Discussion of Health and Human Capital
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Paper Objective

• To estimate the impact of health on earnings & retirement behavior

• Absenteeism & presenteeism

• Caring responsibilities
Important because

- Reducing work productivity of the population

- May impact other workers besides work productivity of those targeted in this study
Research Approach

Health conditions → Human Capital

- Through changes in mortality
- Through changes in morbidity by impacting on the labour force’s productivity and its quantity supplied (Absenteeism and Presenteeism)
- Through changes in retirement age

Measuring HC and how it is affected by health

Part 1: Estimation of health index (HI)
Part 2: Health effect on income
Part 3: Health effect on retirement
General Methodology

- For the UK in 2014, uses a self-reported health Likert scale assessment (SAH) data set to create a health index (HI)
- Sets a cut-off point as those in poor health may justify behavior by overstating how poor their health is
  - Bottom 10 and 25 percent of the distribution
- Incorporates health status and caring into alternative J-F human capital stock estimates
Health Index

- Uses a standard pooled ordered probit with SAH data to estimate HI as a function of diagnosed diseases and health limitations with a broad range of socio-economic control variables
  - Women’s HI higher
  - 10% cut point at relatively flat area of distribution
  - 25% cut point as distribution has begun to rise significantly
Health Index
Comparison of SAH and Estimated HI

The graph shows a comparison of the observed SAH and estimated HI for women and men. The x-axis represents different health conditions: poor, fair, good, very good, excellent, poor, fair, good, very good, and excellent. The y-axis represents the percentage. The bars are color-coded: black for observed SAH and gray for estimated HI.
Data for HC stocks

• For ages 16 – 69 and by gender for all variables
  • Survival rates no other information
• Also by educational qualifications and health for
  • Earnings, employment, unemployment and retirement rates
  • Enrollment rates for education level
• Mincer style equation estimated with log of hourly wage rates for wage and salary workers by qualifications as a function of HI and some socio-economic controls
Jorgenson-Fraumeni equations

- Recursive backwards
- Everyone retires by age 70

- Work only (no school) above age 34

\[ \text{LLI}(s,a,e,h) = \text{EMR}(s,a,e) \times \text{Incomes}(s,a,e,h) + \text{sr}(s,\text{older}) \times \text{LLI}(s,\text{older},e,h) \times R, \]

where \( R = \frac{1 + g}{1 + \delta} \); \( g \) is the labor productivity growth rate (2%), \( r \) is the discount rate (3.5%) and \( \text{sr} = 0 \) for those aged 69
Jorgenson-Fraumeni equations

• Ages 16 through 34, work and school both possible
  \[ LLI(s,a,e,h) = EMR(s,a,e) \times Incomes(s,a,e,h) + \]
  \[ sr(s,older) \times R^* \]
  \[ [ENRR(s,a,e) \times LLI(s,older,school,h) + \]
  \[ (1 - ENRR(s,a,e) \times LLI(s,older,e,h)) \]

• Another version of the J-F equations for those aged 50 through 69 includes health to estimate
  \[ EMR(s,a,e,h) = \]
  \[ [1 - RETR(s,a,e,h) - UNEMR(s,a,e) - Other(s,a,e)] \]
Employment Rate Versions

- Other versions of the J-F equations for those aged 50 through 69 add health, then care taking (c) to estimate EMR,

\[
EMR(s,a,e,h,c) = \left[ 1 - RETR(s,a,e,h,c) - UNEMR(s,a,e) - Other(s,a,e) \right]
\]
Retirement Probabilities

- With a pooled probit regression, as a function of
  - Respondent’s own HI
  - Spouses health
  - Respondent’s informal caring responsibilities of others,
  - With socio-economic controls
- Predicted retirement probabilities compared to those in good and poor health compared to avg. retirement probabilities across all individuals with the two cut-off points: 10% (poor health) and 25% (fair health)
Results – Wages Only

- For health effect on wages only, 2% of total employed (for each gender too) HC stocks (HCS) is contributed by individuals in poor health in 2014.
- Inclusion of fair health increases estimates to 8% for males and 11% for females.
- If everyone’s poor health rose to good health, overall HCS impact is 3.5%.
- Rises to 10% if fair health individuals rose to good health as well.
Results

- Note that employed women on average have a 33% lower HCS than males.

- Compared to poor health employed individuals, the overall employed average HCS per capita including health and its retirement effect is:
  - 2.79 times higher for males
  - 2.68 times higher for females
Results – Qualification Impact

- Poor health is associated with lower qualification levels.
- For counterfactual, poor health people need to be redistributed across all qualification levels.
- Controlling for qualification effect, average HCS per capita for a healthy person compared to a person in fair or poor health is 2.22 for men and 2.10 for women.
Results - Caring

- Caring for others reduces an individual’s HCS regardless of their health status.
- Impact of caring has a bigger effect on female HCS than male HCS as they do more caring work.
- Men’s HCS is more affected by their own status while women’s is affected by poor health of others as reflected in their caring duties.
Discussion

• Much more to this paper than I presented here:
  • Very nice discussion of literature and possible circumstances
  • More results

• I don’t do econometrics!
IWR 2014 Health Stocks

- Not featured on par with their other wealth estimates

- 2017

- BUT....
Some 15 years ago Berndt of MIT & others wrote about the effect of mental health on productivity in the US

Clearly better for employers to cover mental health treatment than not
Discussion

• $R = \frac{1 + g}{1 + \delta}$ a bit high

• Here $g=2\%; \delta=3.5\%; R=.986$

• J-F two versions
  • $g=2\%; \delta=4\%; R=.981$
  • $g=1.32\%; \delta=4.58\%; R=.969$

• $g=2\%$ is fairly high
Discussion

- Put 2% of total employed (for each gender too) HCS is contribution by individuals in poor health in context

- Include health in unemployment rate

- Mention possible “other type of job” effect sooner

- Do you know if unhealthy work part-time more often?
• Excellent paper

• Enjoyed being forced to read it!