

Economics of Migration

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The Economics of Migration: General Issues

The labor market in the host country

- When migrants enter a destination country, the immediate effect that should be considered is an increase in the supply of labor
- The expected consequences of an increase in labor supply in a perfectly competitive labor market are: i) an increase in the equilibrium employment level from N^* to \bar{N}^* and ii) a decrease in the equilibrium wage from w^* to \bar{w}^*

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The labor market in the host country

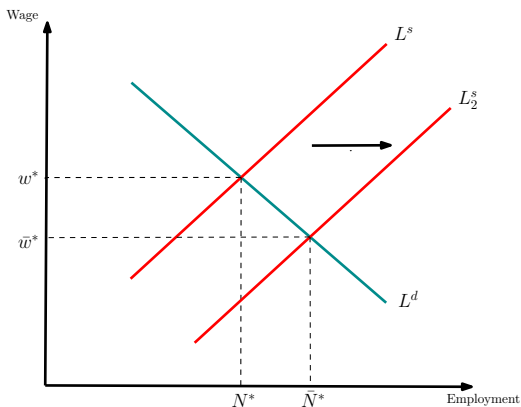


Figure 1: Increase in labor supply due to immigration: wage flexibility

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- This is often the main concern in the debates about immigration: immigration will worsen the economic conditions of the natives, in particular because it will increase competition in the labor market and will reduce the (equilibrium) wage of all workers, in particular of the native workers.
- This seems to be a straightforward conclusion. However, it depends on two crucial assumptions: i) immigrants compete in the same labor market of the natives; ii) the labor market wage adjusts to the new equilibrium.
- Condition ii) might not be satisfied in presence of wage rigidity, i.e. in the case the wage does not decrease in response to an increase in the supply of labor, which implies an increase in unemployment

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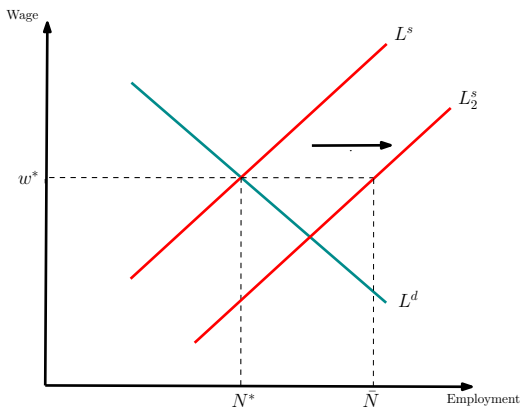


Figure 2: Increase in labor supply due to immigration: wage rigidity

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- In Figure 2, unemployment is given by the difference $\bar{N} - N^*$.
- Also in this case, however, the native workers may see worsening their conditions if they become unemployed after the arrival of the immigrants.
- From Figure 2, however, it is not clear who would be unemployed, the natives, the immigrants, or both.

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- Let us consider a simple model to investigate further the effects of an immigration flow in a destination economy (the example is from Frattini, 2015). The setup of the model is the following.
- An economy produces a single good Y utilizing two types of labor: skilled work, denoted by Q , and unskilled labor, denoted by N .
- The production function is: $Y = f(Q, N)$. We assume that if the production factors double, output will double (i.e. the production function exhibits constant returns to scale).

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- Workers can be natives, denoted by A , or immigrants, denoted by M . Assume that natives and immigrants are perfect substitutes in production.
- This implies that the total quantity of skilled workers Q is given by: $Q = A_Q + M_Q$ and the total quantity of unskilled workers is given by $N = A_N + M_N$, where A_I and M_I indicate native and immigrant workers ($I = Q, N$).
- Finally, let's assume that labor supply is rigid: this means that, graphically, the labor supply curve is vertical, implying that workers are available to work for any wage (this is a simplification, a special case of the perfectly competitive labor market).

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- In competitive equilibrium, i.e. if labor markets are perfectly competitive, wages equal the marginal product of labor, i.e. $w_Q = MPL_Q$ and $w_N = MPL_N$, where MPL_Q and MPL_N denote the marginal product of skilled and unskilled labor.
- In this model output is distributed to the production factors as:
$$Y = w_Q Q + w_N N.$$
- Now let's consider the consequences for an economy in which, in period 1, there are only native workers, while in period 2 an inflow of unskilled immigrants enters the country.
- In period 1, the quantities of skilled and unskilled labor are, respectively: $Q_1 = A_Q$ and $N_1 = A_N$, i.e. production only employs native workers.

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- Figure 3 shows the initial equilibrium and the consequences of the inflow of immigrant workers.

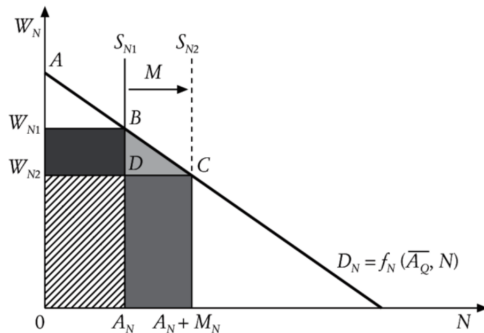


Figure 3: Increase in labor supply due to immigration: effects on wages and output with inelastic labor supply. Source: Frattini (2015).

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- The graph has the unskilled wage w_N on the vertical axis and unskilled employment N on the horizontal axis (i.e. the skilled labor market is not explicitly represented).
- Unskilled labor supply in period 1 is represented by the vertical line S_{N1} , while unskilled labor demand is represented by D_N , representing the marginal productivity of unskilled labor (given the quantity of skilled labor $Q_1 = \bar{A}_Q$).
- The initial equilibrium, i.e. demand meets supply, is in B , where all native unskilled workers A_N are employed at (equilibrium) wage w_{N1} (although not explicitly shown here, also skilled workers are fully employed, given the assumption of perfectly competitive labor markets)

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- In the initial equilibrium, total output Y_1 is given by the area $A - B - A_N - 0$. Output Y is fully utilized to remunerate productive factors, i.e. the two types of labor which, in period 1, are only natives.
- Total wage accruing to unskilled workers is given by $w_{N1} \times A_N$, graphically represented by the area $w_{N1} - B - A_N - 0$, while native skilled workers receive what remains of total output:
 $Y_1 - (w_{N1} \times A_N) = w_{Q1}A_Q$ graphically represented by the area:
 $A - B - w_{N1}$

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- In period 2 an influx of immigrant workers occurs. For simplicity let's assume that it is composed by unskilled workers only, so that $M = M_N$.
- This increases the supply of unskilled labor, from A_N to $A_N + M_N$, and so the (unskilled) labor supply shifts to the right, from S_{N1} to S_{N2} .
- This implies a reduction of unskilled wage from w_{N1} to w_{N2} , and the new equilibrium of the economy is at point C .
- In this new equilibrium: all workers, unskilled and skilled, natives and immigrants, are employed, and the new output level, Y_2 , is given by the area $A - C - (A_N + M_N) - 0$.

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- In the new equilibrium, the output share accruing to native unskilled workers decreased of an amount given by the area $w_{N1} - B - D - w_{N2}$, which has been transferred to the native skilled workers.
- However, there is not only a redistributive effect: the inflow of immigrant workers increased the size of the economy.
- The increase in total output, in particular, is given by the area $B - C - (A_N + M_N) - A_N$.
- Part of this increase accrues to the immigrant workers: their slice of the pie is given by $w_{N2} \times M$, corresponding to the area $D - C - (A_N + M_N) - A_N$

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- The difference between the increase of total output, and the share of this increase accruing to the immigrants is defined **immigration surplus**, and is given in the graph by the area $B - C - D$.
- In this model, the immigration surplus is completely captured by the native skilled workers.
- Now the share of output native skilled workers is given by $w_{Q2} \times A_Q = Y_2 - w_{N2} \times (A_N + M_N)$, and is graphically represented by the triangle $A - C - w_{N2}$

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- To sum up, in this model, an inflow of immigrant workers:
 - ① decreases the wage of native unskilled workers and the their share of output;
 - ② increases the output level of the economy, part of which goes to the unskilled migrant workers;
 - ③ increases the share of output accruing to the native skilled workers (who capture the immigration surplus).

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- Immigration, therefore, has two effects:
 - i) the average wage of the native population increases, as the share of total product accruing to the native workers (skilled and unskilled), increases for the immigration surplus;
 - ii) a redistributive effect: some social groups (unskilled workers in this case) lose something, other groups (skilled workers) gain something. Immigrants, in this model, are however fully employed (as all native workers) and receive a share of the output, which increased with their contribution with respect to Period 1.

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- In this simple model, there is no capital, i.e. we do not consider the fact that firms also employ capital who has owners entitled to receive a return.
- It is possible to show that in a model with (fixed) capital and one type of labor, an inflow of immigrants have the same effects seen here, but the immigration surplus goes to capital (see Bodvarsson and Van den Berg, 2013, pp. 110-113).
- This does not change one fundamental result of such models: immigration has a redistributive effect.
- Bodvarsson and Van den Berg (2013, pp. 113-114) show that, in the case of the US, the transfer from workers to capitalists can be substantial. An aspect that: “may help to explain why many labor groups object to immigration while business owners often welcome it.” (Bodvarsson and Van den Berg, 2013, p. 114)

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- In another version (Bodvarsson and Van den Berg, 2013, pp. 114-116) labor supply is fixed, while capital is variable.
- Let us consider the case of a small, open economy, i.e. an economy which is open to foreign capital flows, and that takes the return to capital r as given, and determined in the world capital markets.
- Idea: capital is a good for which there exists a world demand and supply. The equilibrium in this world market determines the return to capital that a small country takes as given. (I.e. the contribution to supply and demand of capital of this country to the world market is so small, that its variations are unable to influence the world return to capital. This is the same mechanism that applies in competitive markets with respect to individual firms: an individual firm takes the price as given.)

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- The implications of this model are the following. Consider a Cobb-Douglas production function:

$$Y = AK^\alpha L^{(1-\alpha)} \quad (1)$$

where parameter A indexes the technological level available in the country, K denotes capital, L denotes labor and $0 < \alpha < 1$.

- This specification also implies that labor and capital are complementary: in order to have a positive output, both factors are necessary.

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- In competitive markets, as we have already seen, the return of the factor equals its marginal product (recall that this conditions ensures that firms are maximizing their profits and optimally choose the amount of factors they wish to use).
- (Formally, the condition of equality between marginal products of labor and capital and their return is given by:

$$w = MP_L = (1 - \alpha)AK^\alpha L^{-\alpha} = (1 - \alpha)A \left(\frac{K}{L}\right)^\alpha \quad (2)$$

$$r = MP_K = \alpha AK^{(\alpha-1)} L^{(1-\alpha)} = \alpha A \left(\frac{L}{K}\right)^{1-\alpha} \quad (3)$$

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- If an inflow of immigrant worker occurs, L increases. This has two consequences: i) from Eq. (2) w decreases, i.e. the wage of native workers goes down; i) from Eq. (3) we see that r increases, i.e. the return to capital in the country goes up.
- Given the hypothesis that the country is open, the increase of r will determine an inflow of capital from abroad.
- Given that labor and capital are complementary, this will increase the demand for labor which, for a given supply, will push up the wage. In this case, we can distinguish a short-run effect on wages (decrease in w), and a long-run effect on wages (increase in w). The overall effect on wages in the long run, therefore, is zero (see Bodvarsson and Van den Berg, 2013, Fig. 5.3)

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- These results point out that, even in the (apparently) simple case in which an inflow of immigrants pushes the wage of natives down, the overall dynamics can be quite complex.
- If the inflow of immigrants favors an increase in the capital stock (in this case flowing from abroad), this can cause an increase in the demand for labor, and the natives' salary can be less affected, or not affected at all.

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The labor market in the host country

- This is an instance of how economies can adjust to the inflow of immigrants. In this model, what adjusts to immigration is the capital stock through the inflow of foreign capital
- Another instance of how economies adjust to immigration is adjustment in goods production (Frattini, 2015, p. 472).
- Example: an economy produces two goods: one “advanced”, which mostly utilizes skilled labor, one “traditional”, which mostly utilizes unskilled labor.
- If a flow of immigrant unskilled workers arrives to the country, this will reduce the unskilled wage.
- This will increase the profits in the traditional sector. The increase of profitability in the traditional sector will increase production in this sector and, therefore, the demand for unskilled labor will increase.

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- Production, therefore, adjusts to immigration and the production in the sector where the wage (initially) decreased will expand.
- In the long run, therefore, this can mitigate the depressive effect of immigration on the unskilled wage
- Another channel is the adjustment in technology (Frattini, 2015, p. 472).
- The idea is the following: a large inflow of, e.g., unskilled labor, can push firms to introduce technologies complementary to the use of the factor that became more abundant.

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- If, for example, the pool of unskilled workers increases, firms can choose unskilled-labor-intensive technologies, for example unsophisticated technologies that can be used by unskilled workers.
- This can increase the demand of unskilled labor, and therefore offset, partially or totally, the negative effect on natives' wages caused by the inflow of unskilled immigrants.

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- Frattini (2015, p. 473) makes the example of wine production in California and in Australia.
- These economies are quite similar in institutional and cultural characteristics (they are both developed, Anglo-Saxon economies).
- However they produce wine in very different manners: in California there is abundant utilization of unskilled labor (mostly provided by immigrants from Latin America), which utilize simple technologies; while in Australia wine production is heavily mechanized, i.e. there is abundant use of an advanced technology, which the local producers adopted because of the immigration restrictions in Australia, that made unskilled labor more costly for the firms.

The Economics of Migration: General Issues

Identification Issues

- In general, the aspect of the adjustment of economies to immigration flows points to the difficulty of identification of the effect of these flows on the host economies, in particular on their wages.
- Identification is strictly related to the specification of a regression equation. To identify the effect of a variable on another, means that the coefficient we estimate is correctly quantifying the effect of interest (possibly in a causal way).
- Ideally, to measure the effect of immigration on wages, one would like to have a *counterfactual*: i.e. what would be needed is an observation of, say, an economy after it received a flow of immigrants, and the same economy had the flow of immigrants not occurred. Unfortunately, once the immigrants entered the host economy, it is not possible to observe it without the immigrants.

The Economics of Migration: General Issues

Identification Issues

- In the study of the effect of immigration on natives' economic outcomes, especially wages, the main approaches are: i) the spatial approach; ii) the approach based on education-experience cells (see Frattini, 2015, pp. 474-77).
- The spatial approach is based on this hypothesis. Consider two labor markets, A and B, which are identical. Assume that all immigrants move to A. The effect of immigration on wages could be identified by comparing the wages of A after the inflow of immigrants (for example after a certain period of time since the inflow), with the wages in B observed after the same period of time (under the assumption that, had immigration not occurred, the two labor markets would have been identical).

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Identification Issues

- For this approach to be useful, however, one need a number of hypotheses. The first one is that the distribution of immigrants across different locations should be random, in other words it should be independent on the local conditions of the different labor markets.
- Unfortunately, as we discussed, migration is a choice, it is not determined by randomness.
- This can imply, for example, that immigrants go where the economic conditions are better, or are expected to be better. This can imply in turn that when one observes the effect of immigration on local wages s/he does not find a depressive effect because the overall good conditions of the economy keep the demand for labor up, offsetting the effects on wages of the increased supply.

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Identification Issues

- This can bring to a positive correlation between the share of immigrants and local wages (i.e. local wages \uparrow , share of immigrants \uparrow).
- It is possible to overcome this problem, from an econometric point of view, by controlling for fixed effects of the different locations.
- A fixed effect (FE) refers to the effect on, e.g., wages, that depend on the location's characteristics that tend to be persistent in time.
- For example, the sectoral composition of output of the location, the quality of the institutions at local level, etc.

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Identification Issues

- The type of regression equation to estimate would be, having data on wages for r locations (e.g. regions) and period t , in this case, such as:

$$\ln w_{rt} = \beta m_{rt} + \phi_r + \tau_t + u_{rt} \quad (4)$$

where m_{rt} is the share of immigrants on the labor force in location r , ϕ_r are dummy variables capturing the location's FE (i.e. this variable takes the value 1 for observations from region r and zero otherwise), τ_t is a FE capturing the effect of time (for example because, over time, there are new reforms of the labor market that affect all wages, trends in economic growth, etc.)

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Identification Issues

- The key parameter to estimate in Eq. (4) is β : the reason to add other variables on the right-hand side is to control for other possible factors that can explain w_{rt} , being dummy variables or not.
- That is, to control essentially amounts to remove from the explanation of w_{rt} other factors in order to correctly identify the effect of m_{rt} .
- However, not all the problems are solved by FE. Can we claim that β captures a causal effect? There might be another problem.

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Identification Issues

- Consider the two locations A and B which have identical conditions in the initial period. In a subsequent period a positive economic shock affects the location B: for example trade develops with a foreign country. This stimulates economic growth in B, and pushes the wages up (as the demand for labor is increased by the economic shock)
- Where will the immigrants go? Probably to location B (this is the effect of selection of immigrants into a location).
- In this case, immigration can affect wages, but also wages can affect immigration, we have a potential problem of reverse causality. In this case the parameter β would not correctly identify the effect of immigration on wages.

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Identification Issues

- How to solve this problem? One would like to have something that can explain the inflow of immigrants which is not correlated to the economic shock (and the subsequent increase in wages).
- Research showed that immigrants typically choose to locate where previous generations of immigrants of the same country decided to locate.
- So, the past shares of immigrants can contribute to explain the immigration flow, but they do not contribute to explain the wage dynamics (differently from the current immigration flows, which should do so).

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Identification Issues

- Technically, past immigrant shares are instrumental variables for the current immigrants' share.
- In other words, past immigrant shares can be used to predict the current immigrants' shares (in a regression of the current immigrants' share on the past immigrants' share), and then this *predicted* value is used in a regression such as Eq. (4) instead of the actual current value.
- The predicted value is such that it is not related to the current shocks. In this way it can be taken to estimate the causal effect of current immigration flows on wages.

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Identification Issues

- Another problem of the spatial approach is the mentioned case of adjustment of the local labor market to immigration.
- Some workers whose wage has been badly affected by immigration can decide to leave the locality: this would imply a counteracting effect on the labor supply.
- In this sense, the local labor market can “adjust” to immigration through the relocation of some workers, who are in competition with the immigrants, to other locations.
- A relevant case that allowed to study the effect of immigration on local wages was the “Mariel boatlift”: in 1980 the Cuban government allowed whoever wanted to leave the island from the Mariel port to do it. As a consequence, around 125 thousands low-skilled Cubans moved to the metropolitan Area of Miami

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Identification Issues

- This is an ideal setting to study the issue as it represents a natural experiment: the decision of Fidel Castro generated an exogenous flow of immigrants to Miami. I.e. a flow completely unpredictable and disconnected from the economic conditions of Miami. In addition, the destination was simply chosen for its geographical proximity with the country of origin.
- Results on the effect of the *Marielitos* are mixed, and spurred a long controversy among labor economists.
- The key issue was how to define the low-skilled workers that were mostly affected by the immigrant flow (see Anastasopoulos et al., 2018 for a recent contribution)

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