ECON 421

Inequality I

Intergenerational Mobility

Fall 2015

The Great Gatsby Curve

Are inequality and intergenerational mobility correlated?

Inequality is measured by the **Gini coefficient**.

Mobility is measured by the **intergenerational earnings elasticity**.

$$\ln Y_{i,t} = \alpha + \beta \ln Y_{i,t-1} + \epsilon_i$$

where

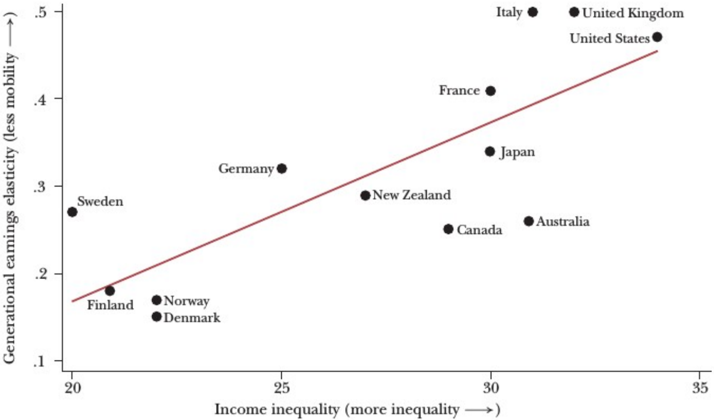
- $Y_{i,t}$ is permanent income of family i of generation t
- α is the trend in income
- β is the estimated elasticity

We can look at the relationship across different countries.

Results are generally driven by persistence in the very top and bottom of the income distribution.

Figure 1

The Great Gatsby Curve: More Inequality is Associated with Less Mobility across the Generations



Source: Corak (2013)

Outcomes vs. Opportunities

Could there be a reason to correct inequality in wealth or earnings?

Argument I – No:

Observed inequality could be a matter of choice (unobserved preference heterogeneity).

Argument II – Maybe:

Observed inequality results from "luck". There is then the potential to insure households against this uncertainty.

Argument III – Yes:

Observed inequality could reflect differences in opportunities.

Inequality and Human Capital

We look at a standard OG economy.

- preferences: $\ln c_t(t) + \beta \ln c_t(t+1)$
- technology: $AK_t^\alpha L_t^{1-\alpha}$
- capital fully depreciates after one period

There are two households with different effective labour endowment $h_H(t)$ and $h_L(t)$.

Total labour input is given by $L_t = h_H(t) + h_L(t)$.

The per-capita capital stock is now measured in terms of total effective labour L_t.

Human Capital as Endowment

Suppose first that the realization of $h_i(t)$ is pure luck for the household.

Savings are given by

$$s_{t+1} = \frac{\beta}{1+\beta} w(t) h_i(t)$$

for $i \in \{H, L\}$.

Income and, hence, savings (wealth) and consumption will differ according to h_i.

But this outcome is just a manifestation of different productivity which is purely random here.

Insurance

Suppose now each member of generation t faces a probability $1/2$ of being born with h_H.

Consider a lump-sum tax equal to

$$T = w(t)\left(\frac{h_H - h_L}{2}\right)$$

when people have endowment h_H and a transfer $-T$ otherwise.

Savings are then given by

$$s_{t+1} = \frac{\beta}{1+\beta} w(t)\left(\frac{h_H + h_L}{2}\right).$$

Utility for everyone is higher **ex ante** since there is insurance against labour endowment risk.

There is redistribution of earnings **ex post** that leads to equal savings (wealth).

Human Capital as Investment

We are now interpreting labour endowments as **human capital**.

Household i

- endowment of human capital $h_i(t)$
- earns income when young $w(t)h_i(t)$
- makes "bequest" $e_i(t)$ to its children

Household i budget constraints

$$c_t(t) + s(t+1) + e(t) = w(t)h_i(t)$$
$$c_t(t+1) = r(t+1)s(t+1)$$

Households value these bequests according to

$$\ln c_t(t) + \beta \ln c_t(t+1) + \gamma \ln e(t)$$

We again have a Cobb-Douglass production function with capital fully depreciating

$$AK_t^{\alpha} L_t^{1-\alpha}$$

where $L_t = h_1(t) + h_2(t)$.

Bequests increase the human capital of the household's next generation according to

$$h_i(t+1) = Be_i(t)^{\theta} h_i(t)^{1-\theta}$$

where $\theta \in (0,1)$.

Total income next period is given by

$$\begin{aligned} w(t+1)h_i(t+1) &= (1-\alpha)Ak_t^{\alpha} h_i(t+1) \\ &= (1-\alpha)Ak_t^{\alpha} Be_i(t)^{\theta} h_i(t)^{1-\theta} \end{aligned}$$

Hence, income (and savings/wealth) depends positively on existing human capital and new investments.

Evolution of Inequality

Decisions are given by

$$\begin{aligned} c_t(t) &= \frac{1}{1+\beta+\gamma} w(t)h(t) \\ s(t+1) &= \frac{\beta}{1+\beta+\gamma} w(t)h(t) \\ e(t) &= \frac{\gamma}{1+\beta+\gamma} w(t)h(t) \end{aligned}$$

Human capital for any households evolves according to

$$h(t+1) = B\left(\frac{\gamma}{1+\beta+\gamma}\right)^{\theta} w(t)^{\theta} h(t)$$

or

$$\frac{h(t+1)}{h(t)} = g w(t)^{\theta}$$

The per-capita capital converges to a steady state according to

$$k(t+1) = \frac{K(t+1)}{L(t+1)} = \frac{s_1(t+1)+s_2(t+1)}{L(t+1)} = \frac{1}{g}\frac{\beta}{1+\beta+\gamma} w(t)^{1-\theta}$$

Results

1) Growth rate of human capital is constant for all households.

2) Initial inequality $\frac{h_i(0)}{h_j(0)}$ is perfectly persistent over time.

3) Differences in preferences or "ability" lead to increasing inequality over time.

For $\gamma_1 > \gamma_2$ or $B_1 > B_2$, we obtain higher investment or higher productivity in human capital accumulation for household 1.

Hence, $g_1 > g_2$.

Conclusion:

- A lack of intergenerational mobility can arise either from different opportunities or from inate differences in the population.
- Redistribution to achieve equal opportunities (insurance) is different from redistribution of outcomes that arise from fundamental heterogeneity (efficiency and incentives).