

The Battle for Brains: How to Attract Talents

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or: How Far Can You Travel With One Quart of Gas?

- ▶ It depends on your car.
- ▶ Quite far, if your car is light and its engine simple.
- ▶ Typically, however, you give up on safety and comfort.

The theoretical model

- ▶ The value of migrating from country $o = 1, \dots, O$ to country $d = 1, \dots, D$ for individual i is

$$U_{odi} = \delta_{od} - \nu_{odi},$$

where

$$\delta_{od} = f_1 W_d - g_1 \vartheta_d - g_2 X_{od}$$

is a linear function of expected life-cycle earnings from migrating (W_d), destination country factors (ϑ_d) and bilateral country factors (X_{od}), and the ν_{odi} are unobservable i.i.d. random variables with a Type I extreme value (Gumbel) distribution.

- ▶ Individual i migrates from country o to country d iff

$$U_{odi} - U_{ori} = (\delta_{od} - \delta_{or}) - (\nu_{odi} - \nu_{ori}) \geq 0, \text{ for all } r \neq d.$$

Model implications

- ▶ The total migration flow from o to d obeys

$$\ln n_{od} = \ln n_{oo} + f_1 W_d - g_1 \vartheta_d - g_2 X_{od}. \quad (1)$$

- ▶ For any pair of destination countries d and r

$$\ln(n_{od}/n_{or}) = f_1(W_d - W_r) - g_1(\vartheta_d - \vartheta_r) - g_2(X_{od} - X_{or}).$$

- ▶ Further assuming

$$\delta_{od}^s = f_1 W_d - g_1^s \vartheta_d - g_2^s X_{od}, \quad s = H, L,$$

gives the selection (share) equation

$$\ln(n_{od}^H/n_{od}^L) = f_1(W_d^H - W_d^L) - \gamma_1 \vartheta_d - \gamma_2 X_{od}, \quad (2)$$

where $\gamma_j = g_j^H - g_j^L$, $j = 1, 2$.

Model estimation

- ▶ Total migration equation (1): OLS regression of the log of total migration flow from o to d on average wage W_d in d and a set of controls.
- ▶ Share equation (2): OLS regression of the log difference between migration flows of high- and low-skilled individuals from o to d on the educational wage premium $W_d^H - W_d^L$ in d and a set of controls.

Main results

- ▶ The average wage in the destination country always has a strong positive effect on total migration flows. The effect is stronger for after-tax wages.
- ▶ The educational wage premium has a strong positive effect on the ratio of skilled to unskilled migration, except for the specifications that control for immigration laws and either labor market legislation or R&D spending.
- ▶ Tightness in asylum requirements and access to benefits affect negatively total migration flows.
- ▶ Pro-skilled immigration laws and restrictions from benefit affect positively the share of high-skilled.
- ▶ The effects of all other variables (the welfare system, labor market legislation and R&D spending) tends to be weak and not very robust.

Some unpleasant implications

- ▶ Given its after-tax wages and educational wage premia, Italy has already lost the battle for brains.
- ▶ Things are only made worse by the current Italian immigration laws favoring the unskilled.

Do we trust these results? Problems with the model

- ▶ Linear specification of the systematic part (δ_{od}).
- ▶ Strong homogeneity assumptions: no individual heterogeneity (except for random errors) and constancy of coefficients both across countries and across skills.
- ▶ Only educational premia in the destination country matter.
- ▶ Education decisions in the country of origin are not modelled.

Do we trust these results? Problems with the data

- ▶ Total migration flows between 74 countries of origin and 14 destination countries for the period 1980–2005. Reliable only for legal immigrants, where the fraction of high-skill should be higher.
- ▶ Migration flows by educational level are imputed.
- ▶ Expected life-cycle earnings proxied by per-capita GDP.
- ▶ Educational wage premia imputed using per-capita GDP, the Gini coefficient and the assumption of log-normal earnings.
- ▶ Crude adjustment for after-tax wages.

An egg-and-chicken problem

- ▶ The model is simple because the data are so crude.
Or:
- ▶ Because the model is so simple, only crude data are needed.

Conclusions

- ▶ This paper tries to squeeze as much as possible out of the available macro-data.
- ▶ It delivers strong policy implications, but at the cost of strong assumptions.
- ▶ It is nevertheless very useful because it helps identifying the limits of the models and the data that we currently have available.
- ▶ Lots of work remains to be done with both theory and data.