SUMMARY SHEET
"Health, Health Insurance, and the Labor Market"

Xinwei Dong

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This chapter are consist of 2 parts: the relationship between health and labor market outcomes, the relationship between health insurance and labor market outcomes. Larger literature focuses on developing countries, but this chapter mainly introduces studies using US data. Kindly keep in mind that this chapter was published in 1999.

Why important? (1) evaluations of the cost effectiveness of interventions designed to prevent or cure disease; (2) assessment on the effectiveness and solvency of social programs; (3) aging population.

1 Health and the labor market

1.1 Model for health as human capital (Becker, 1994, Grossman, 1972)

See the last page of this summary for the model. Main implications:

- Health must be treated as an endogenous choice.
- Health may suffer a greater potential source of bias from endogeneity than education (another human capital), because health endowment must be continuously replenished rather than occur early in the life cycle. (Eg. current health depends on past decisions and on habits that may be very difficult to break; individuals often have highly imperfect information about the health production function at the time they made decisions.)
- The simple model here treats wages and all other prices as parametric. But a more complete one should allow health to be determined endogenously with both wages and labor supply.

1.2 Measurement of health

- Measures usually available can be divided into 8 categories (see p.3314 for details).
- About self-reported measures:
  - Two problems: (1) they are not strongly correlated with underlying health as it affects labor market status; (2) the measurement error is unlikely to be random.
  - But it's still argued to be "better" than more objective measures because (1) it is more directly related to productivity (working capacity); (2) two types of biases may tend to cancel out.

1.3 Empirical works

Health affects labor market outcomes through (1) direct effects on productivity; (2) altering trade-offs between income and leisure.

1.3.1 Identification methods

- IV: prices of health inputs, disease or health environment, calorie intakes (for height or BMI), travel times to health services, water quality, sanitation services, etc.
- Simultaneous equations methods.
- Person-specific random effects to capture unobserved characteristics that could be correlated with both health and labor force participation.
- Dynamic model & simulated method of moments.

1.3.2 Key points on findings

- Poor health reduces the capacity to work and has substantive effects on wages(-), labor force participation(-) and job choice.
  - Health has greater effects on hours of work than on wages.
  - Relationships are stronger for men than for women.
  - Health may be a more important determinant of wages in less developed countries.
  - Results on health (mortality rate) and labor participation rate seem to be contradictory to historical trends? Mediated by social institutions; rising incidence of mental health problems.
  - "Growing" literature linking labor market activity and the health of other family members finds mixed results.
  - "Growing" literature finds poor health in childhood can have profound effects on future outcomes.
- The magnitudes of the estimated effects are very sensitive to health measures. → consider a range of health measures; choose a measure depending on the question to be addressed
- The magnitudes of the estimated effects are very sensitive to the identification assumptions employed. → promising avenues: take the "production function" approach to health; look into the medical determinants

2 Health insurance (HI) and the labor market

2.1 US HI

HI by employers (2/3) + "fill-in-the-gaps" (Medicare, Medicaid, private insurance). A sizeable fraction of the population has no health insurance coverage.

Employer-provision of HI: (1) Individuals face higher price for purchasing HI than employers; (2) Employers can select "desired" employees by offering a compensation package comprised of both wages and HI.

2.2 Empirical works

Health insurance affects labor market outcomes through (1) improving health; (2) changing the utility associated with leisure (enjoy leisure more if healthier/HI tied to employment).

2.2.1 Identification

Endogeneity issue:

- Wages (more capable individuals command higher wages, and HI is positively related to income);
- Retirement (employers may provide pension plans that encourage early retirement and post-retirement HI coverage as well);
- Turnover (those who anticipate changing jobs soon are more willing to accept a job without HI).

Methods:

- Social experiment (eg. RAND Health Insurance Experiment)
- To include an exhaustive set of controls
- To use either multiple observations on individuals or multiple observations within the firm to difference out the effects of any unobserved variables that are correlated with health insurance
- Variations in the institutional arrangements or in personal circumstance and make identifying assumptions.

2.2.2 Key points on findings

- Access to health insurance has important effects on both labor force participation and job choice; the link between health insurance and wages is less clear.
  - There is a strong presumption that a tradeoff between HI and wages should exist. But there is little evidence supporting such a negative relationship. $\rightarrow$ puzzle
  - Employer-provided HI for active employees reduces the retirement rate. Employer-provided post-retirement HI increases the retirement rate.
  - The effects appear to be strong among older workers and married woman.
- Identification issues are critical. HI is correlated with unobserved job and individual characteristics.

3 Further topics

- How do HI and medical care expenditures impact health?
- How do poor health impact not only the average level of employment and earnings, but also the variability in these measures?
- How does HI affect the behavior of firms?
- What is the longer-term relationship between health, HI and labor market outcomes?

This model was further developed by Grossman (1972). A simple version of his model follows. First, consumers are assumed to maximize an intertemporal utility function:

$$\sum_{t=1}^{T} E_t(1/1 + \delta)^t U_t + B(A_{T+1}), \tag{1}$$

where δ is the discount rate, $B(\cdot)$ is a bequest function, A denotes assets, and U_t is given by

$$U_t = U(Q_t, C_t, L_t; \mathbf{X}_t, u_1, \varepsilon_{1t}), \tag{2}$$

where Q is the stock of health, C is consumption of other goods, L is leisure, $\mathbf{X}$ is a vector of exogenous taste shifters, u_1 is a vector of permanent individual specific taste shifters, and ε_1 denotes a shock to preferences. Utility is maximized subject to the following set of constraints:

$$Q_t = Q(Q_{t-1}, G_t, V_t; \mathbf{Z}_t, u_2, \varepsilon_{2t}), \tag{3}$$

$$C_t = Y_t + P_t G_t - (A_{t+1} - A_t), \tag{4}$$

$$Y_t = I_t + w_t H_t + rA_t, \tag{5}$$

$$L_t + V_t + H_t + S_t = 1, \tag{6}$$

$$S_t = S(Q_t, u_3, \varepsilon_{3t}), \tag{7}$$

where G and V are material and time inputs into health production, $\mathbf{Z}$ is a vector of exogenous productivity shifters, u_2 are permanent individual specific productivity shifters, ε_{2t} is a productivity shock, Y is total income, P represents prices, I is unearned income, w is the wage, r is the interest rate, S is sick time, u_3 are permanent individual specific determinants of illness and ε_{3t} are shocks that cause illness. Endowments of health and assets, Q_0 and A_0, are assumed to be given.

Figure 1: Model for health as human capital (Becker, 1994, Grossman, 1972)