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► **To cite this version:**

Steve Briand. TIME INCONSISTENCY AND DELAYED RETIREMENT DECISION: THE FRENCH PENSION BONUS.. CHAIRS DAYS: Insurance, Actuarial Science, Data and Models, Jun 2018, Paris, France. hal-02004085

**HAL Id: hal-02004085**

**<https://hal.science/hal-02004085>**

Submitted on 1 Feb 2019

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# TIME INCONSISTENCY AND DELAYED RETIREMENT DECISION: THE FRENCH PENSION BONUS

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## PENSION BONUS AND EX POST EVALUATIONS

- Ensure the financial sustainability of public pensions funds because of the increase in life expectancy and the demographic shocks.
  - ➔ One financial incentive aiming to postpone individual retirement, the pension bonus: an agent gets a higher pension if he retires beyond his full retirement age (full benefits + an additional proportional bonus).
- The effectiveness is relatively limited:
  - The global effect of financial incentives is principally led by informed individuals (Chan and Stevens, 2008).
  - In France, men are more responsive to the bonus (Benallah, 2011).
- ➔ Another (behavioral) explanation, time inconsistency?

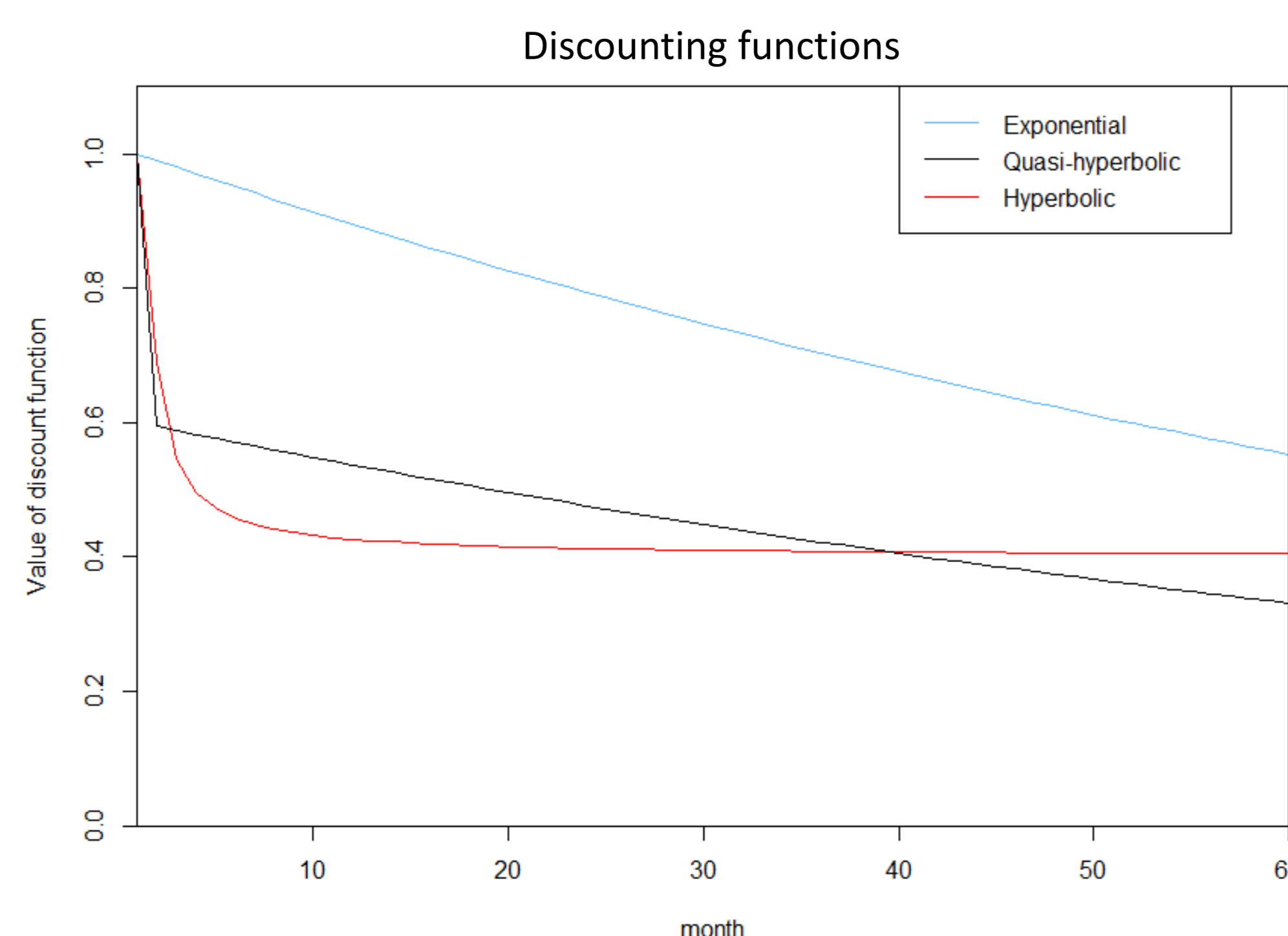
## WHAT IS TIME INCONSISTENCY IN AN INTERTEMPORAL TRADE-OFF?

- Discounting function of a time-consistent agent (exponential discounting):
 
$$\delta^t = \frac{1}{(1+r)^t} \quad \text{as} \quad U_t = u_t + \delta u_{t+1} + \delta^2 u_{t+2} + \dots$$
 With  $r$  the discounted rate
- But, for a time-inconsistent agent (hyperbolic discounting), a decreasing discounted rate with time:
  - ➔ Impatient in the short-term and more patient in the long-term (Thaler, 1981). **He planned to do an action, but as this action gets near, the agent changes his decision.**

The tractable quasi-hyperbolic function (Laibson, 1997):

$$\beta \delta^t = \frac{\beta}{(1+r)^t} \quad \text{as} \quad U_t = u_t + \beta \delta u_{t+1} + \beta \delta^2 u_{t+2} + \dots$$

With the present-bias  $0 < \beta \leq 1$ . The lower  $\beta$  is, the more the agent is time-inconsistent: overweighting of immediate outcome (utility or disutility).



## THE DATA

The French “motivations de départ en retraite” survey (DREES, 2014) on new retirees between July 2012 and June 2013, merged with administrative data:

- Cohorts: 1948 – (first quarter) 1952
- Who were employees of the private and public sectors, non-active civil servants or self-employed and who have contributed at least one year to the private sector employee pension fund during their careers.

## THE MEASURE OF TIME PREFERENCES

Two ordinal synthetic scores:

- **Short-term impatience (proxy of  $\beta$ )**
- **Long-term impatience (proxy of  $\delta$ )**

Based on questions on motivations to retire (4 modality scale – “strongly agree”, “agree”, “disagree”, “strongly disagree”). For instance:

- “You decided to retire because you had reached the Early Retirement Age (ERA)”
  - ➔ Linked to short-term impatience (4 items)
- “You decided to retire because you wanted to enjoy retirement as long as possible”
  - ➔ Linked to long-term impatience (5 items)

The aggregation of answers constitute two final scores, standardized, with 0 mean and a variance of 1.

## ECONOMETRIC STRATEGY

A recursive bivariate probit model with two latent dependent variables:

$$\begin{cases} y_1^* = X_1 \beta_1 + \alpha Z + \varepsilon_1, & y_1 = 1(y_1^* > 0), \\ y_2^* = X_2 \beta_2 + \gamma y_1 + \varepsilon_2, & y_2 = 1(y_2^* > 0), \end{cases}$$

with  $y_1$  the bonus knowledge,  $y_2$  delayed retirement to get the bonus and  $Z$  a set of instruments.

$$\begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \end{pmatrix} \rightarrow N \left( \begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix} \right)$$

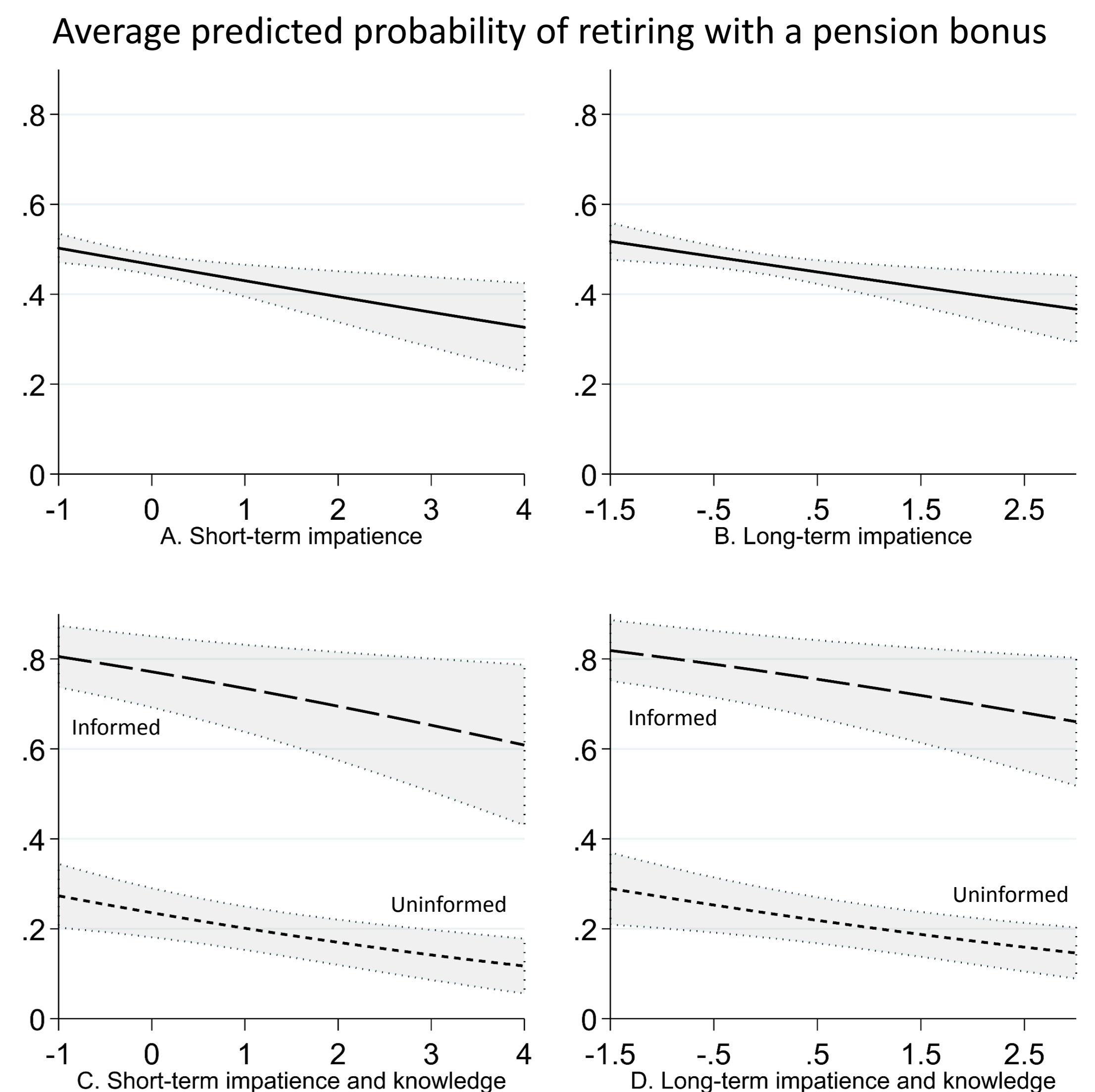
with  $\rho$  the correlation between the error terms.

- ➔ This specification allows to control the likely endogeneity of the bonus knowledge ( $y_1$ ).

## RESULTS

- Both short-term and long-term impatience are significant and impact negatively the probability of retiring with pension bonus.
  - ➔ **A time-inconsistent agent has a lower probability to delay his retirement to get the bonus compared to a time-consistent agent.**

- By fixing both short-term and long-term impatience, an average difference in predicted probabilities of -31.60 (55.41% compared to 23.81%) between the most time-consistent agent and the most time-inconsistent agent.



- The endogeneity of the bonus knowledge is confirmed ( $\rho < 0$ ).

## CONCLUSION

- Time inconsistency is a key determinant of the decision not to delay retirement to get the bonus: another explanation of the (relatively) limited impact of financial incentives aiming to postpone retirement.
- We need to integrate nonstandard preferences in individual retirement analyses.
- Considering nonstandard preferences can improve public information and the efficiency of public policies (Thaler and Sunstein, 2008).

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