

Migration and Mobility: Some Theory

The Incentive to Migrate

At a very simple level, migration decisions are based on the moving costs and on the differential between the income obtained in country of destination and the income obtained in the country of origin.

In particular, it is important to stress how income in the country of destination and of origin does not refer solely the current income but, rather, to the expected flow of current and future income.

Starting from this simple level, we can quantify the incentive to migrate I of a given person i in the following way:

$$I_i = w_{i,D} - w_{i,O} - C_i \quad (1)$$

where $w_{i,D}$ is the current value of all future income (or wages) in the country of destination, $w_{i,O}$ is the current value of all future income in the country of origin and C_i are the costs sustained to move from a country to another.

According to equation we can determine migration decision: for $I_i > 0$ individual i will move, for $I_i < 0$ individual i will stay in the country of origin (for $I_i = 0$ the individual is indifferent between moving or stay).

It is important to stress that both $w_{i,D}$ and $w_{i,O}$ depend on the expectation on future income and, therefore, migration does not simply depends on the current situation but also on the perspectives perceived in the countries. Moreover, the component C_i is not merely the monetary component paid to perform the move but should also take into account the cultural, linguistic and even climatic difficulties that are found in the destination country: the pain in leaving family members and friends should also enter in this component.

Selective Migration

We build now a slightly more complex model that takes into account the role of skills and of wage distribution. The aim of this model is to highlight how different individuals might find convenient to migrate to specific destination on the basis of their skills, producing a selective migration.

Suppose that wages in the country of destination are determined by the following equation:

$$\log w_{i,D} = \mu_D + \sigma_D s_i \quad (2)$$

where μ_D is the average wage (in logarithms) in the country of destination, s_i are a measure of the skill of individual i and σ_D is a factor that determines the remuneration of skills in country D . In truth $w_{i,D}$ should represent the actual value of all future wages and income, however, for sake of simplicity we will refer to them as wages.

As for the skill variable, we assume that s_i varies across individuals and that $E(s_i) = 0$. Clearly it follows that $E(\log w_{i,D}) = \mu_D$ and that the larger is σ_d the more disperse is going to be the wage distribution: in the limit case in which $\sigma_d = 0$ we have that all individuals earn the same wage.

Similarly, wages in the country of origin are:

$$\log w_{i,O} = \mu_O + \sigma_O s_i \quad (3)$$

Clearly, as we saw earlier, we have that individuals will migrate if $w_{i,D}$ is larger than $w_{i,O} + C_i$ but this will happen if and only if $\log w_{i,D}$ is greater than $\log(w_{i,O} + C_i)$. Therefore, in this case, we rewrite the incentive I_i as:

$$I_i = \log w_{i,D} - \log(w_{i,O} + C_i) \quad (4)$$

and individual i will migrate if $I_i > 0$.

We now further proceed with a relevant and simplify assumption: we assume that the individual costs C_i depends on the individual wage in the country of origin: $C_i = \pi \cdot w_{i,O}$. This strictly means that individuals that have larger wages are going to sustain larger costs to relocate: the actual rationale for this is questionable; however, we may think that people with higher income will probably give up relevant social positions when moving and, moreover, they will look for higher class accommodations in the new destination and these will magnify the costs. All in all, it is quite reasonable to assume that C_i is larger the larger is $w_{i,O}$ even if it is not certain whether there is a direct proportionality between the two.

All this said we have that

$$I_i = \log w_{i,D} - \log(w_{i,O} + C_i) = \log w_{i,D} - \log(w_{i,O} + \pi \cdot w_{i,O}) = \log w_{i,D} - \log[w_{i,O}(1 + \pi)]. \quad (5)$$

If π is small (as a matter of fact π is the ratio between all future income and relocation costs) we can elaborate the above:

$$I_i = \log w_{i,D} - \log w_{i,O} - \log(1 + \pi) = \log w_{i,D} - \log w_{i,O} - \pi \quad (6)$$

From which we obtain

$$I_i = \mu_D + \sigma_D s_i - \mu_O + \sigma_O s_i - \pi = \mu_D - \mu_O - \pi + (\sigma_D - \sigma_O) s_i \quad (7)$$

Equation (7) tells us that the incentive to migrate does not depend solely on the average wages in the countries μ_D and μ_O and on the relocation cost π but also depends on how well skills are remunerated or, in other words, on the dispersion in wage distribution.

This is extremely important because, depending on the starting skill of the individuals, the decision of the migration may revert.

To understand this, consider first the simple case in which $\mu_D - \mu_O - \pi = 0$. In this case the difference in the gain in terms of average wage perfectly compensate the relocation costs. What happens then is that the decisions of individuals will depend on the sign $(\sigma_D - \sigma_O)$ and of s_i :

- For $\sigma_D - \sigma_O > 0$ only the most skilled workers (i.e. $s_i > 0$) will migrate
- For $\sigma_D - \sigma_O < 0$ only the less skilled workers (i.e. $s_i < 0$) will migrate

To all extent, we observe a selection of migration, with the most skilled workers moving to the less equal economy. In this case $s_i = 0$ is the threshold that set apart individuals.

The same result holds for $\mu_D - \mu_O - \pi \neq 0$. In this case, the threshold for which migration will be selected will not be $s_i = 0$ but a different one; yet we will still observe that:

- For $\sigma_D - \sigma_O > 0$ only the most skilled will migrate; the threshold value of s_i will be lower than zero for $\mu_D - \mu_O - \pi > 0$ and greater than zero for $\mu_D - \mu_O - \pi < 0$.
- For $\sigma_D - \sigma_O < 0$ only the less skilled workers will migrate; the threshold value of s_i will be greater than zero for $\mu_D - \mu_O - \pi > 0$ and lower than zero for $\mu_D - \mu_O - \pi < 0$.

There are three final considerations that are worth doing on this model:

- The model rests on the assumption that skills and competence are fully movable from a country to another. Even if this is not always the case, the qualitative results (and the direction of the selection in particular) remain the same if we remove this assumption as long as skills maintain the same relative order after the move (i.e. two workers that could be ordered on the base of their skill values in the country of origin maintain the same order in the destination country). In analytical terms this means that the conversion of the skill from the country of origin to that of destination happens according to a positive monotonous function.
- In all the analysis we have discussed, countries where skills are highly rewarded are also the country with a more dispersed distribution of wages. In reality, it is not always the case that countries that rewards actual "skills" more also have a more dispersed distribution of income. From this point of view, the variable s describes the skills that can be directly converted in income: whether s represents skills, competences or qualifications in a broader sense it is instead questionable.
- Finally, it is worth to stress that the distribution of skills among migrants and native are not necessarily the same: this is extremely important because even in the case of positive selection of migrants (i.e. only the most skilled migrate) it is possible that the individuals that migrate ends up to be less skilled than most workers in the destination country. This in turn implies that, even in the case of positively selected migration, it is possible that is the supply of less skilled workers that relatively increases in the destination country.

Some simple considerations on the effects of migration on employment, production and wages.

In the presence of migration of a certain skill level there is a change in the labour supply of workers of that level of skills. Even if we are not going to formalize a model explaining the consequences of this change some straightforward considerations can be done. Suppose for example that the economy production employs three factors: unskilled labour, skilled labour and capital and that migration produce an increase of the supply of unskilled labour (the other case, in which skilled labour supply increases it is totally symmetrical):

- The increase of unskilled labour supply produces a decreases in unskilled wages.

- The reduction of wages allows for more unskilled employment which, in turn increases production: this creates a so-called immigrant surplus in production.
- Part of immigrant surplus is taken by skilled workers (whose wages increase) and capital owner (whose rate of profits increases).

In practice the process of migration of unskilled workers produces a benefit to the overall economy (the immigrant surplus) but the benefit is shared unequally, with skilled labour and capitalists improving their income and with native unskilled workers losing their income.