ECON 442

Inequality – Outcomes vs. Opportunities

Winter 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

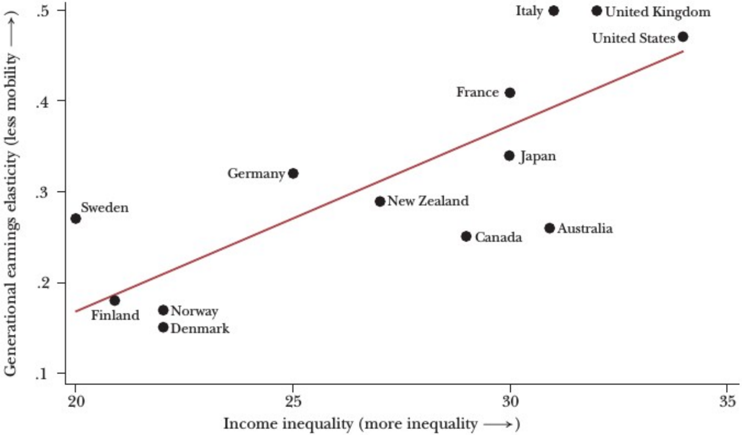
- $Y_{i,t}$ is permanent income of family i of generation t
- α is the trend in income
- β is the estimated elasticity

Look at the relationship across different countries.

One can argue that this is mostly 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



Opportunities vs. Outcomes

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 labor endowment $h_H(t)$ and $h_L(t)$.

The realization of $h_i(t)$ is pure luck for the household.

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

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

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) will differ according to h_i.

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

Inequality in Outcomes

Question: Could there be a reason to correct inequality in outcomes?

There is the potential to insure households against this uncertainty.

How? Ex-ante agreement to transfer resources ex-post from the productive to the unproductive household.

Problem I: Incentives (Mirrless (1971)).

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

Further Issue:

There could be an underlying inequality in opportunities.

Bequest and Human Capital

There are two households that differ in their endowment of human capital.

Household i can make "bequests" $e_i(t)$ to their children in the form of human capital investments.

Households value these bequests according to

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

The bequest of human capital increases the productivity of the household's next generation.

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

where $\theta \in [0, 1]$.

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

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

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

Total income next period is given by

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

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 in $h(0)$ is perfectly persistent over time.

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

Why?

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: Inequality is a result of initial endowments and bequests perpetuate such inequality.