Pensions schemes by points versus NDC, a focus on French and German schemes

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Very brief summary

- Pure NDC - actuarially fair at level - are not ideal NDC;
- How far French and German point systems are they from the NCD?
- Some remarks about NDC, fairness, efficiency, automatic stabilizing.
**Organisation of the paper**

- A quick description of French and German Pension Schemes;
- NDC and Actuarial Fairness: from Incentives to pure NDC
- NDC and Resistance to Various Shocks
- Conclusions: Nobody ‘s perfect.
**France: Schemes and contributions in the main pension scheme**

<table>
<thead>
<tr>
<th>Considered wage share:</th>
<th>TRA (0/SS ceiling)</th>
<th>TRB (up to 4XTRA)</th>
<th>TRC (up to 8 X TRA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non executives</td>
<td>CNAV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wage earners:</td>
<td>6.55</td>
<td></td>
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</tr>
<tr>
<td>Firms: 8.2 %</td>
<td></td>
<td></td>
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<tr>
<td>+ Firms: 1.6 of the total wage</td>
<td></td>
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<tr>
<td>ARRCO</td>
<td>Cont. Rate: 6%</td>
<td>Cont. Rate: 10%</td>
<td></td>
</tr>
<tr>
<td>Call rate: 125</td>
<td></td>
<td>Call rate: 125</td>
<td></td>
</tr>
<tr>
<td>(firm: 4.5/wage earner: 3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Executives</td>
<td>CNAV</td>
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<td>Id upper</td>
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<td></td>
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</tr>
</tbody>
</table>
France: a DC scheme by points

Individuals’ pension:

\[ P_{C+A}^i = \sum_{t=t_0+1}^{A} \frac{\tau_{t-1} \cdot w_{t-1}}{P_{P_{t-1}}} \cdot VP_{C+A} \]

Ressources of the scheme:

\[ R_t = \sum_i \tau_t \cdot w_t^i \cdot coeff_t \]
France: management of the schemes by points

- AGIRC and ARRCO are private associations;

- Boards - helped by experts - do forecasts and deduce the values of VP (value of points when people retire), PP (purchasing price of the points), coeff. (in order to increase resources without increasing pensions).
Germany: a DC scheme by points

Individuals’ pension:

\[
P_{C+A}^i = \sum_{t=t_0}^{A} \frac{W_t^i}{W_{t-1}} \alpha_i \cdot VP_{C+A}
\]

\[
\alpha = 1 - [0.003(780 - A(12))]
\]
Germany: forecasted decrement of the pensions

- A rather low contributory ceiling (1.8 times the average wage; 8 times in France). Adjustments rely on the value of point VP.

\[
VP_t = VP_{t-1} \times \frac{\bar{W}_{t-1}}{\bar{W}_{t-2}} \times \frac{x - \tau_{t-1} - \mu_{t-1}}{x - \tau_{t-2} - \mu_{t-2}} \times SF_t
\]

\[
SF_t = \left( \frac{s_{t-2} \times N_{t-3}}{N_{t-2}} \right) \times 0.25 + 1
\]
The implicit weight of life expectancy

- Germany: in the long run pensions will increase like gross wages; in the transition period like net wages minus demographic drift

- Life expectancy appears implicitly:

\[ \text{Retirees in } t = \text{life exp. in } t \times \text{workers in } t-1 \]
Actuarial fairness: from incentives to NDC

- Actuarial fairness at margin provides incentives to postpone retirement
- Actuarial fairness at level: discounted sum of contributions is equal to discounted sum of benefits
Actuarial fairness at margin:

- AF rebate - indexing rules
- High values even if no leisure (costly)
- Individuals’ preferences - life expectancy
- Depends of the wage if Beveridgian elements
- No ceilings.
Actuarial fairness at margin and life expectancy

...How to pool?

<table>
<thead>
<tr>
<th>Category</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executives, self employed</td>
<td>22.5</td>
<td>26.0</td>
</tr>
<tr>
<td>Intermediate profession (technicians, etc.)</td>
<td>19.5</td>
<td>25.0</td>
</tr>
<tr>
<td>Artisan, shopkeepers, firms managers</td>
<td>19.5</td>
<td>25.0</td>
</tr>
<tr>
<td>Employees</td>
<td>19.0</td>
<td>24.0</td>
</tr>
<tr>
<td>Workers</td>
<td>17.0</td>
<td>23.0</td>
</tr>
</tbody>
</table>
Actuarial fairness in level

\[ 1 + \rho_t = \frac{P^{i}_{t+1} \times s_{t+1}}{\tau_t \omega_t} \]

- Sum (contributions) = sum (benefits) for i
- Discount rate \( \rho \) equal for all i
- RQs:
  - AF in level = FFS or NDC
  - No Beveridgian elements
  - No contributory ceiling
Actuarial fairness in level: pure NDC

Automatic stability?

\[ E_{t+1} = R_{t+1} \iff E_{t+1} = \frac{s_{t+1}}{s_t} (1 + g_t) \sum_{i} \frac{\tau_i}{\tau_{t+1}} \frac{w_i}{R_{t+1}} \]

- Pb of indexing device
- Pb of indexing ex-ante (forecasting)
- Optical illusion of the 2 periods model (life expectancy varies every year and pensions are computed once).
**French NDC:** exogenous parameters

\[
R_{t+1} = E_{t+1} \iff E_{t+1} = \frac{s_{t+1}^j}{s_t^j} * \frac{V_{P_{C+A+1}}}{V_{P_{C+A}}} * \sum_{t=t_0}^{A} \frac{\tau_t}{PP_t} * \sum_{i} \sum_{t} w^i_t * \frac{\sum_{i} \sum_{t} w^i_{t-1}}{PP_{t-1}} * \frac{\tau_t \sum_{i} w^i_t}{\tau_{t+1} \sum_{i} w^i_{t+1}} * R_{t+1}
\]

- Quick answer to shocks;
- Highly depends on forecasts
- Manipulating the parameters does not burden the same category
Germany NDC: endogenous parameters

\[ E_{t+1} = R_{t+1} \iff E_{t+1} = \frac{S_{t+1}}{S_t} (1 + g_t) \frac{\tau_t}{\tau_{t+1}} \sum_i \frac{w_i^j}{\sum w_i^{j+1}} R_{t+1} \]

\[ 1 + g_t = \frac{\bar{w}_t \times x - \bar{P}_t \times s_t / (1 + n_{t-1}) + T_t / N_t}{\bar{w}_{t-1} \times x - \bar{P}_{t-1} \times s_{t-1} / (1 + n_{t-2}) + T_{t-1} / N_{t-1}} \]

A return spring... \[ \tau_t \rightarrow 1 + g_t \rightarrow VP_{t+1} \rightarrow E_{t+1} \rightarrow \tau_{t+1} \rightarrow g_{t+1} \]

… but a questionable automatic stability
A questionable automatic stability

- Even if the life expectancy is now « nearly explicit » in the formula ;
- Even if the burden is directly and explicitely shared by both the contributors and the retirees ;
- The fiscal funding of the PAYG remains possible.
Nobody’s perfect

Difficulties:
- Different life expectancies
- Not pure NDC
- Use of forecasts:
  - yearly changes
  - if changes, AF is broken
  - pessimistic assumptions?
  - Unfairness
  - Need a buffer fund.

A ideal NDC is:
- redistributive
- provides incentives to work later
- automatic stability

Why NDC? Individual responsibility = FFS;
Social responsibility = NDC