

## Brief

*Prepared by the General Secretariat of the Council, under the direction of the President of the COR*

**Summary:** The missions assigned by law to the Conseil d'orientation des retraites are manifold. In addition to financial projections for the pension system, the COR must also monitor the situation of retirees, paying particular attention to the differences between women and men, and participate in providing information on the effects of reforms. Only microsimulation models can help the COR in this diagnosis of the retirement system, in particular through the analytical potential they allow. This session is thus devoted to the examination of the microsimulation models used in particular for the COR's pension projection exercises. After a short description of the principles of microsimulation, its contributions but also its constraints, the report focuses on some results made possible by the implementation of microsimulation models.

### *1. Summary presentation of microsimulation and existing models in France*

- **Why are microsimulation models needed?** Insured people differ according to their age, gender, status or professional career. In addition, the rules for calculating pensions show a number of non-linearities. Microsimulation makes it possible to grasp this heterogeneity of individual situations and this complexity. It differs from both case study approaches, which are based on a limited number of examples and not necessarily representative, and from aggregate approaches which are based on a representative agent.
- **What is microsimulation?** Its general principle is to simulate, on a representative sample of members of the pension system (based on survey data or administrative data), the various events that happen to individuals over their life cycle (*document no 2*). The results obtained for each individual are then aggregated to estimate the overall changes (pension expenditure, number of retirees, etc.), while having data on individual effects (redistributive effects, for example). This method thus makes it possible to answer a whole series of questions, such as: what is the equity within the same generation, according to status, gender or even social gradient? Who will be the "winners" and "losers" of a reform?
- **And what are the microsimulation models for pensions in France?** Seven major models have been developed for more than 20 years in French pension schemes and administrations: INSEE's DESTINIE model, which served as the basis for the APHRODITE model of the DG Trésor and the PENSIPP model of the Institut des Politiques Publiques, the TRAJECTOiRE model of the DREES, the PRISME model of the CNAV, PABLO for the State civil pension scheme, CANOPÉE of the CNRACL and the AGIRC-ARRCO model which is currently being developed (see *documents no 5 to no 12*). The coexistence of these tools allows for a wide variety of analyzes and contributes to the robustness of the results they can deliver, while sometimes raising the question of their consistency. This is why the COR General Secretariat set up a working group on these models in 2018-2019 in order to better understand any discrepancies in results and gradually reduce them (*document no 3*).

- **What about abroad?** Models of this type exist in most of the countries monitored by the COR. Although their construction often remains under the responsibility of the academic field, administrative institutions are increasingly involved, which reveals the interest of microsimulation in the evaluation of public policies (*document no 4*)

## *II. Some examples of the use of microsimulation models*

- **What would be the retirement age and retirement levels of civil servants under the rules of the private sector?** According to DREES simulations, 62% of civil servants born in 1958 (excluding military, super active and unhealthy categories) could retire at the full rate at the same age under private rules, 27% later and 11% earlier. In addition, a majority of civil servants, in particular women, would have a higher pension at the same retirement age (*document no 8*).
- **What will be the effect of the 2010 statutory reform regarding nurses?** With this reform, new nurses now enter a category A job (and not B) and benefit from better pay in return for the loss of the active category. The agents in activity at the time of this reform had the choice between the two. The simulations carried out by the CNRACL show that for nurses born in 2000, this reform would lead to a significant increase in the retirement age (64.3 years on average against 61.9 years) and to a pension gain of between €100 and €500 per month.
- **What would be the effect of implementing a defined return pension system?** With a defined return system with pension entitlements indexed to average earnings and taking into account life expectancy at pension claiming, the IPP model shows that economic shocks and the increase in life expectancy life would be largely absorbed by the automatic adjustment mechanisms built into the system, unlike the current system. On the other hand, fertility and migration shocks would not be absorbed because variations in employment would not be taken into account in the indexation. From an individual point of view, the implementation of such a system would reduce pension inequalities, for their purely contributory part (*document no 7*). This effect had already been highlighted in a 2012 study carried out with the DESTINIE model, which showed that the current rules for calculating pensions (25 best years, rights revalued on inflation, taking into account insurance record in the calculation of the pension) increased inequalities to the detriment of persons with a short career, with lower wages and women in particular. For former employees born between 1955 and 1964, the interdecile ratio at pension claiming (excluding solidarity) was 6.66 against 5.85 for cumulative career wages. Taking all the solidarity mechanisms together, the interdecile pension ratio was then 4.10 (*document no 5*).
- **And how could the share of solidarity evolve?** According to the study carried out by the CNAV, about a quarter of the benefits paid would fall under solidarity mechanisms in 2016 as in 2070. This stability would be driven by two opposing movements: the shares of early retirement for long careers and minimum pensions would be decreasing, while the proportion of mechanisms linked in particular to unemployment credits or to the use of points from the professional prevention account (C2P) would rise. In terms of individual pension amounts, the share of solidarity would decrease for deciles 2 to 5 between the 1950 and 1975 cohorts, in particular due to less recourse of minimum pensions, while it would increase for the other deciles, including the highest. Then the decrease in the share of solidarity would affect all deciles in an equivalent way until the 2000 cohort (*document no 9*).