The Role of Human Capital: Immigrant Earnings

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Contents

Immigrant Earnings

How could one measure human capital without knowing the production function?

The problem: we only observe wages

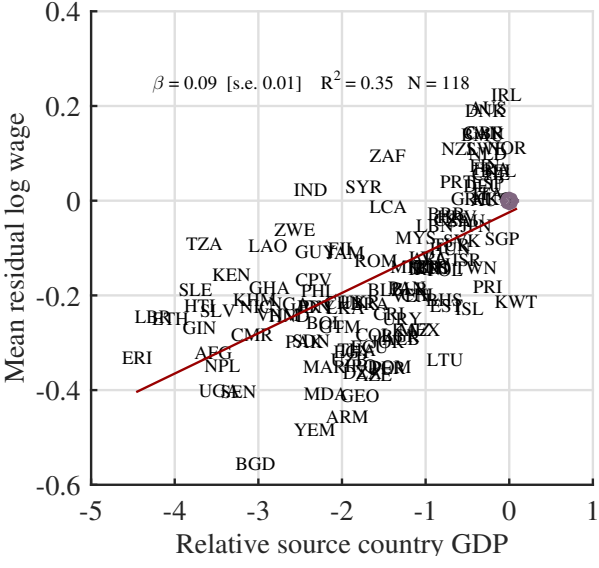
- wage = [skill price] * [human capital]
- skill prices (unobserved) differ across countries

A simple idea: observe workers from different countries in the same labor market

- with the same skill prices
- Hendricks (2002)

Immigrant Earnings in the U.S.

The motivating fact: immigrant earnings do not vary much across rich / poor source countries.



Source: 2010 U.S. Census

Approach

1. run a descriptive wage regression
   (a) LHS: log hourly wage
   (b) RHS: schooling, experience, sex, marital status, ...
2. for each person, compute residual log wage
3. sort workers by country of birth
4. for each country of birth: compute mean residual log wage
5. plot it against relative gdp per worker (PPP, PWT)

Main result: A 1 log point increase in gdp is associated with a 0.09 log point increase in wages (given characteristics).

Interpretation Issues

If there were no immigrant selection: the graph would measure source country human capital relative to the U.S.

Main concern:

Immigrants from low income countries are more positively selected than immigrants from rich countries.

Indirect evidence on selection:

1. Studies that follow migrants across borders show little selection
    (a) but mostly Latin American countries
2. Return migrants earn roughly the same as never-migrants
3. Refugees earn roughly the same as other migrants
4. For some countries (SLV, JAM), a large fraction of workers migrates to the U.S. at some point
    (a) lots of back and forth migration

Not everyone is convinced ...

Work in progress: construct direct measures of selection from NIS data (New Immigrant Survey).

Schoellman (2012)

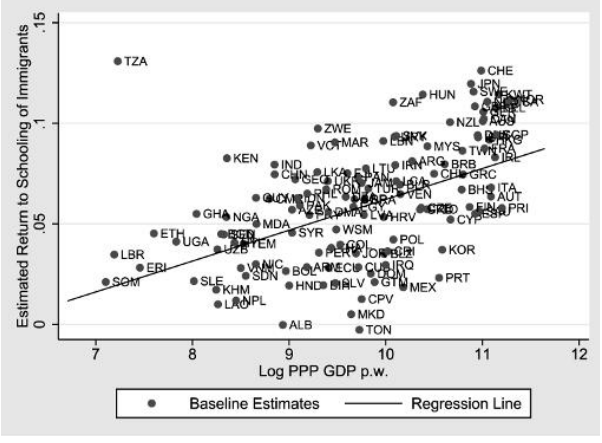
An extension of the immigrant earnings approach by Schoellman (2012)

The idea: use returns to schooling in the U.S. to measure school quality.

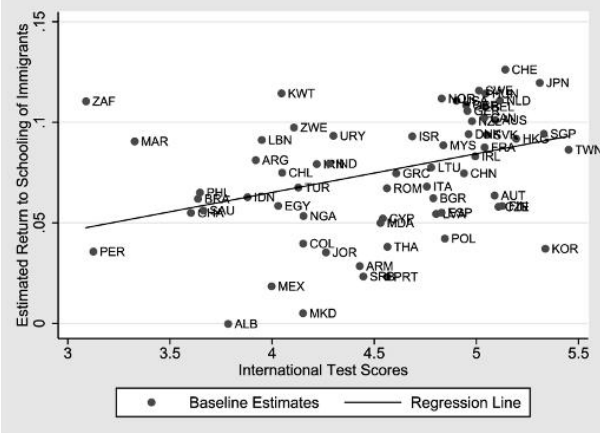
Step 1: Estimate immigrant returns to schooling Run a simple wage regression where coefficient on schooling varies by source country.

Result: school coefficient varies from 0 (ALB, TON) to 12% (CHE, JPN)

Richer countries have higher returns



Countries with higher test scores have higher returns



What about selection?

Selection could be a problem if immigrants from low income countries are selected to have below average school quality, but above average schooling

- perhaps a priori not too plausible

Restrict sample to countries with high fraction of refugees (50%+)

Transferability

There really isn't good evidence to rule out that the human capital acquired in low income countries is a poor match for rich country labor markets.

But we are living in a model with only 1 type of human capital.

Accounting Model

Aggregate production function:

$$Y_j = A_j K_j^{\alpha} \left[h\left(S_j, Q_j\right) L_j\right]^{1-\alpha} \tag{1}$$

Human capital measurement equation

$$h\left(S_j, Q_j\right) = \exp\left[\left(S_j Q_j\right)^{\eta} / \eta\right] \tag{2}$$

This is an invention, due to Bils and Klenow (2000).
Observed:

- Y_j, K_j: PWT
- S_j: Barro and Lee (2013)

We need to estimate Q_j and η.
Then we can construct h for each j and perform levels accounting.

Estimating Q_j

The idea:

- immigrant returns to schooling reveal Q_j

We want to estimate Q_j by running the regression

$$\ln W\left(S_{US}^{j}\right) = c + M_{US}\frac{Q_j}{Q_{US}}S_{US}^{j} \tag{3}$$

In words:

- Run a Mincer regression with country specific returns to schooling
- Then j's Mincer coefficient is proportional to its Q_j

This is really based on intuition, not a model.

Motivating Model for the Wage Regression

To motivate this regression, we develop a simple model.
Workers maximize lifetime earnings:

$$\max_{S} pvEarn - sCost \tag{4}$$

where

$$pvEarn = h\left(S, Q_j\right) \int_{\tau+S}^{\tau+T} e^{-r_j t} w_j\left(0\right) e^{g_j t} dt \tag{5}$$

$$sCost = \int_{\tau}^{\tau+S} e^{-r_j t} \lambda_j w_j\left(0\right) e^{g_j t} h\left(t-\tau, Q_j\right) dt \tag{6}$$

They take Q_j as given.
The cost of schooling is proportional to foregone earnings.

Optimal Schooling

Optimal schooling satisfies

$$S_j = \left[Q_j^{\eta}/M_j\right]^{1/(1-\eta)} \tag{7}$$

where

$$M_j = \frac{(r_j - g_j)(1+\lambda_j)}{1 - \exp\left[-(r_j - g_j)(T - S_j)\right]} \approx (r_j - g_j)(1+\lambda_j)$$

Claim: M_j is the Mincer return in country j.

- This is a bit fishy b/c in the model everyone is the same (no variation in S).
- Not clear what is supposed to change to induce changing S (likely Q) within a country

Some poorly explained messing around with the equilibrium wage in the US then yields the desired regression equation.

Now we have Q_j as a function of M_j (roughly the same everywhere) and S_j.

Estimating η

The idea:

Use the equilibrium schooling equation

$$\ln S_j = \frac{\eta}{1-\eta} \ln Q_j + \frac{1}{1-\eta} \ln M_j \tag{8}$$

Set $M_j = \bar{M}$ based on estimated Mincer regressions.

Instrument Q_j with test scores.

Development Accounting

Main result: Quality differences are as important as school quantity differences.

	This paper			Literat
	$\eta = 0{\cdot}42$	$\eta = 0{\cdot}5$	$\eta = 0{\cdot}58$	Hall and Jones (1999)
h_{90}/h_{10}	6·3	4·7	3·8	2·0
$\frac{h_{90}/h_{10}}{y_{90}/y_{10}}$	0·28	0·21	0·17	0·09
$\frac{\text{var}[\log(h)]}{\text{var}[\log(y)]}$	0·36	0·26	0·19	0·06

Comments

The empirical idea is quite nice:

- use immigrant returns to schooling as a proxy for source country school quality

Quantitatively, it's a bit hard to make this work

We run again into the two issues that plague the entire literature:

1. What is the production function for h?
2. How do deal with migrant selection?

The only clear way out (I think): direct measures of migrant selection (NIS data)

References

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Bils, M. and P. J. Klenow (2000): "Does Schooling Cause Growth?" *The American Economic Review*, 90, 1160–1183.

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