Comments on
"Aging and Productivity"

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- Unprecedented demographic shift: for the first time in history, the demographic structure is expected to be flat by 2050

- What is the effect of this demographic revolution on economic growth and productivity?

- Contributions of this paper
    1. it raises an important question
    2. it provides a general framework to think about this question
    3. it provides some intriguing empirical evidence

- This is just the beginning. Much more can and should be done on this question

General Comment 1: Two Dimensions of Aging

- The paper is about "aging". But aging has different components.

- The current demographic revolution is driven by two main forces.
    1. life expectancy is increasing
    2. fertility rates are declining

- Different effects on productivity.
  Different policy implications.

First Component: Increase in Life Expectancy

- An increase in life expectancy affects the *relative* share of young and old individuals

- It does not imply that the *absolute* number of young individuals declines

- An increase in health and life expectancy amounts to an increase in labor supply.

- It could be good news for economic growth (although bad news for the sustainability of the social security system)

Second Component: Decline in Fertility Rates

- It lowers not only the *relative* share of young individuals, but in some countries it lowers the *absolute* number of young individuals

- Potentially bad news for economic growth

- Possible decline in quality-adjusted labor supply, *if productivity declines with age.*

- It is crucial to know how productivity varies over the life cycle, especially in the age range 65-75.

Differences in Policies and Differences Across Countries

- Aging is not the same everywhere.
    1. In Italy the decline in fertility rate is particularly pronounced
    → possible *declines* in quality-adjusted labor supply

    2. In the Unites States the decline in fertility is less pronounced:
    → possible *increase* in quality-adjusted labor supply

- Policies that focus on fertility are different from policies that focus on life expectancy improvements

General Comment 2: Gender Differences

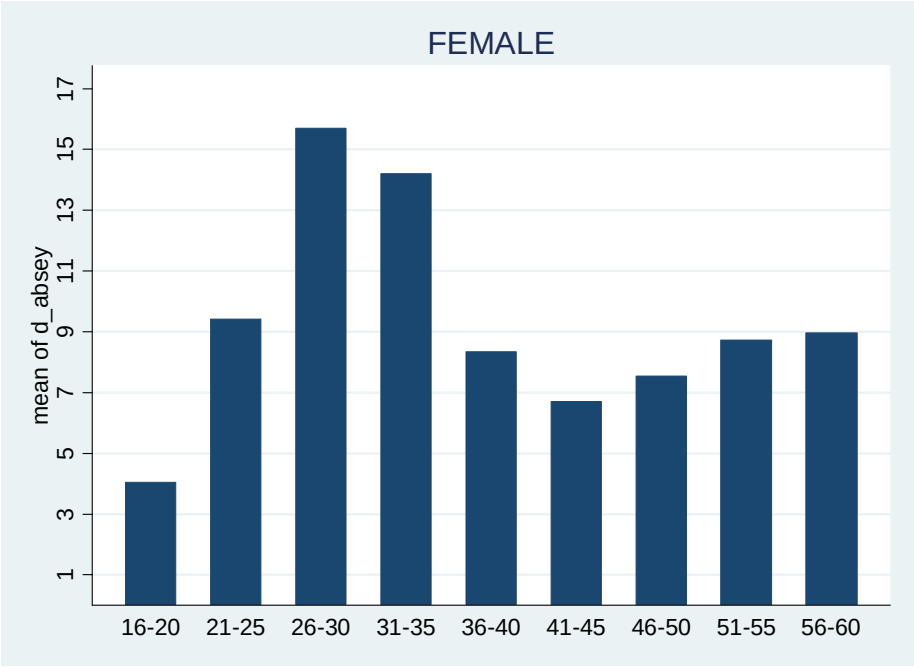
- Two effects of aging on productivity:
    1. extensive margin (absenteeism)
    2. intensive margin (decline in physical and mental ability)

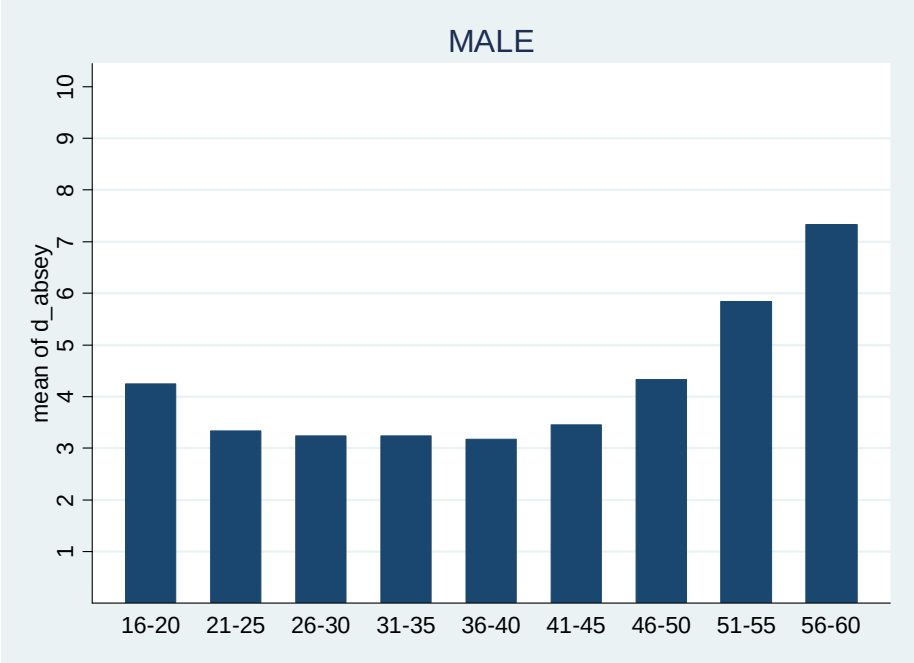
- Important gender differences in both margins

- For example, women are healthier and live longer than men.
  Is the physical and mental decline *relatively* slower for women?

- Women have a higher incidence of absenteeism than men. How does this gap change with age?

Figure 1: Absenteeism, by Gender and Age





Two Questions on Gender Differences:

(1) What does this gender difference comport for future productivity trends in countries where female labor force participation is increasing?

(2) What would happen to productivity and economic growth if women retirement age were raised to the level of men, or even higher?

General Comment 3: The Role of Incentives

- Productivity and absenteeism are likely to depend on incentives
- What is the right level of incentives and job security for older workers?
- Example: Japan

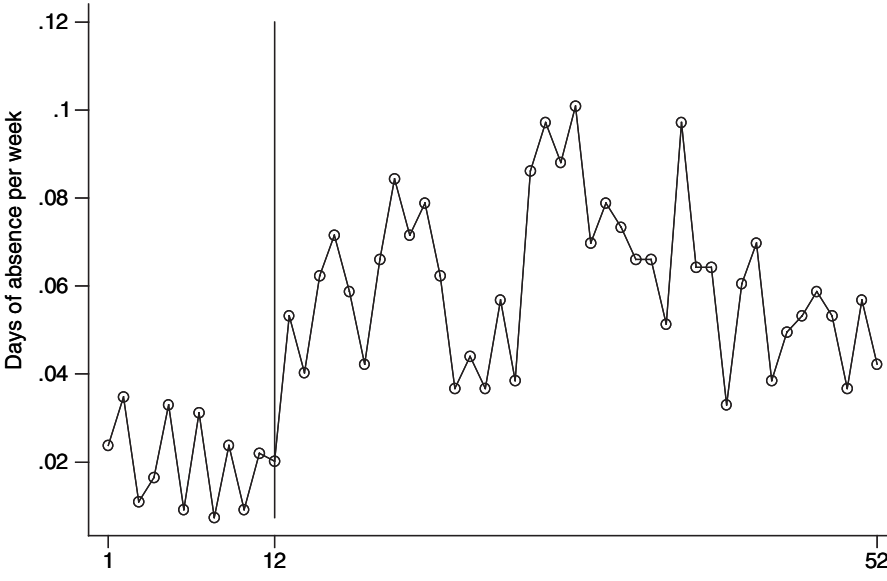


FIGURE 1. Absenteeism during and after probation—Males.

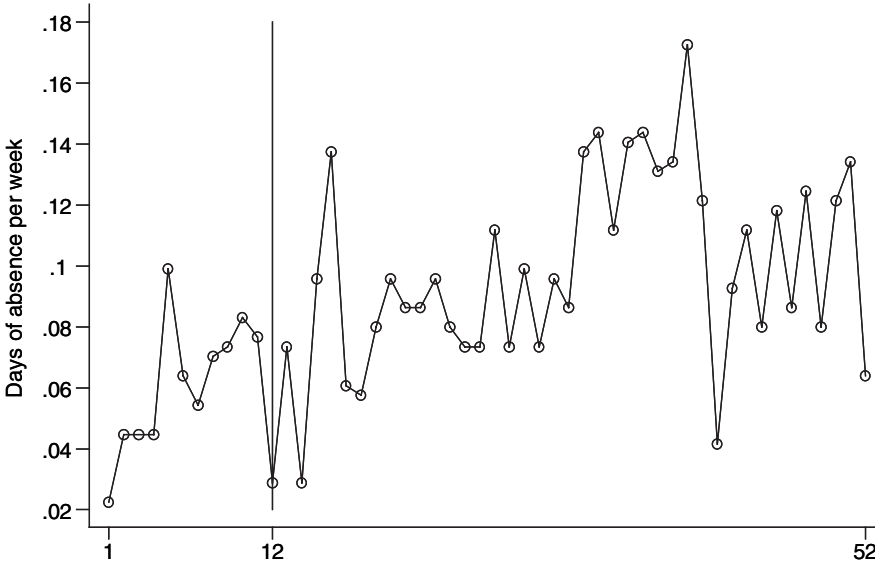


FIGURE 2. Absenteeism during and after probation—Females.

Comment on Empirical Evidence 1: Productivity

- To what extend productivity declines with age?

- Ideal data:
  -individual-level output
  -no endogenous selection into labor force
  - many observations in key age range: 65-75

- Real data

1. individual level output is rarely observed. Self-reported productivity not too convincing

2. selection in and out of the labor force is not random. It is driven by potential wage, which is itself a function of individual output.
   → serious sample selection problem

3. non-linearities. We are interested in what happens in 65-75, but most of our observation are younger

Production Functions

- The plant level analysis is probably the most interesting piece of empirical evidence presented in the paper.

- Main finding: the productivity of a team is decreasing with average age of the team

- This is interesting because it a direct and easily interpretable measure of output decline.

Difficulties

- Non-linearities
    - average team age in sample is 26-50
    - What we are interested in is range 65-75.
    - Difficult to take estimates based on 26-50 and draw inference on the decline in individual productivity in 65-75.

- Endogeneity of team average age

A Suggestion: An Alternative Empirical Approach

- Focus on wages

- Advantages
    1. Wages = marginal product of labor.
    2. Decline in wages associated with age reflect decline in productivity + increase in absenteeism.
    3. Wages are measured at the individual level
    4. We observe individuals in the relevant age range (65-75).

- Limitations:
    1. selection problems
    2. unions
    3. downward rigidity

Evidence Based on Wages

- PSID data. Panel: 10,000 workers, 30 years

- I use a sample with no union jobs, in a period with high inflation

- I estimate two sets of wage equations
    1. I only include a fourth order polynomial in age
    2. I also include individual fixed effects

Two Types of Sample Selection:

(1) Workers who are observed in the labor force after age 65 may have a different set of skills.

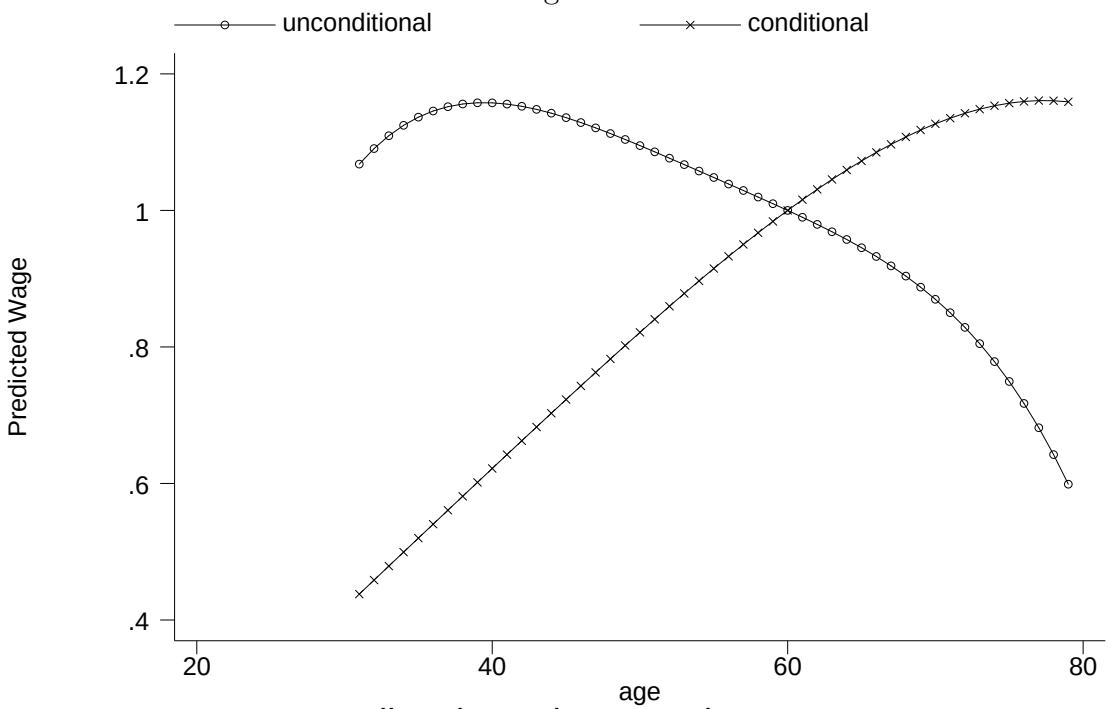
Selection can be positive or negative: it depends on whether income effects vs. price effects dominate in retirement decisions.

- If the price effect dominates, high skill individuals work after 65

- If the income effect dominates, low skill individuals work after 65

(2) Given the set of skills of a given worker, individuals who happen to receive a particularly good draw in terms of wage after age 65 are more likely to be observed working.

Figure 2



Predicted Hourly Wage, by Age

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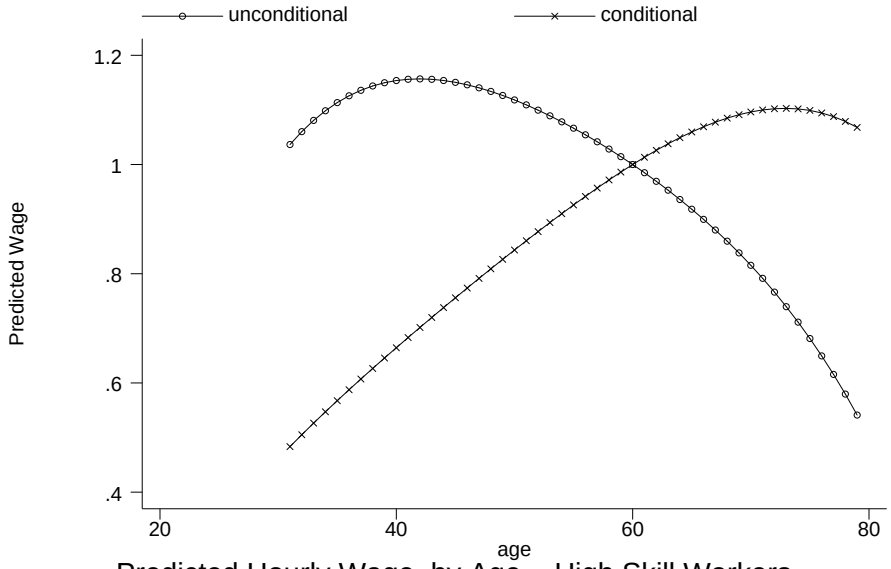
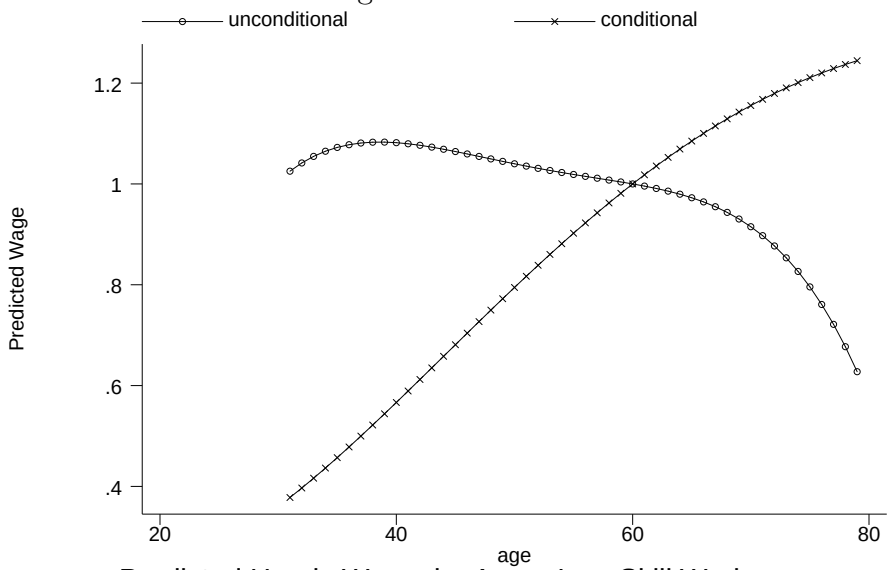
Figure 3



Predicted Hourly Wage, by Age − High Skill Workers

High Skill Workers



Predicted Hourly Wage, by Age − Low Skill Workers

Low Skill Workers

Comment on Empirical Evidence 2: Absenteeism

- The authors pool men and women together

- They find that absenteeism increases up to age 45, and flatten afterward.

- I separate men and women,

- I find that after age 45 the number of absences increases rapidly for men, and less rapidly for women. Women absenteeism peaks early because of maternity leave.

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