to Portugal?

The impact of migration on Brazilian workers from a social security perspective

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Agenda

- 1. Social security and migration**
- 2. Methodology**
- 3. Results**
- 4. Final comments**



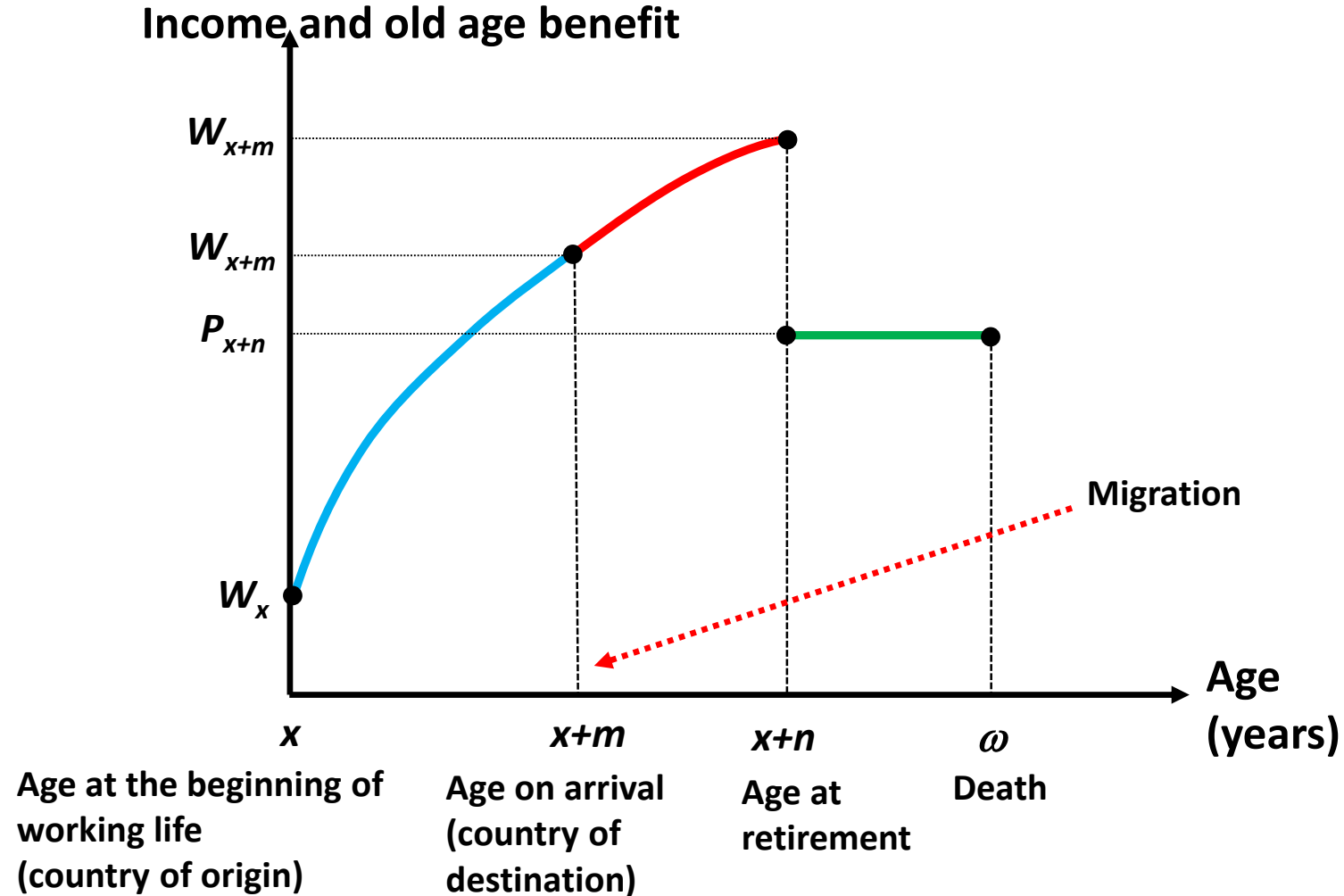
1. Social security and migration

- Increase in international migration: 153 million (1990) → 244 million (2015)
- Migration: rational decision: workers evaluate marginal costs and benefits
- International Social Security agreements
- Migration during the working life: Different pension system rules
- New migration law in Brazil (2017)
- Increasing migration *from* Brazil
- Literature: conceptual aspects and influence on the welfare system
- Gap: migration & pension system, with focus on the individuals



2. Methodology

Figure 1 - Life cycle of a representative migrant worker





2. Methodology

Pension indicators

Replacement rate

$$RR_i = \frac{P_{it}}{W_{it-1}}$$

Internal rate of return

$$\sum_{t=1}^N \frac{Contribution_t}{(1 + IRR_i)^t} = \sum_{t=N+1}^{\omega} \frac{Pension_t}{(1 + IRR_i)^t}$$

Required Contribution Rate

$$NecRate_i = \frac{\sum_{t=N+1}^{\omega} \frac{Pension_{it}}{(1+r)^t}}{\sum_{t=1}^N \frac{W_{it}}{(1+r)^t}}$$

Contributive variation

$$Variation(\%) = \left(1 - \frac{Transferred Contrib}{Required Contrib}\right) \cdot 100$$



2. Methodology

Assumptions

- **Representative workers: men or women, private sector, urban areas**
- **Beginning of working life: 18 years**
- **Initial wage: 1, 2 or 3 Minimum Wages (MW)**
- **Wage growth rate: 1%, 2% or 3% per year**
- **Contribution density: 100%**
- **Only old age benefit, no survivors benefit**
- **Contributions and Retirement → eligibility conditions & pension rules for each country**
- **Two migration flows (once for all)**
 - **Brazil → Portugal**
 - **Brazil → Spain**
- **Monetary values: multiples of MW, local currency**
- **Δ Wage in the country of destination: 0% (base scenario), -50%, or +50%**
- **Migration: 28 years (base scenario) or 38 years**



3. Results

Pension indicators Brazil (no migration)

Initial income (BRL)	Income growth rate (%)	Age/CT		Pension indicators					
				RR (%)		IRR (%)		ReqRate (%)	
		M	F	M	F	M	F	M	F
1	1	53/35	48/30	70.7	74.3	3.7	4.6	75.9	100.6
2				56.1	48.1	2.9	3.2	60.2	65.2
3				56.1	48.1	2.8	3.0	60.2	65.2
1	2	53/35	48/30	50.1	55.3	3.2	4.2	43.8	59.9
2				49.4	43.1	3.0	3.3	43.2	46.6
3				49.4	43.1	2.9	3.2	43.2	46.6
1	3	53/35	48/30	43.8	41.3	3.3	3.8	31.7	36.5
2				43.8	38.8	3.3	3.4	31.7	34.3
3				43.8	38.8	3.1	3.3	31.7	34.3



3. Results

Pension indicators

Spain (no migration)

Initial income (MW)	Income growth rate (%)	Age/CT	Pension indicators			
			RR (%)	IRR (%)	ReqRate (%)	
			M/F	M/F	M/F	M/F
1	1	65/47	75.9	2.3	47.8	
2			75.9	2.3	47.8	
3			65.2	2.0	41.1	
1	2	65/47	67.7	2.7	36.4	
2			61.6	2.4	33.1	
3			41.1	1.7	22.1	
1	3	65/47	60.7	3.0	28.2	
2			39.0	2.1	18.1	
3			26.0	1.7	12.1	

Portugal (no migration)

Initial income (MW)	Income growth rate (%)	Age/CT	Pension indicators			
			RR (%)	IRR (%)	ReqRate (%)	
			M/F	M/F	M/F	M/F
1	1	70/52	80.0	2.6	38.9	
2			78.6	2.6	38.2	
3			77.1	2.5	37.4	
1	2	70/52	63.3	2.7	26.9	
2			61.8	2.7	26.3	
3			60.8	2.6	25.8	
1	3	70/52	51.4	2.9	19.2	
2			49.9	2.8	18.6	
3			48.7	2.7	18.2	

3. Results

Pension indicators and Contributive variation

Base scenario – Migration Brazil-Spain

Initial income (BRL)	Income growth rate (%)	Age/CT	Pension indicators			Variation (%)
			RR (%)	IRR (%)	ReqRate (%)	
			M/F	M/F	M/F	
937	1	65/47	75.9	2.3	47.8	-1.1
1,874			75.9	2.3	47.8	2.5
2,811			65.3	1.9	41.1	9.5
937	2	65/47	67.7	2.7	36.4	-1.1
1,874			61.7	2.4	33.2	2.5
2,811			41.1	1.7	22.1	9.5
937	3	65/47	60.7	3.0	28.1	-1.1
1,874			39.1	2.1	18.1	2.5
2,811			26.1	1.6	12.1	9.5

Small differences; similar pension system (and disequilibrium)

3. Results

Pension indicators and Contributive variation

Base scenario – Migration Brazil-Portugal

Initial income (BRL)	Income growth rate (%)	Age/CT M/F	Pension indicators			Variation (%)
			RR (%)	IRR (%)	ReqRate (%)	
			M/F	M/F	M/F	
937	1	70/52	68.0	2.0	33.0	38.6
1,874			66.9	1.9	32.5	43.5
2,811			65.8	1.9	32.0	53.4
937	2	70/52	56.0	2.2	23.8	38.6
1,874			54.8	2.2	23.3	43.5
2,811			53.8	2.1	22.8	53.4
937	3	70/52	46.7	2.4	17.5	38.6
1,874			45.4	2.4	17.0	43.5
2,811			44.5	2.3	16.6	53.4

Higher differences; different pension systems

3. Results

Pension indicators and Contributive variation

Migration at 38 – Migration Brazil-Spain

Initial income (BRL)	Income growth rate (%)	Age/CT	Pension indicators				Variation (%)
			RR (%)	IRR (%)	ReqRate (%)		
			M/F	M/F	M/F	M/F	
937	1	65/47	75.9	2.3	47.8		-1.1
1,874			75.9	2.3	47.8		2.5
2,811			65.3	1.9	41.1		9.5
937	2	65/47	67.7	2.7	36.4		-1.1
1,874			61.7	2.4	33.2		2.6
2,811			41.1	1.7	22.1		9.6
937	3	65/47	60.7	3.0	28.1		-0.9
1,874			39.1	2.1	18.1		5.3
2,811			26.1	1.6	12.1		14.2

Minor increases

3. Results

Pension indicators and Contributive variation

Migration at 38 – Migration Brazil-Portugal

Initial income (BRL)	Income growth rate (%)	Age/CT	Pension indicators			Variation (%)
			RR (%)	IRR (%)	ReqRate (%)	
			M/F	M/F	M/F	
937	1	70/52	54.5	1.3	26.5	38.7
1,874			53.6	1.2	26.1	43.5
2,811			52.8	1.1	25.7	53.4
937	2	70/52	46.7	1.6	19.8	38.6
1,874			45.7	1.5	19.4	43.7
2,811			44.9	1.4	19.0	53.4
937	3	70/52	40.3	1.9	15.1	38.7
1,874			39.2	1.8	14.6	47.5
2,811			38.3	1.7	14.3	53.4

Pension decreases, indicators decrease



3. Results

Pension indicators and Contributive variation

50% income growth in the destination country – Migration Brazil-Spain

Initial income (BRL)	Income growth rate (%)	Age/CT	Pension indicators				Variation (%)
			RR (%)	IRR (%)	ReqRate (%)		
			M/F	M/F	M/F	M/F	
937	1	65/47	75.9	2.6	51.5		-1.1
1.874			65.3	2.2	44.2		2.5
2.811			43.5	1.7	29.5		9.5
937	2	65/47	67.7	2.9	39.1		-1.1
1.874			41.1	1.9	23.8		2.5
2.811			27.4	1.6	15.9		9.5
937	3	65/47	52.1	2.9	26.0		-1.1
1.874			26.1	1.9	13.0		2.5
2.811			17.4	1.6	8.7		9.5

Major increases in pensions; no changes in Variation



3. Results

Pension indicators and Contributive variation

50% income growth in the destination country – Migration Brazil-Portugal

Initial income (BRL)	Income growth rate (%)	Age/CT	Pension indicators			Variation (%)
			RR (%)	IRR (%)	ReqRate (%)	
			M/F	M/F	M/F	
937	1	70/52	67.3	2.2	34.9	38.6
1.874			65.8	2.2	34.2	43.5
2.811			64.7	2.1	33.6	53.4
937	2	70/52	55.4	2.4	25.1	38.6
1.874			53.8	2.3	24.4	43.5
2.811			52.6	2.2	23.8	53.4
937	3	70/52	46.0	2.6	18.4	38.6
1.874			44.5	2.5	17.8	43.5
2.811			43.5	2.4	17.4	53.4

Major increases in pensions; no changes in Variation



3. Results

Pension indicators and Contributive variation

50% income decrease in the destination country – Migration Brazil-Spain

Initial income (BRL)	Income growth rate (%)	Age/CT	Pension indicators			Variation (%)
			RR (%)	IRR (%)	ReqRate (%)	
			M/F	M/F	M/F	
937	1	65/47	75.9	2.3	46.8	-1.1
1.874			75.9	1.8	39.4	2.5
2.811			75.9	1.7	39.4	9.5
937	2	65/47	67.7	2.5	34.8	-1.1
1.874			67.7	2.1	30.0	2.5
2.811			67.7	2.1	30.0	9.5
937	3	65/47	60.7	2.8	26.2	-1.1
1.874			60.7	2.5	23.2	2.5
2.811			52.1	2.1	19.9	9.5

Decrease in RR and ReqRate; no changes in Variation



3. Results

Pension indicators and Contributive variation

50% income decrease in the destination country – Migration Brazil-Portugal

Initial income (BRL)	Income growth rate (%)	Age/CT	Pension indicators			Variation (%)
			RR (%)	IRR (%)	ReqRate (%)	
			M/F	M/F	M/F	
937	1	70/52	68.1	1.9	32.4	38.6
1.874			68.0	1.4	27.7	43.5
2.811			67.3	1.3	27.5	53.4
937	2	70/52	56.3	2.1	22.9	38.6
1.874			56.0	1.7	20.0	43.5
2.811			55.4	1.6	19.8	53.4
937	3	70/52	47.1	2.3	16.5	38.6
1.874			46.7	1.9	14.7	43.5
2.811			46.0	1.9	14.5	53.4

Decrease in RR and ReqRate; no changes in Variation



4. Final comments

- Migration Brazil → Portugal: $> RR$, $> IRR$ for low income workers
- Migration Brazil → Spain: $> RR$, $> IRR$ for high income workers
- *Variation* is higher when worker migrates to Portugal
- Delayed migration (38 years) → more important for Portugal
- Changes in wage in destination → not very important
- The more relevant the differences in the pension systems, the higher are *Variation* and changes in the indicators



Thank you!

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