3

The Effects of Immigration on the Receiving Country

This chapter concentrates on the welcome and unwelcome effects of immigration on the labor market and economy of the receiving country. We do not rehash the well-worn discussion of immigrant integration and assimilation, mentioning it only marginally in the wider context of the economic effects immigrants can have. We start with a survey of the main theoretical and empirical results derived from studies conducted in the United States and Europe, presenting, where available, results for the southern European countries. Special attention is given to the question of complementarity or substitution between groups of workers. Empirical evidence from the United States, Canada, Australia, and northern Europe is used to interpret the southern European cases and is compared to the limited research available for these countries. The aim is to assess the impact of illegal as well as legal immigrants on native wage and employment growth.

3.1 AN OVERVIEW OF MODELS BY MAIN THEMES

Four main lines of approach can be identified. The first analyzes the role played by foreigners in the labor market (complementarity or substitution), and the second studies how foreigners integrate into the structure of wages and jobs. The third examines the contribution of immigrants to economic growth in the receiving country, and the fourth tries to assess the impact immigrants have on social expenditure.

These four approaches are exclusively economic, and they should be integrated with analyses of the demographic consequences of immigration. Demographic changes affect an economic system deeply.

3.1.1 Complementarity or Competition

The first approach brings together studies that analyze the effect foreign workers have on the labor market through their impact on wages and on levels of native employment. The debate on this theme, which has an important influence on the kind of migratory policy a country tends to adopt, is characterized by conflicting and emotional stances. Supporters of competition argue as if there were a given number of jobs in an economy, and they assume that foreigners cannot create any growth in labor demand. In contrast, the supporters of complementarity assume that there is a clear segmentation between foreigners and natives and that no competition can arise. The impact of immigration can also be affected by changes in the business cycle, by periods of excess demand or excess supply, and by the contrasting effects of reduced wage growth and reduced inflation, the latter of which can be beneficial to natives, too.

The passionate discussion of hypothetical reactions of the labor market can go on forever, but economic theory is unequivocal on this point. Immigrant workers are defined as being *competitive*, or *substitutes*, when they have a negative effect on wages or native employment levels of both. They are defined as *complementary*, when the effect is positive.

Before we consider various models for representing the effect of immigrants on the labor market, it is important to specify the various categories to be considered at risk. The larger body of theoretical and empirical economic literature deals with competition or complementarity between natives and foreigners working regularly in the formal labor market with similar or different skill levels (cases A and B in Figure 3.1). The first model we will discuss illustrates how the labor market functions in the first case, assuming a standard neoclassical labor market without trade unions. The second case (Schmidt, Stilz, and Zimmermann 1994) explicitly models possible trade union behavior. Very little research deals explicitly with the competition between irregular foreign employment and regular native employment (case C in Figure 3.1). An exception is the Dell'Aringa and Neri study (1987) presented later. This issue deserves a lot of attention in the southern European countries, where irregular forms of work are more common than in other areas and where competition between natives and foreigners can also take place in the informal economy (case D in Figure 3.1), thus aggravating the poverty of already poor workers.[1] U.S. literature stresses the role played by

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[1] The theoretical reference model for the analysis of case D is the traditional neoclassical model, presented later.

 Competition between:

A. **Regular immigrants and natives of equal skill level**

B. **Regular immigrants and natives of different skill level**

C. **Regular natives and irregular immigrants**

D. **Irregular natives and irregular immigrants**

E. **Internal mobility (USA, EU, southern Europe)**

F. **Production decentralization**

Figure 3.1. Competition or complementarity by categories

the internal mobility of natives as insurance against wage reduction induced by immigrants. In contrast, in Europe, and in particular in southern European countries, immigrants going into areas of high wages and high labor demand can displace the internal mobility of natives from low-wage and high-unemployment areas (case E in Figure 3.1) or can discourage the decentralization of production to high-unemployment areas in the country (case F in Figure 3.1), thus playing a competitive role. Very little research has been done on these last two issues relevant to the longer term, especially in Europe.

The most quoted model for analyzing the effect of immigrants on the native labor market is the neoclassicical model, where wages and employment are perfectly flexible. Its behavior is shown in Figure 3.2.

An increase in the supply of labor in a labor market that employs workers *i*, foreign labor being homogeneous, produces a decrease in the equilibrium wage only if the supply of labor is rigid (Figure 3.2b). If the supply of labor is elastic to wages, both wages and employment will decrease (Figure 3.2a). Native employment levels ONi decrease after immigration to ONi' because workers are discouraged from working by the decrease in real wages. There are similar results if the growth in supply is followed by or induces a demand shift of a smaller amount, so that the equilibrium variables are reduced (point A'' in Figure 3.2c and 3.2d).
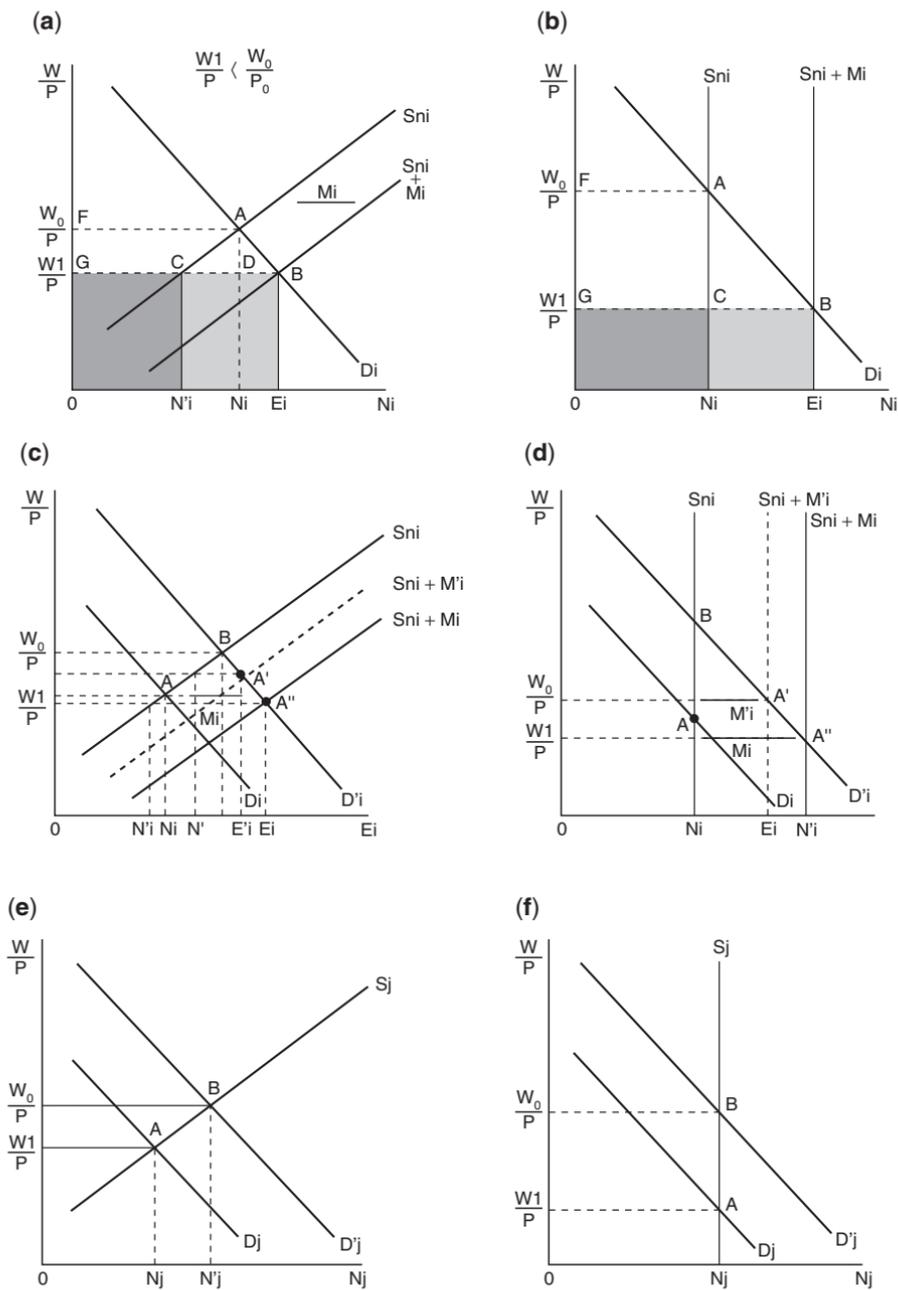
Figure 3.2. Labor market adjustment with immigration. Sni = supply of national workers of quality, i,Mi = number of immigrants of quality i, Di = Demand for labor of quality i, W/P = real wage, $W_0 > W1$ monetary wage, Ni = native employment before immigration, Ei, E'i = total employment after immigration, N'i, N''i = native emplyment after immigration, Sj = supply of natives of quality j, different from i, OFANi − OGCN'i = welfare loss by natives, section (a)

The more rigid the labor supply, the larger the decrease in wages and the smaller the decrease in employment; the more rigid the demand for labor, the greater the decrease in wages and the greater the number of workers displaced. However, if the demand[2] increases more than supply due to immigration, there is a complementary relationship, with an increase in both wages (point A′ in Figure 3.2d) and employment (point A′ in Figure 3.2c, which passes from ONi to Oni'; the increase is $NiNi'$).

Complementarity is found especially between the nonhomogeneous factors of production. For example, where the growth of Mi induces an increase in the demand of factor j, and depending on the characteristics of the supply, there will be an increase in both wages (Figure 3.2f) and employment (Figure 3.2 and $Nj' − Nj$).

Although this is a reasonable description of the workings of the market in the U.S. case, it is of little help in describing the European labor markets, where strong trade unions play a major role in wage determination and where both wage and employment flexibility are limited. Klaus Zimmermann in a series of theoretical studies – with Schmidt, Stilz (1994), and alone (1995), and with Bauer (1997)[3] – develops a working model of the labor market that assumes a monopolistic trade union; a labor supply made up of native skilled workers ($S°$) and unskilled workers ($N°$), the latter being homogeneous with the foreigners (M); and a quota of immigrants fixed by the government. The economic system produces only one good and is characterized by a production function for capital, skilled labor (S), and unskilled labour (L), with constant returns to scale. The output price is given, and the two factors of labor are q complementary, as in the standard case. The native workers offer a fixed amount of two kinds of labor. The immigrants (M) do not bring capital with them, and they do not influence the aggregate demand of the economy. A monopolistic trade union fixes wages (W^L) in the labor market for unskilled workers, and entrepreneurs determine the employment level; in the market for skilled workers (W^S), market forces determine the equilibrium wage.

The author suggests two cases: one where immigrants are perfect substitutes for unskilled workers (N), and a second where they can also replace

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[2] The increase in demand either can be exogenous or can be induced by new employment.

[3] Bauer and Zimmermann in their study dated 1997 used a different specification of the trade union's utility function, which is expressed as a function of skilled and unskilled workers' wages. The results are, however, similar to those found in the neoclassical model. In the case of unskilled worker immigrants, the effect on wages and employment is negative. In contrast, in the case of skilled worker immigrants the effect on unskilled wages is uncertain, but for reasonable values of elasticity a negative sign prevails, whereas the effect on the employment of unskilled workers is positive.

skilled workers (S). In the first case, the employed unskilled native workers account for a share g of the total of unskilled workers: $N = gL$, where $g = N°/(N° + M°)$.

The trade union has an objective function in which there is the weighting δ for skilled workers' wages (W^S) and for employed unskilled workers' wages (W^L), and the weighting ϕ for unemployed unskilled workers $NU = (N° - gL)$ who receive unemployment benefits z.

$$MAX_{w^L} \Omega = \delta w^s \overline{S} + (w^L - z)gL + zN° + \frac{\phi}{2}(N° - gL)^2 \qquad (1)$$

Where $\overline{S}$ and $N°$ indicate the values of skilled and unskilled native workers, respectively.

Profit maximization for the firm implies that wages are equal to the marginal productivity of labor, which in linear form is given by the following equation:

$$\overline{w^L} = a^L - b^L L + c\overline{S}; \quad w^s = a^s - b^s \overline{S} + cL, \quad dove \quad a^2, a^L, b^s, b^L > 0 \qquad (2)$$

Where the wage W^L is determined by the trade union and c identifies the degree of complementarity of the two factors.

From the first-order condition the following equation is obtained:

$$L - \frac{1}{b^L}W^L + \frac{1}{b^L}z - \frac{\phi}{b^L}(N° - gL) - \frac{\delta c\overline{S}}{g b^L} = 0 \qquad (3)$$

From this it is found that the relationship between immigration and the changes in unskilled workers' wages is negative, and that pushes the unskilled labor market toward a competitive equilibrium. The link between increased immigration and unemployment is uncertain, and it depends on the degree of complementarity between the factors of production and the weights given by the trade union to the components of its utility function.

Because the link between unskilled workers' wages W^L and the number of immigrants M has the opposite sign of the link between W^L and g (the number of employed unskilled natives), the authors decided to investigate the latter relationship:

$$\frac{dw^L}{dg} = \frac{\frac{\delta}{g}c\overline{S} + \phi L}{2 + \phi \frac{1}{b^L}} > 0 \qquad (4)$$

$$\frac{dNU}{dg} = \frac{\delta c\overline{S} - 2Lb^L}{2b^L} \approx 0 \qquad (5)$$
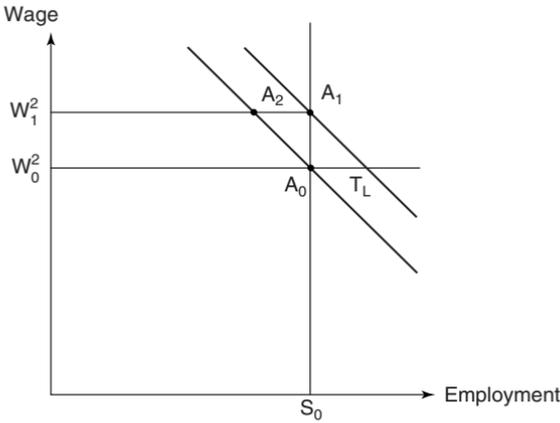
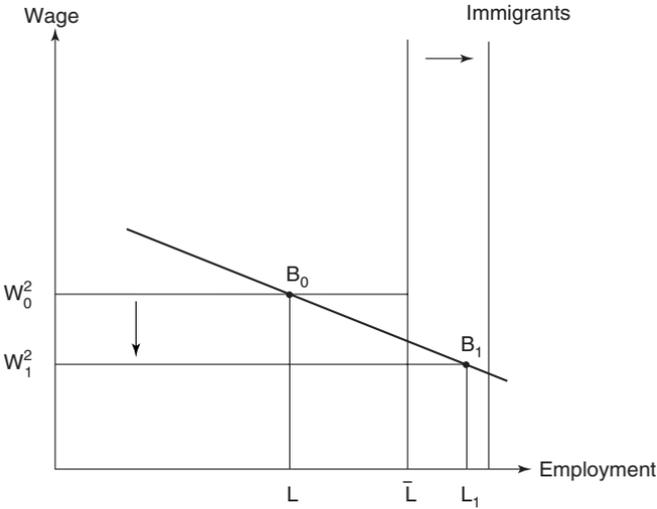Figure 3.3a. Effect of unskilled immigration on the skilled labor market

Figure 3.3b. Effect of unskilled immigration on the unskilled labor market

This result is shown graphically in Figure 3.3. The trade union has fixed a wage (W_0^L) for unskilled workers that is higher than the equilibrium level, resulting in a level of unemployment ($\overline{L} - L$). The entry of a number of unskilled immigrants (a quota fixed by the government) who compete with the natives forces the trade union to revise the market wage downward. This action brings the unskilled labor market to a more competitive equilibrium, with an increase in employment L_1, and this also has a positive effect on the

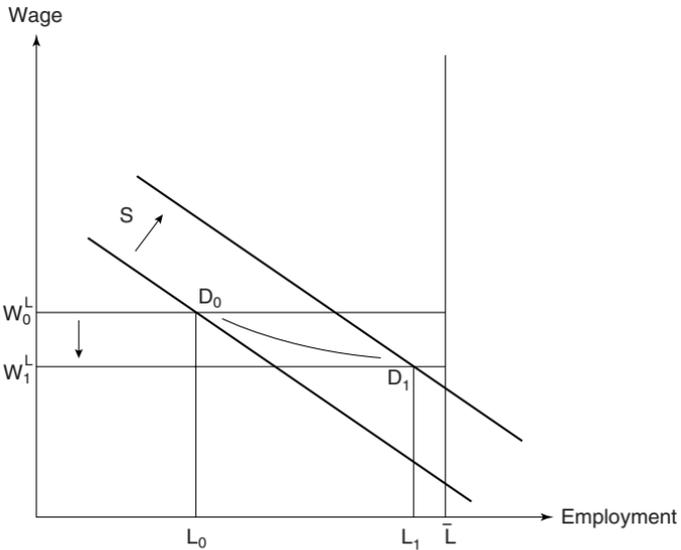Figure 3.3c. Effect of skilled immigration on the skilled labor market

Figure 3.3d. Effect of skilled immigration on the unskilled labor market. *Source:* Zimmermann (1994)

employment of natives. Furthermore, given the complementarity between unskilled work, and skilled work, there will be an increase in skilled workers' wages.

The final effect on the employment and unemployment of unskilled natives can be positive or negative, depending on the weights that the trade unions assign to the components of the utility function. In the case described, the new equilibrium B_1 identifies the case of a decrease in native unemployment.

In the second case, when some of the immigrants are skilled workers (*SM*) who are similar to skilled native workers, skilled workers' wages will decrease because they are determined in a competitive market. It is uncertain how their presence will affect unskilled workers' wages because this depends on the weights that the trade unions give to skilled workers' wages and the number of unemployed natives. Instead, where there is complementarity between the two factors of production, the effect on the unemployment of unskilled workers is negative.

$$\frac{dw^L}{dSM} = \frac{c\left(g + \phi\frac{g^2}{b^L} - \delta\right)}{2g + d/b^L} \approx 0 \tag{6}$$

$$\frac{dNU}{dSM} = -\frac{gc}{b^L}\left[g + \frac{\phi}{b^L}(1 - g^2) + \delta\right] < 0 \tag{7}$$

Such a model is interesting because it explicitly introduces the role of the trade unions. The results depend crucially on certain hypotheses, such as the supply of labor being inelastic to wages. Because the number of immigrants is a quota established by the government, the trade unions are forced to reduce unskilled workers' wages more than would be necessary to absorb the same number of unemployed native workers.

Another interesting case, especially relevant to the southern European countries, is described in an article by Dell'Aringa and Neri (1987). Competition is expressed through the movement of capital from the official sector (*u*) to the informal sector (*i*). Because the substitution takes place through capital, this can be called *indirect competition,* or *indirect complementarity.*

The authors assume that there is only one good (*Q*) in the economic system, part of which is produced in the official sector (*u*) and the rest produced in the informal sector (*i*). Neither the firms nor the workers pay taxes, and therefore labor costs are lower. In sector *u,* capital (*Ku*) is used and skilled workers (*Lu*) are employed; in sector *i,* unskilled workers (*Li*), made

up of native and immigrant workers, are used. The functions of production in the two sectors show constant returns to scale, but the returns in sector i are less efficient (the parameter c represents an efficiency parameter, which is inversely correlated to the risk of the informal firm that is identified).

$$Qu = Fu(Ku, Lu) \qquad Qi = Fi(Ki, Li) = cFu \quad (0 < c < 1) \qquad (8)$$

Wages in the official sector are fixed exogenously (w_u°) at such a level as to create an excess demand for labor in that sector. The firm maximizes profits when marginal productivity is equal to factor costs ($dFu/dLu = w_u^\circ$, $dFu/dKu = r$, $dFi/dLi = wi/c$, r cost of capital). In the case of wages in the official sector, factor costs are exogenous and in the informal sector are related to parameter c.

Adding the two conditions of full employment $K = Ku + Ki$ and $L = Lu + Li$, it is possible to identify the optimum combinations of capital and labor in the two sectors ($ku^* = Ku^*/Lu^*$ and $ki^* = Ki^*/Li^*$). There is a necessary and sufficient condition so that there is a positive solution for Lu^* and Li^* and that the following is true:

$$Ku^* > k > ki^*$$

That is, because the first is an increasing function of wages w_u° and the latter is an increasing function of c, it is necessary for wu^* to be sufficiently large and c sufficiently small. The previous condition can be rewritten substituting ku^* with the parameter m – which is function of wage w_u^* and of the parameters of the production function – and ki^* with tm, where t, which is less than 1, is a parameter whose value depends on c and on the parameters of the production function. The rewritten condition becomes $m > k > tm$.

At this point it is possible to calculate the equilibrium level of employment in the official sector Lu^* and in the informal sector Li^*. Employment in the official sector will therefore be equal to the following:

$$Lu^* = (K - tmL)/m(1 - t) \qquad (9)$$

It is now possible to find the derivative of the changes to the total labor force:

$$dLu^*/dL = -t/(1 - t) < o \qquad (10)$$

This means that an increase in immigration causes not only an increase in employment in the informal sector but also a decrease in employment in the official sector.

An increase in capital or a reduction in labor, ceteris paribus, makes it more convenient for firms to produce in the more efficient sector where the

intensity of capital is greater. The opposite occurs if capital is reduced or if the number of workers willing to work in the informal sector increases.

As shown in these models, complementarity and substitution between workers can be caused by extremely different types and trends in the labor market. Not knowing a priori the behavior of the domestic labor market, the only way to settle the age-old dispute concerning the role played by immigrants is to empirically test the relationship between the factors of production.

In fact, most literature on this topic is concerned with empirical research. The direction of the empirical literature is two-pronged: Either a traditional production function is tested in order to compute the cross-factor elasticity, or, more frequently, the number or the share of foreign workers is included among the explicative variables that identify the causes of changes in the levels of employment and wages for natives using cross-area or cross-sector information.

The research began with the cases of the United States, Australia, and Canada (Abowd and Freeman 1991; Borjas 1990; Borjas and Freeman 1992), which attempted to test theoretical models using cities, metropolitan areas, or productive sectors as closed labor markets in which employment and wages were influenced by the share of foreign workers. A detailed description and analysis of the empirical results is presented in section 3.2. In the meantime, we simply mention that for various reasons complementarity dominates the relationship between foreigners and natives. In early research, Borjas (1990) found that in the United States the effect of immigration on native wages is positive or nil; it is negative and significant only for early immigrants, and this is because they are the ones who are replaced by new immigrants. Similar results were found for Canada and Australia. In Europe, less homogeneous results are found.

The only study with a primarily empirical approach, which we would like to introduce at this stage is the one carried out by Gang and Rivera-Batiz (1994). The authors overcame one of the limits of the traditional empirical studies, which ignore skill differentials in areas or sectors, by splitting the contribution made by workers into three components – labor, human capital, and experience – and using special data supplied in a survey made by Eurobarometro of the EU; it is assumed that the individual's wage i (Wi) is made up of his or her offer of physical labor (ru) plus a return for education (Edi) and experience (Exi).

$$W_1 = r\,u + r\,e\;Edi + r\,x\;Exi \tag{11}$$

Where *re* and *rx* identify the return for education and experience in the market. An individual without education and experience on the job will earn only *ru*, whereas the other workers will receive a higher wage. The rates of return are equal to the marginal productivity of each single factor, given an aggregate production function ($Y = F(Le, Lx, Lo)$, where *Le, Lx,* and *Lo* represent the supply of education, experience, and physical labor, respectively). This function has the traditional neoclassical characteristics, and therefore

$$r_u = \delta F / \delta L_u; \qquad r_e = \delta F / \delta L_e; \qquad r_x = \delta F / \delta L_x \qquad \textbf{(12)}$$

Dividing immigrants according to their human capital, it is possible to measure the effect they have on the returns of each earning component and their ultimate effect on the natives' earnings:

$$Ln(Wi) = bo + brEdi + bxExi + ui$$

The model includes two hypotheses: First, the factors of production are assumed to be exogenous to each labor market, and therefore there is no internal migration. Second, the factors of production other than labor – capital, for example – are weakly separable from labor and so can be ignored. Using the available data for European countries on wages, education, and experience, the authors estimate the rates of return and get the price elasticity of factor K with respect to a change in input J. If this price elasticity is negative, it indicates substitutability between the two factors; if it is positive, it indicates complementarity between them. They also get the price elasticity of the factor with respect to its change.

$$\varepsilon_{kj} = \frac{d L n r_k}{d L n L_j} \qquad \varepsilon_{kk} = \frac{d L n r_k}{d L n L_k} \qquad \textbf{(13)}$$

The empirical results show that education is complementary to experience and to unskilled work, whereas unskilled work and experience are substitutes. A 1% growth in unskilled labor in Europe leads to an increase in the return to education of 0.10 and a decrease in the return to experience of 0.75. Choosing a sample of native workers with a combination of productive inputs, it is possible to calculate the composite elasticity of complementarity for different groups of immigrants who are supplied with different productive inputs. The results obtained show that complementarity is prevalent, and there are few cases of substitutability – that is, negative cross elasticity – and such cases are limited to those of native workers whose earnings are based only on returns to experience.

3.1.2 Wage Assimilation

Another topic that is well researched and has been debated widely is the issue of *wage assimilation* for foreign immigrants in the receiving country. This issue is important because it is linked to the overall assessment of immigrants' success and their impact on social expenditure. The more successful immigrants are in the labor market, the larger their contribution to economic growth will be and the smaller will be their cost to the welfare system, making them a positive element in the receiving country.

In the case of the United States, the debate centers on the work of Barry Chiswick, George Borjas, R. LaLonde, and R. Topel, but there are many other relevant contributions.

The estimated equation uses as explanatory variables for the wages of workers (i): a vector of socioeconomic characteristics Xi, the worker's age as a proxy of experience Ai, a dummy Ii, which specifies whether the worker is an immigrant, and a variable yi, which indicates the number of years the worker has been resident in the destination country, which is of course 0 for natives.

$$\mathrm{Log}\,Wi = Xia + b1Ai + b2Ai^2 + g^{\circ}Ii + g'yi + g''yi^2 + \epsilon i \qquad (14)$$

In his pioneering work (1978), Chiswick used a cross section drawn only from one census. He identified a negative coefficient for g° – which indicates the percentage difference between immigrants and natives at the time of arrival – and a positive coefficient for g' – which identifies the rate at which wages grow with respect to those of the natives – while a negative g'' shows an increase at a decreasing rate. The conclusion tended to support an "overassimilation" of immigrants, in that, in the short term they are able to catch up with and overtake corresponding natives. This result was not attributed to the lack of specific human capital in the receiving country at the time of arrival but rather to the fact that these people have a greater propensity to risk and possess more human capital, two factors that came to the fore over time.

Borjas (1985) reached a different conclusion. Using two censuses, he showed that the different wage structures of two cohorts can be missed in a single cross-section analysis, whereas a longitudinal analysis reveals a phenomenon of "underassimilation" (which can be attributed to the lower quality of the most recent cohorts) and therefore a higher g° and a lower g'. The different *quality* of cohorts at the time of immigration is imputed to various factors: changes in immigration policy to admit individuals with different characteristics, and different economic conditions in the destination

country, which changes the national mix of the immigrants and thus causes changes in the productivity of the workers. The quality of cohorts can also depend on changes in the composition of the cohorts due to non-casual repatriation.

Finally, LaLonde and Topel (1992) report similar results to those of Borjas (underassimilation of foreigners and a lower g'), but they attribute this not to the lower quality of the cohorts but to worse economic conditions in the receiving country at the time when the foreigner entered the labor market, offering his or her labor at a lower entry wage (negative $g°$) and having few career prospects (a lower wage pattern g'). The debate is ongoing, with new specifications and tests being introduced.

From an analytical point of view the problem is well known in labor literature. Building the pattern of wages in the life cycle using census data poses numerous problems of specification.

$$W_{it} = X_{it}\beta_t + \varepsilon it; \qquad \varepsilon_{it} = a_{it} + b_{it} + u_i \qquad \textbf{(15)}$$

The wage of an individual who belongs to the arrival cohort i in the year of the census $t(wit)$ is a function of a limited number of individual variables: Xit and the error ε. The latter is made up of three components: ait, the vintage factor, that is, the average value of human capital specific to the receiving country and accumulated by the cohort (i) on arrival; bit, the time factor, that is, changes in the labor market that have various effects on a foreign worker's human capital on arrival; and ui, the cohort factor, that is, the average value of the quality of the cohort, which is fixed for each given arrival cohort.

Using longitudinal data would simplify the problem because it would eliminate the error due to various qualities of cohorts. However, in the U.S. case and in many other panels, foreigners are undersampled or are not chosen in a random way. Thus, it has become the custom to build cohorts using census data, and this creates the problems of specification that we have mentioned.

With precise assumptions and specifications, it is possible to estimate the degree of assimilation of foreigners. In the studies by LaLonde and Topel, this does not reveal that the quality of the immigrants is getting worse but rather that the economic conditions are getting worse, causing the immigrants to have a lower wage pattern. More specifically, such an assimilation analysis suggests that the longer individuals live in the United States, the higher their wages will be and the closer their wage patterns will be to that of the natives who have the same characteristics. It is not possible to identify the

different kinds of error in an analysis of only one year, but with two periods of reference the estimated error is as follows:

$$\varepsilon_{55,t} - \varepsilon_{65,t} = a_{55,t} - a_{65,t} + b_{55,t} - b_{65,t} + u_{55} - u_{65} \qquad \textbf{(16)}$$

The estimate is correct if there is no time factor between the two cohorts ($E(b_{55,t} - b_{65,t}) = 0$) – a solution adopted in Borjas 1985 – and if there is no difference in terms of the average values of the quality of the worker ($E(u_{55} - u_{65}) = 0$) in the cohorts. If the quality of the worker decreases or if transitory changes reduce the new immigrant's wages, the assimilation of the foreigner will be over- or underestimated. LaLonde and Topel abandoned the use of cross-section estimates to create a quasi panel in order to follow the growth of wages of the immigrant cohorts from 1970 to 1980. It was indexed to a group of natives, and, using other simplifying assumptions, it was possible to specify the time component.[4]

The debate is not yet over. Daneshvary et al. (1992), for example, show how investment in knowledge and looking for work increases the wage that the worker manages to get and how it varies from one ethnic group to another. Chiswick (1991) shows how important the knowledge of written English is for wage assimilation. In the case of Canada, Baker and Benjamin (1994) come to the traditional conclusion that there are permanent differences between immigrant cohorts, and Bloom, Grenier, and Gunderson (1995) emphasize that the new immigration policy and the recession of the 1980s were the causes of the reduced assimilation of the most recent immigrants.

The debate in Europe is less heated because the studies are limited and extremely heterogeneous. Bevelander and Scott (1996) offer evidence that suggests that the case of Sweden can be interpreted in a similar way to that proposed by LaLonde and Topel. Using data from the 1970 and 1980 censuses and testing for the level of education, Bevelander and Scott show that the lower wage assimilation of foreigners – the inability of the more recent immigrants to reach 90–100% of the national wage within five years – can be attributed to the changed economic conditions in the receiving country.

Recent work by Rosholm, Scott, and Husted (2000) found in both Sweden and Denmark that from 1985 to 1995 the number of job opportunities for male immigrants decreased. However, these authors used a panel of administrative data showing that the worsening situation was independent of the different market trends in the two countries. Rather, it was caused

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[4] For details see La Londe and Topel (1992), pp. 76–7.

by the structural changes taking place in the markets, where the demand was for workers with high interrelationship and communication abilities, something that placed immigrants at a disadvantage. In another study involving only Denmark and again using administrative data covering the same period and testing a random effect model on foreign wages, Neilson et al. (2001) found that a foreigner's job assimilation increases not with the number of years in the country but the number of years worked in the country, thus emphasizing that a worker increases human capital only when working.

The work of Penninx, Schoorl and van Praag (1994) highlights in the Dutch case two perverse effects that reduce a foreigner's ability to assimilate and to achieve wage integration after the mid-1970s. The slowdown in the national business cycle made it difficult to absorb new immigrants in general (a decrease in demand) and in particular the different kind of immigrant – not in terms of quality (meant as human capital) but in terms of being political refugees or family members joining their kin. This new kind of immigration transforms it from labor migration to residential migration. Again, Kee (1994), in the Dutch case, estimates that one of the causes of the lack of assimilation is that few immigrants continue their studies in the receiving country. Niesing, van Praag, and Veenman (1994) analyze the causes of the higher levels – two or three times as high – of unemployment among foreigners, who in 1988 represented 5.1% of the population. This high rate can be traced to three factors. The first factor, which explains half of the higher unemployment, is the different personal characteristics of the individuals; the second and the third factors, which share the remaining half, are the different individual patterns of supply and demand (discrimination).[5]

In a study of England, Chiswick (1980), using data taken from the General Household Survey of 1972, found little difference between the incomes of white foreigners and those of comparable white natives, whereas black foreigners earned 25% less than natives. The difference in wages increased with the number of years of education. The fact that most foreigners came from the Commonwealth meant that experience before emigration was more or less the same as in the receiving country.

The only controversial situation is the case of Germany. The empirical study carried out by Dustmann (1993) uses the individual data panel of

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[5] The authors' estimates show that discrimination is much greater against Mediterranean immigrants than against immigrants from Antilles and Suriname. But if the latter lose their jobs, they have little chance of getting another one.

GSOEP and shows lower earnings for foreign workers during all their working life and traces this finding to the temporary nature of the migratory flow. This conclusion is contradicted by an analysis of the same dataset by Schmidt (1993), which shows that a foreign worker's earnings are equal to a native worker's earnings after seventeen years. Pischke (1993) finds that there is no difference in the rate at which incomes grow between foreigners and natives in comparable jobs, even though foreigners never reach the same wage level as natives.

The different findings depend on the reference group with which the foreigners are compared. Because Dustmann uses all natives, white-collar and blue-collar workers, the lack of convergence can be explained by the low skills of the foreigners. However, the small number of recent immigrants in the sample makes it difficult to study wage trends.

Mackay and White (1995) studied a theme, wage segregation, that is dear to English researchers. The authors built a wage segregation index for England in 1987. It revealed very little ethnic variability, but it varied inversely to education, unemployment, and gender.

Granier and Marciano (1975) examined the case of France using data from the 1968 census in a descriptive way. They reached static conclusions, suggesting that the lower average wage for foreigners with a nuclear family is caused mainly by less investment in human capital, and this varies substantially according to ethnic group.

For the southern European countries very little research exists on this subject because the immigration phenomenon is recent. However, Venturini and Villosio (1999; 2000; 2002a, b, c) studied the Italian case using an administrative dataset (INPS). Unfortunately, these data do not cover employment in the domestic services and in agriculture, but they represent about 70% of total regularly employed foreigners. The authors studied the dynamic of native–foreign wage differentials and turnover rates. In 1990–96 the average wage differential between natives and foreigners is 1.15 (log 0.13), much lower than the gender wage differential, as usual.[6] The construction of a specific variable – years of presence in the dataset (which proxies the years of regular presence in the country) – improves the results and brings the explained part due to the different characteristics of the two groups to 80%. It also contributes to a reduction of the wage differential over time. The analysis by ethnic group shows that employers value potential productivity, offering a wage premium (a negative wage differential) to foreigners who

[6] Using the same dataset Bonjour and Pacelli (1998) calculate a log gender differential of 0.225, only 25% explained by the different characteristics of the labor force.

have average higher education and productivity (for example, Rumanians). These variables are missing in the dataset but are captured by the individual wage. In the same way, the turnover rate of foreigners decreases sharply after the second year of formal employment, stressing how regular foreign workers are economically integrated and how rapidly they assimilate into the wage and employment patterns of natives.[7] This positive result is probably induced by the evolution of the Italian immigration policy. Repeated amnesty provisions (legalizations) legalized only those workers who were already trained in the informal economy and in the culture of the destination country and thus found it easier to integrate.

From this brief survey of the main empirical results of wage and employment assimilation of foreigners, it is possible to conclude that assimilation depends on the average human capital of the group of immigrants, whether "group" refers to a cohort or to a country of origin. It also depends on the economic growth of the labor market in the destination area as well as on structural changes in the labor market, which can penalize the ability of the immigrants. Assimilation increases with actual work experience, not merely with longer residence in the receiving country or – in southern European labor markets where a black market is common – with informal employment.

3.1.3 Impact on Economic Growth

The third approach considers the impact of immigration on economic growth. The idea that the foreign labor force can represent the engine for economic growth is based on studies carried out in the 1950s and 1960s. It is sufficient to remember the famous work by A. W. Lewis (1954), where

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[7] In the Italian case there are two very interesting local studies. The first one focuses on the gender differential among foreigners (Strozza, Gallo, and Grillo 2002), and the second on regular–irregular wage differentials (Baldacci, Inglese, and Strozza 1999). The first research uses a survey dataset that is much more informative than the administrative one used in the Venturini and Villosio work but is limited to foreigners. It includes important information, such as years of education, proficiency in the Italian language, and the number of relatives. Taking all this information into account, the log wage gender differential is 0.182 for Moroccans, 0.341 for former Yugoslavs, and 0.288 for Poles. It is higher than in the native–foreigners case shown before but is very similar to the native gender wage differential mentioned earlier. In addition, the different national employment behavior is reproduced in the male–female differential: In the former Yugoslav and Polish groups, the wage differential is caused mainly by differences in human capital; the unexplained part is about 10%, whereas, in the Moroccan case, the differential is totally unexplained.

The second research uses another dataset: the results of survey conducted in 1993–4 of foreign immigrants in two regions (Latium and Campania) with a much larger number of ethnic groups. Baldacci et al. (1999) estimate the legal–illegal wage differential, which results in log 0.246 for male and 0.192 for female immigrants in both cases, indicating lower earnings from illegal work.

migration from low-wage sectors to high-wage sectors not only brings relative wages into line but also favors the growth of output, through higher profits. C. Kindelberger (1967) interprets economic growth after the war as being the fruit of an infinite supply of immigrants in a situation of overemployment. V. Lutz (1961) also thinks economic growth derives from the transfer of productive resources from less productive sectors to more productive areas.

The problem has always been seen and analyzed in the context of links between population and economic growth and therefore the impact of population on the rate of accumulation and technological progress. The work quoted by Tapinos and de Rugy (1993) regarding the United States, Australia, and Canada[8] provides positive results, but they are of a limited number and are attributed exclusively to economies of scale and market expansion. The debate is often based on arguments that are difficult to test. For example, Simon (1989) argues that one of the many positive aspects of scattered migration is the positive impact of a multiethnic society on technological innovation.

The studies that analyze the impact of immigration on per-capita income adopt it as the only measure of the well-being of the native population. This does not necessarily imply a decrease in income for natives if foreigners' per-capita income is lower than that of natives.

In Europe before the mid-1970s, there was a consensus regarding the effect of immigration on economic growth in the receiving country (Garson and Tapinos 1981), but subsequent empirical studies have raised a number of doubts. The case of Switzerland, a country that has always exercised strict control over immigration, reveals that the output elasticity of the labor force is lower for foreigners (0.10) than for natives (0.46) (Butare and Favarger 1995). This means that foreigners have a positive impact on the growth of income but not on per-capita income.

To discuss clearly the impact of immigration, it is necessary to bear in mind the links that exist between the productive system and the level of human capital of foreign workers. Few studies manage to deal with these two aspects together. Solow's growth model is elaborated in a version proposed by Lucas (1988), which explicitly takes into account the growth of human capital and makes it possible to analyze the impact of immigration on the growth rate of the receiving country. The conclusions reached in the literature (Dolado, Goria, and Ichino 1994) converge in identifying a positive

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[8] It has been impossible to trace the study of Mayer (1990), quoted by Tapinos and Rugy in their review (p. 165). See also the work of Swan et al. (1991) and Simon (1989).

effect on the growth of per-capita income in the receiving country if the foreigner's human capital is higher than the native's, and vice versa if it is lower.

The economy has a production function in which human capital is inserted explicitly,[9] where Y represents the level of output, H is human capital, and L is the total working population (natives plus net immigrants $L_o + M$), whose productivity increases at rate g.

$$Y = H^a (Le^{gt})^{1-a} \quad 0 < a < 1 \tag{17}$$

The total number of effective workers increases because the population, made up of natives and net immigrants, increases, and also because of the technological growth incorporated in that population.

Human capital in turn increases in relation to the share of output (s) invested, plus the share (b) of the existing stock of human capital introduced by each immigrant. Human capital is reduced by the rate of depreciation (d).

$$\dot{H} = sY - dH + bM\frac{H}{L} = sY - dH + mbH \quad \text{where} \quad m = M/L \tag{18}$$

$$y = h^a = \left(\frac{H}{L}\right)^a = \left(\frac{H_o + Mb\frac{H_o}{L_o}}{L_o + M}\right)^a \tag{19}$$

Using lowercase letters for the units of labor results in the following:

$$y = h^a; \; y = \frac{Y}{L_e^{gt}}; \; h = \frac{H}{L_e^{gt}} \tag{20}$$

Thus, the effect of net immigration will be positive or negative if b, the share of human capital brought by immigrants, is $\gtrless 1$.

$$\delta y/\delta M = \frac{ah^{a-1}}{L^2} H_o(b-1) \quad > o < 0 \tag{21}$$

From this it follows that for a given value of b, more immigration will make the current level of per-capita income increase (or decrease) if b is more (or less) than 1.

The authors estimate the equilibrium value of the stationary state of the parameters for a sample of twenty-three OECD countries from 1960

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[9] Solow's model, augmented by immigration, has been used. See also Mankiw, Romer, and Weil (1992).

to 1985, getting an estimated value for b of between 1.41 and 0.72. This value is similar to the values obtained for some European countries, with the expected effect of a decrease in per-capita income. Because the immigration flow was exogenous and using the parameters of the model, the authors estimate the effect of immigration on growth. According to the model, an increase of one per thousand in the net migratory flow decreases the equilibrium per-capita income in the stationary state by 1.5% and decreases current income by 0.04%. This outcome, however, is less than the negative impact of population growth on the growth of per-capita GNP.

The theoretical model used to analyze the impact of immigration on a country's growth can be extended to analyze the impact of emigration on a country of origin, and thus it is possible to study how population movements lead to convergence. The theory is that growth in the departure area is favored by the emigration of workers with few skills, whereas the rate of growth in the area of immigration is decreased by workers with few skills, thereby converging the rate of growth and the rate of per-capita income in the two areas (see, for example, Goria and Ichino 1994 and Piras 1995 for Italian regions). Taylor and Williamson (1994) have written an interesting article that assesses the role played by immigration in the United States from 1870 to 1913 – specifically, whether it was a factor that made the incomes of the countries of immigration converge with those of the countries of emigration.

Another particularly interesting article, which treats the topic only in theoretical terms, was written by Davies and Wooton (1992). The authors analyze the effect of the international migration of workers on the distribution of income in the departure country and in the receiving country. This study overturns the traditional assumption that the migration of unskilled individuals reduces the difference in incomes in the departure country and increases it in the receiving country. As in the case of the migration of skilled workers, the authors question the assumption that the variance of the distribution of income in the receiving country is reduced and in the departure country is increased. The authors show that the migration of unskilled workers can have a twofold effect, and they show that although the movement of skilled workers can reduce inequalities in income in the departure country, differences can increase in the receiving country.

Sarris and Zografakis (1999) and Ferri, Gomez-Plana, and Martin-Montaner (2000) analyze Greece and Spain, respectively, adopting a computable general economic equilibrium model and using the most recent data. They consider the effect of immigration on the well-being (income)

of the population and find that families maintained by unskilled workers became poorer.

3.1.4 Impact on Social Expenditure

A fourth line of research concentrates on measuring the impact of foreigners on social expenditure. This approach is often reduced to an attempt to supply an overall estimate of the costs and benefits of immigration. Simon (1989) pursues ten lines of inquiry so as to analyze the whole problem correctly. Unfortunately, some of his findings cannot be tested. For example, the impact of immigration on technological innovation is assumed to be positive because a multiethnic society is more willing to adopt innovation.

The more limited field of the effect of immigration on social expenditure has produced numerous theoretical studies and a few empirical ones on specific topics, such as fiscal contributions, the payment of pensions, health contributions, and the use of health services. However, the cross-section analysis that is generally used is not suitable for analyzing an issue that has a life cycle dimension. Errors due to different composition and different quality of the cohorts (vintage and cohort errors) can influence the results.

George Borjas (1995b) used longitudinal data for the United States in a series of empirical studies on this topic. In his 1995 study he used data from the 1970, 1980, and 1990 censuses and showed that foreigners took advantage of welfare programs less than their native counterparts during the initial and final stages of their lives. But this pattern changes with later immigration flows. The turning point is reached when immigrants make greater use of welfare services at all stages of life. Immigrants such as political refugees take advantage of welfare programs more than other working immigrants, and their growth in numbers in the past few years has certainly weighed on the aggregate results: Immigrants account for 8% of the population but 10.1% to 13.1% of social assistance.

In a later paper Borjas and Hilton (1996) used the Survey of Income Programme Participation (SIPP), showing greater differences between groups of immigrants in their use of welfare programs. In part, we can impute the differences to the fact that information about such programs is filtered through the reference community. Most recently Borjas (1999a, 1999b) using data from the 1980 to 1990 Public Use Microdata Sample of the U.S. censuses, concentrates on the possibility that welfare can determine, if not the choice to migrate, at least the choice of where to settle. That is, the immigrants who use welfare more were concentrated in the areas where the benefits were more generous.

From these studies, it is not possible to draw any conclusions for the European case. There are three problems:

- The welfare programs differ – that is, they provide different social guarantees and systems of organization of such guarantees for native citizens.
- Access to welfare differs between natives and foreigners – that is, the extension of the social rights of citizens to immigrants is applied differently in different countries.
- The use of welfare differs and is strongly conditioned by the different reference communities.

Initially, European migration was mostly temporary migration from the south to the north and involved workers who returned to the departure country before they had become vested in a pension but after they had paid some contributions. The possibility of capitalizing a pension and cashing it out when they return home has canceled this kind of benefit for the budget of the country of destination and has made it necessary to analyze what use is made of social services by immigrants in their old age or by their families. The different rates of unemployment and the use of available services by ethnic groups – often greater among the most recent immigrants – lead to the conclusion that lower-skilled immigrants are attracted not only by job market opportunities but also by income subsidies.

Staubhaar and Weber (1994) reviewed the empirical results of studies of costs, taxes, benefits, and transfers made by the state to foreigners.[10] Direct comparisons between countries are almost impossible because different statistical and fiscal definitions mean that items of expenditure are grouped in different ways. However, the conclusion reached in this research, as shown in the summary in Table 3.1,[11] is that immigration does not necessarily have a negative effect on public finances. In fact, in most cases it is neutral or doubtful, and in some cases it is positive.

The results of case studies in Europe are very limited; the studies of Germany and Switzerland are highlighted in Table 3.1. Detailed inquiries have been made into the use of unemployment payments in other countries, such as in the Netherlands and in northern Europe, but these studies are directed more toward examining the unemployment differentials

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[10] Interesting results regarding the United States, Australia, and Canada are developed in the work by Tapinos and de Rugy (1993, pp. 169–70).

[11] Table 3.1 is taken from the work quoted by Staubhaar and Weber (1994) and has been integrated with recent work quoted by Tapinos and de Rugy (1993), which, however, has not been examined directly because a complete bibliographic reference was not available.

Table 3.1. *Empirical research on the distributional effects of public transfers between immigrants and natives*

Author	Budget positions analyzed	Area of analysis	Transfer effect for the natives
Simon (1984)	Taxes and public transfer payments	United States	Positive
Blau (1984)	Benefits from public welfare and social security programs	United States	Neutral
Muller and Espenshade (1985)	Tax payments and use of public social programs	United States	Neutral
Tienda and Jensen (1986), Jensen and Tienda (1988), Jensen (1988)	Use of public social programs	United States	No general statement possible
Weintraub (1984)	Tax payments and use of public services	State of Texas and its biggest cities	State level: positive City level: negative
Akbari (1989)	Taxes and public transfer payments	Canada	Positive
Kakwani (1986)	Taxes and public transfer payments	Australia	Positive
Whiteford (1991)[a]	Taxes and pensions Other social security benefits	Australia	Positive
Miegel (1984), Wehrmann (1989)	Use of public social programs	Germany	Negative
Ulrich (1992)	Taxes and public transfer payments	Germany	No general statement possible
Wadensjö (1973), Ekberg (1983)	Taxes and public transfer payments	Sweden	Positive
Gustafsson (1981)[a]	Use of public welfare programs	Sweden	Negative
Gustafsson (1990)	Taxes and public transfer payments	Sweden	Neutral
Weber (1993)	Total of monetary and real public transfers	Switzerland	Positive

[a] Unfortunately, these two researches do not have complete bibliographical references in the Tapinos and Weber article.

Source: Straubhaar and Weber (1994), p. 120, and Tapinos and de Rugy (1993), p. 169

between foreigners and natives than the differentials in contribution to social expenditure. Thus, no definite conclusions can be drawn on the issue.

Straubhaar and Weber (1994) try to estimate the impact of foreigners on the Swiss fiscal system using a special inquiry into consumption in 1990. They include, on the income side, payments to the public budget in direct and indirect taxes as well as social payments and contributions for the use of public goods and club goods (education, public health, protection of the environment, etc.). On the expenditure side, the study includes direct transfers to firms and the use of public goods and club goods.

The budget impact turns out to be largely positive for the Swiss government, which received a net transfer per family of about $1,743 in the year under examination. Given the number of foreign resident families, there is a net gain of about $464 million for the Swiss government. The authors conclude that the optimum level of immigration has not been reached in that country, and there is still the possibility of new flows. This result can be attributed in part to the selective immigration policy, which is such that the rate of unemployment of immigrants is higher than for natives, but about 1%.

Migration in Europe also changed a lot in the 1990s, with the immigration from eastern Europe and large inflows of political refugees. Thus, previous results no longer hold because of changes in the nature of immigration itself. Recent research has focused on Germany. The work of R. Riphahn (1998), Fertig and Schmidt (2001), and Bird, Kaiser, and Frick (2001) fundamentally show that immigrants are more welfare dependent because their individual characteristics – lower education, larger families, lower age of the household head – and their lower labor market performance compared with those of natives increase their use of welfare.

Recent research carried out by two teams – one European and one from the United States – tried to reach conclusions about immigration and welfare (Boeri, McCornick, and Hanson, eds., 2002). In the European case they use the information of the European household panel to single out foreigners' welfare dependency. Unfortunately the data do not cover all issues, but the authors did test in ten European[12] countries whether non-EU immigrants have higher predictable dependency than EU natives on unemployment and family benefits. The results are positive in all the countries, with a stronger dependency ratio, for example, for family benefits in the Netherlands, the United Kingdom, France, and Austria. Even if the dataset is unique, it is not

[12] Denmark, the Netherlands, Belgium, France, the United Kingdom, Greece, Spain, Portugal, Austria, and Finland.

sufficient to detect welfare shopping by the immigrants at the European level; for the southern European countries, the recent waves of immigrants are probably not sufficiently sampled in the dataset. Thus, no final conclusion can be drawn from these cases.

In the U.S. case, the debate and the research are much more advanced. The results show that the average fiscal impact of immigration is negligible, but the federal government gains from immigration. Many programs used by immigrants are financed at the state level, and because immigrants are negative net contributors to the cost of these programs, some states must bear larger costs. Illegal immigration is an important part of the U.S. research, but very little is said on illegal immigrants' use of public utilities and social services. In contrast, this issue is important in the southern European countries even if its impact on the cost of welfare is likely to be small.

Attempts to analyze the impact of immigration on social expenditure in southern European countries are only now beginning because migration is still a recent phenomenon. Census data are not available to replicate the U.S. study, and there are no longitudinal datasets that can be used to follow the economic integration of foreigners. In these countries, however, the cost of immigration is augmented by the pressures of clandestine foreigners. Illegal entry must be prevented by coastal and land patrols, and illegal foreigners who have already entered the country and have been detected after a stay at a reception center must be expelled, and these policies are all costly for government budgets. The stay of illegal immigrants is a further cost because they use health and welfare services, even if in a limited way. Little can be learned from other European studies about such costs because attention has been concentrated on the impact of legal immigrants.

3.1.5 Effects on the Native Population and on Pension Fund Accounts

Immigration policy is determined not only by economic and political factors but also by demographic factors. Examples are the migrations around 1900 and after the Second World War (Gesano 1994) and, even earlier, the French migratory policy. The French have always had an active demographic policy in that France has always tried to ensure that its army was equal to that of its neighboring enemy, Germany. Immigration represented an alternative source of population growth to native births, allowing the size of the cohorts to be kept under control.

Immigration and emigration today have lost their specific demographic connotation, and economic and political factors have come to the fore.

However, the impact of immigration on the population of the receiving country can still be very important.

The demographic effect of migration depends on the demographic structure of the receiving country and on the way foreigners settle there. The demographic characteristics of the population of the receiving country are influenced by the presence of foreigners because of their effect on the early cohorts, their distribution between genders, and their initial high level of fertility. The effect is much more relevant when it is concentrated in age groups. An example drawn from the history of migration in Italy (Golini 1978) emphasizes that at the end of the large internal migration, the inward flows caused the population of the 20–64 age group to increase by 68% in Turin, whereas the same age group decreased by 40% in Molise.

The study led by Tribalat et al. (1991) reveals that after 100 years of immigration in France, from a demographic point of view, the average age of the male population decreased by 1.3 years and for women by 0.8 years. A study carried out in the Netherlands by Penninx, et al. (1994) showed a decrease in the average age of 0.6 years, and the share of over-65s fell by 0.4 percentage points (Gesano 1994).

Interest in the effect of immigration on the generational composition of the population of the receiving country is no longer primarily demographic but economic. The receiving countries are mainly countries with decreasing fertility, and therefore the size of cohorts of working-age young people is smaller than the size of cohorts of people of retirement age. In industrialized countries, most pension funds are financed on a pay-as-you-go basis – that is, contributions that are paid into the current budget are used to pay current pensions. Therefore, the number of people of pensionable age must be proportionate to the size of the population that contributes to the fund.

As life expectancy in the receiving country increases, there is the risk that the number of pensioners and people of pensionable age will exceed the number of those making contributions. Thus, immigration that is made up of young people whose fertility rate is higher than that of the natives represents a way to increase both the number and the growth rate of the actual population.

From a demographic point of view, the equilibrium of the age cohorts is reached when the population reaches the stationary state. Many studies have been carried out to discover whether immigration can counter aging and a decrease in population caused by a fertility rate that is lower than the *substitution* level – that is, able to maintain the population constant and with the same pattern of age cohorts.

To ensure a constant rate of population growth equal to 1%, the study of Wattelar and Roumans (1991), quoted in Gesano (1994), shows that Canada – a country whose population is not very old – should accept much higher net flows of immigration than the current average: about 500,000 per year until 2050. In the European case, the research of Lesthaeghe, Page, and Surkyn (1991) shows that flows of immigrants should be about one million per year, a figure that is higher than the highest annual level yet recorded.

If instead the aim is to counter the aging of the population with new cohorts of young people so as to maintain the dependence ratio constant – that is, maintain the ratio between the population of working age and those over 65 (the optimum value is 3) – then many inward flows are necessary. Such immigration would cause the initial population to double over sixty years and would create an autonomous demand for new inflows to counter the aging of the immigrants themselves. If instead the aim is to maintain the share of the population of working age, 20–59, constant, there would have to be a relevant growth of population, although less than in the preceding example; but again in this case there would be wide fluctuations.

Admitting immigrants (net of immigrants who return home and emigrants) at a constant rate seems to be the only way, in the long term, that the average age of the population can be lowered in the receiving country without upsetting the preexisting equilibrium. In the case of Italy, Gesano (1994) estimates that the number of immigrants necessary for Italy to have a stationary population is equal to 30% of the native population. This rate of immigration would lead to a maximum population of 69 million in 2039, with a net annual flow of 389,000 immigrants. Smaller inflows would lead to a stationary population, but at a later date. The alternative choice, which is to have a fixed rate of immigration (5.2–5.3%), would lead to slightly smaller flows, and a stationary state would be reached much later.[13]

Using a generational account approach, Coda (2001) writes that in Italy the positive impact of immigration can reduce the public budget deficit by 8%, but that if structural reforms are not introduced, the annual number of immigrants necessary to make up the deficit is the impossible figure of one million. However, the most interesting result that emerges is that temporary

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[13] Many of these exercises assume that the fertility of foreigners is the same as that of the natives, but, as is well known, this assumption is not realistic and makes it difficult to forecast the impact of immigration flows. The demographic effect of immigration tends to be underestimated, and the inflows necessary to maintain a stationary population are overestimated.

migration is less attractive than permanent migration because the positive contribution of an immigrant's fertility would be lost.[14] Using a similar methodology in Spain, Callodo, Iturbe-Ormaetxe, and Valera (2002) reach a similar conclusion, although their use of the European socioeconomic panel dataset to build the age consumption profiles is risky given the limited sampling of the survey. In addition, the authors do not specify the interest rate at which the process is discounted, something that probably justifies a more positive presentation of the immigration effect on the national budget.

As Blanchet (1988) emphasizes, immigration policies aimed at bringing the age structure of a population back into equilibrium in the short term create the need for more substantial corrective measures in the long term. There are no short-term solutions, and the best strategy is to adopt a fixed rate aimed at establishing a stable rate in the long term.[15]

3.2 COMPLEMENTARITY AND SUBSTITUTION: EMPIRICAL EVIDENCE

Much attention is devoted to the issue of the competition or complementarity of immigrants in the destination labor market. The debate in the southern European countries is concentrated on this issue, and immigration policy is constantly being revised.

Before we investigate this issue, we must remember that the empirical studies of European countries are limited and difficult to compare. We therefore start by examining the results of studies carried out in the United States, Canada, and Australia so that we can assess the methodological problems and the dynamics, which determine the results, before we consider the cases of northern and southern Europe.

3.2.1 Comparing the United States, Canada, Australia, and Northern Europe

As mentioned previously, there is a big difference between the theoretical approaches to complementarity and substitution of natives and immigrants

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[14] The assumptions that condition the results can be seen in the study. The same methodology was adopted by Sartor (1997), who also studied the Italian case.

[15] Zlotnik (1981) and OECD (1991) reviewed the models used to estimate the effects of various patterns of migratory flows on the population of the receiving country and discussed the difficulty in identifying the optimum flow that would keep the worker/pensioner ratio constant.

as compared with empirical tests of these phenomena. Most empirical studies – for example, those of the United States – analyze the impact of immigrants on the local (or sector) labor market.[16] They assume closed markets and use a cross-section study among areas (or sectors) where the intensity of immigration varies. Therefore, it is possible to calculate an elasticity between the number of immigrants (or the quota of immigrants) and wages (or employment of native workers divided into homogeneous groups – native whites, young native whites, black natives, young black natives, Hispanic natives, Asian natives – depending on the various studies). The very first study by J. B. Grossman (1982) analyzed the impact of immigrants on employment and wages of three groups of workers: natives, native children (second-generation immigrants born in the United States), and immigrant workers already in the United States. This work reveals that the effects are very weak. An increase of 1% in the number of immigrants led to a decrease in the wages of natives of 0.1%, the wages of the second-generation immigrants decreased by 0.08%, and the earnings of immigrant workers already in the country decreased by 0.23% (the number of natives employed decreased by 0.1%, and the employment of second-generation immigrants decreased by 0.04%). The "new" immigrants hardly competed with the natives, but they clearly competed with the immigrants already in the country because the two groups are more homogeneous. Changes in capital do not seem to affect the results because all the factors of production are complementary.[17] However, these results reveal a common limit to most studies on this topic: They do not allow for differences in "average skills" between natives and foreigners in different areas (or sectors).

Later studies by Borjas (1985, 1987, 1990) reach similar conclusions. Particularly in the work of 1986, Borjas analyzes the effect of different kinds of demand for labor on the results in a cross-section estimate. He finds few differences. However, the time analysis, which uses two censuses, reveals a larger impact than a pure cross-section analysis does. Similar results are found in other studies – for example, the work of Briggs and Tienda (1984), where immigrant workers are complementary to all classes of workers, and competition comes from the women's labor force. Similar complementarity between immigrants emerges from the study by Muller and Espenshade (1985). In this case it is between Mexican and black workers,

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[16] Borjas (1994) in footnote 30 emphasizes that, in sector and labor market studies, there is no structural interpretation because workers as well as firms can move among sectors and areas.

[17] This result is often contradicted in theoretical models and by some empirical studies.

and surprisingly they are the group of workers who seem to gain most from immigration.[18]

More specific studies of groups of workers who are more at risk show similar results. LaLonde and Topel (1992) analyze the impact that a 1% increase in the number of foreign workers in an area or sector would have on young native workers. The authors find that the annual wages of young Hispanic workers would decrease by 0.2%, and the annual wages of young blacks would decrease by 0.6%.

Similarly, Altonji and Card (1991) find that the effect of immigrants on the employment of low-skilled natives is slight, whereas the impact on their wages varies between –0.3 and –1.2%, depending on the specifications used. These results have been challenged by Borjas (1994) on the grounds that the instrumental variables used were not really appropriate and so should show higher levels. However, the effects are still modest.

The effect of immigration seems particularly reduced if we consider the exceptional emigration of Cubans in September 1980 following Fidel Castro's announcement that anyone who wanted to emigrate to the United States could do so freely from Mariel port. This emigration represented a 7% growth in the labor force of Miami.[19] And as Card (1990) shows, the effect on natives' wages and employment was not significant, and the evolution of wages and employment in Miami was not different from that of cities that did not have any immigration.

Furthermore, illegal immigration does not seem to have a negative effect on workers. Bean, Lowell, and Taylor (1988) assume that Mexican immigrants after 1975 entered illegally, and the authors estimate the effect of this illegal immigration on various groups of workers. The results show that there was no competition even with Mexican immigrants who arrived before 1975, the group that would more easily be competitive than the other groups of workers.

The studies of Canada and Australia are less numerous but tend to reach the same conclusions. The study directed by Swan (1991) for the Economic Council of Canada analyzes only the effect of immigration on unemployment, which seems to be nil. The authors also report a series of results of estimates of aggregate econometric models (p. 56), which forecast that if the labor force increases there will be a corresponding growth of unemployment equal to one-half or one-third of the growth of the labor force. In the case being examined, such empirical evidence could be interpreted

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[18] For another survey of empirical results regarding complementarity and substitution, see Tapinos and de Rugy (1993) and Borjas (1994).

[19] In the space of a few months, the labor force of Miami increased by 125,000 unskilled workers.

as demonstrating that it is the growth in immigration that induces growth in unemployment. Swan and the other authors of the report are skeptical of such an interpretation because it is not specified who becomes unemployed, and especially because the positive links between immigration and unemployment were not confirmed. On the one hand, the authors emphasize a neoclassical interpretation of the labor market. On the other hand, they draw attention to the importance of a selective immigration policy to improve the way the labor market functions.

In Withers's study of Australia (1986), a survey of the empirical tests on the effects of immigration provide similar results, showing a lack of competition between foreigners and natives with respect to employment and wages both in the short term and in the long term.

In short, the available empirical evidence shows that immigration has a primarily negative, but limited, effect on the wages of various groups of native workers, and more or less no effect on the employment and unemployment of the groups most at risk: young people, those with little skill, and ethnic minorities.

How do the authors explain this somewhat surprising result? In the U.S. case, the thesis is that immigrants have no significant effect on the wages of natives because the natives can "vote with their feet" – that is, they can move to where better jobs and better pay are available. Also in this case the high mobility of the U.S. labor market is considered to have a beneficial effect on the native labor force. This interpretation is reinforced by the research of Filer (1992), which analyzes the impact of a flow of immigrants on native mobility in a local market. He finds a significant negative relationship between the immigration flows[20] and the net flow of native migration, a result that can be explained by natives moving when general prospects worsen. There is a larger negative impact on the wages of earlier immigrants already in the country, and this is attributed to the limited internal mobility of foreigners, who tend to settle where there are important ethnic communities. This is shown by the fact that 70% of the Mexicans who live in the United States are in California or Texas (Martin and Midgley 1994).

At this point we should consider a methodological aside. If, on the one hand, internal mobility decreases the negative effect of immigrants on native wages, on the other hand, it spreads the immigrant effect to other areas and so reduces the ability of this cross-section approach to measure the effect it has on native wages and employment.[21]

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[20] Net migration grows if the inflows $(+)$ are greater than the outflows $(-)$.
[21] This weakness of the approach is pointed out in more detail in Borjas (1999b).

In the Canadian and Australian cases, the lack of any significant effect of immigration on wages and employment of natives – which, if anything, has had a positive impact – is attributed both to the mobility of workers and to the high selectivity of the immigration policy, which can choose and attract workers who, on average, are more skilled than immigrants in the United States. It is well known that Canada and Australia use a strict point system to authorize entry, which is linked to labor demand and the age of the population. The countries' geographic positions – not bordering other countries with strong emigration pressure – has meant that it is not necessary to make a strong effort to apply a restrictive immigration policy. This system favors workers whom the labor market actually needs. Furthermore, U.S. migratory policy was, with the 1965 Amendment Act, centered on family reunification, whereas the policy in Canada, with the 1962 Immigration Act, removed national restrictions but focused attention on "skill requirements"; and in Australia, only during the 1980s was family reunification emphasized (Borjas 1988). With such laws Canada and Australia managed to select flows of more skilled immigrants who more directly reflected the needs of the market.[22]

This agreement in the results, however, conflicts with the contribution made by Borjas, Freeman, and Katz (1992), who, instead of using "micro" studies, use an aggregate approach. They use an *implicit labor supply*, which includes the quantity of human capital embodied in legal and illegal immigration and imports of intermediate and semifinished goods. The increased implicit supply of labor was due to one of two things: (a) the deficit in the balance of payments during the 1980s and therefore to imports from developing countries, which were 1.5% for the whole economic system and 6% for the manufacturing sector, or (b) immigration, which represented 0.3% of the labor supply per year. Because both trade and immigration implicitly cause the amount of unskilled labor to increase more than that of skilled labor,[23] the increase in these components was the cause of the increase in wages of skilled workers[24] and the cause of the decrease in the remuneration and employment of high school dropouts (for an amount equal to 30–50% of the remuneration between 1980 and 1988). This result

[22] See Green and Green (1995) for information regarding the efficiency of the point system used in Canada.

[23] The reduced impact of immigration takes into account its continuation and its increases over time.

[24] The 1985 balance of payments deficit caused the number of high school dropouts to increase compared with graduates by 5–12% for men and 10–17% for women. In 1988 immigrants accounted for 20% of the high school dropouts.

emphasizes that at aggregate levels immigration and the balance of payments deficit led to a choice of growth model that induced a decrease in unskilled wages.

It is difficult to reconcile such contrasting results; to do so we must assume that the local markets adjust to the new flows of immigrants very rapidly or that immigration creates added demand sufficient to offset the effect very quickly. We must also assume that at the aggregate level a process is set off that slows the modernization of traditional unskilled jobs and that decreases their wages. This aggregate approach also emphasizes the competitive effect both of immigrants and of trade.

Now let's examine the European results. As we have emphasized, they are difficult to compare because they refer to different countries and different periods and because the researchers used different data. The results shown in Tables 3.2 and 3.3 are strangely conflicting. A number of studies show keen competition between foreigners and natives and especially unskilled natives, whereas others favor complementarity.

In the German case, the five studies that we know of do not provide similar results. De New and Zimmermann (1994), who used the GSOEP from 1984 to 1989[25] for only male workers, reveal, using a random effect model and an industry specification, that an increase of 1% in the foreign labor force produces a decrease in native hourly wages of, on average, 4.1%, with decreases of as much as 5.4% for blue-collar workers and an increase of 3.5% for white-collar workers with little experience.[26] The work of Hatzius (1994a) analyzes the impact of immigration on a regional cross section using data from 1984 to 1991. Following Altonji and Card (1991), Hatzius uses a two-stage estimate. First, an estimate is made of wages (both wages and earnings) and individual unemployment,[27] with regional dummies based on the data of the GSOEP. Then he estimates how the regional dummies vary by using variables that include the share of immigrants. He distinguishes between those who come from eastern European countries – having high human capital – and the others, and he finds complementarity in the former case (+2.%) and high substitution in the latter (−7% for a 1% growth in the foreign labor force).

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[25] The panel was cleansed of managers, self-employed persons, and civil servants so as to create more homogeneous conditions.

[26] At a sector level there are positive elasticities for some sectors, such as commerce, but they are mostly negative.

[27] It is measured as the probability of being unemployed and is later changed into the regional probability of a typical case: a 40-year-old married male with a low level of education and 20 years' experience in the labor market.

Table 3.2. *Wage and employment effects of immigration in northern Europe*

Study	Country, period, data	Dependent variable	Type of analysis	Variable used to measure immigrants	Analysis dimension	Instrumental variables (if any)	Results
De New and Zimmermann (1994)	Germany, 1984–89, GSOEP	Log hourly gross individual wage of natives	Random effects panel model (individual-specific component in the error term) $w_{it} = \alpha + \beta' X_{it} + e_{it} + u_i$	Foreign workers for each major industry	10 industrial sectors	Industry dummy, industry growth rates, overall and industry-specific time trends	1% increase in foreign share produces a reduction of 4.1% of aggregate native wages and higher reduction for blue-collar workers (5.9%). Foreigners have positive effect on wages of white-collar workers with less than 20 years experience (3.5%).
Hatzius (1994a)	Germany, 1984–91, GSOEP, Aggregate (regional) published data	**1° stage:** a1. Log indiv. real wages a2. Log indiv. real earnings b. Indiv. unemployment **2° stage:** Coefficients of region-by-period dummies of the 1° stage	**1° stage:** OLS regression on wages or earnings, logit regression on indiv. unemployment. Inclusion of the only variables exogenous to any labor market adjustments brought by immigration	a. Foreign labor force relative to initial total labor force by region b. East German immigrant labor force relative to initial total labor force by region c. Ethnic German immigrant labor force relative to initial total labor force by region	10 regions	a. Lagged immigration values to instrument the current immigration values b. Lagged values as explanatory variables	**Unemployment:** No form of immigration appears to affect native unemployment in all analyses. **Earnings:** a. A 1% increase in lagged foreign share produces a reduction of native earnings (−7%) using GSOEP data. No statistically

Study	Data	Dependent variables	Methodology	Explanatory variables	Results/Comments
			(personal variables but *Not* industry, occupation, position in a company) **2° stage:** Equation with lagged dependent variables and time dummies estimated (with heteroschedasticity-consistent std. errors) using: a. The dynamic panel data estimator (Arellano) b. Anderson and Hsiao first difference-estimator		significant effect using aggregate data. b. East German immigration appears to raise native earnings: +2.5% using GSOEP; +1.1% using aggregate data. c. Coefficient for ethnic Germans is never significant. **Wages:** Results on wages look very suspicious. Probably data on wages are not trustworthy, and it is better to use data on earnings.
Pischke and Velling (1997)	Germany, 1985–89, aggregate data from various statistical sources	a. Employment-to-population, ages 15–64 b. Employment-to-population, ages 15–64 (Germans only) c. Unemployment rate	a. Mean reversion model $u_{it} = b_1 u_{it-1} + b_2 \Delta f_{it} + e_i$ b. Differences (OLS) $\Delta z_{it} = \alpha \Delta f_{it} + x_{it-1}\gamma + \varepsilon_{it}$ (z = labor market performance of natives) c. Differences (IV)	a. Change in the foreign share between 1985 and 1989 (working age population) b. Foreign inflow (outflow) from (to) abroad and Germany for each year from 1986 to 1989	167 labor market regions	Foreign share in 1985 and its square	Little evidence of displacement effect due to immigration, in particular for unemployment rate. No effect of migrant inflows on native migration pattern.

(continued)

129

Table 3.2 (*continued*)

Study	Country, period, data	Dependent variable	Type of analysis	Variable used to measure immigrants	Analysis dimension	Instrumental variables (if any)	Results
Pischke and Velling (1994)	Germany 1984 German Federal Research Institute for Regional Geography and Regional Planning	d. Change in log manufacturing wage	Earning function approach	All foreigners and Turks only	167 labor market regions	Change in foreign share in 1985 and its square	Foreign share seems to have a large and positive effect on the log manufacturing wage (+1.8–3.3%), but no significant effect considering Turks only. The authors believe that these results are likely to be spurious.
Haisken–De New and Zimmermann (1999)	Germany (males only), 1985–92, GSOEP	a. Log real monthly individual labor earnings b. Mobility dummies variables (change of occupation; intrafirm mobility; interfirm mobility)	a. Random effects panel model (earnings equation) b. Probit model with time-specific fixed effects using pseudo R2 (mobility equations). "Moulton problem" solved by employing industry-specific fixed effect.	a. Foreign share in the labor force by region and sector (merged to the micro data by industry, state, and year) b. Trade deficit ratio ((import–export)/ output) by industry	Foreign share by region and sector (34 values). All the other aggregate variables are at industry level.	Growth of industry value added, industry dummies, time dummies, and industry-specific time trends	Trade is more relevant than immigration on both wages and mobility: Immigration has a positive effect on the overall wages (+0.6%), no effect on the wages of low-skilled workers, but a positive effect on the wages of high-skilled blue collars (+1.4%). Trade deficit ratio

Study	Country, year, data	Method	Specification	Dependent/measure	Sample	Instruments	Results
							has a negative effect on wages (−0.11, for white collars −0.35). Immigration reduces intrafirm mobility only. Trade deficit ratio has a negative effect on occupational mobility and intrafirm mobility, positive effect on interfirm flexibility
Bauer (1997)	Germany, 1990, German Labour Force Survey	a. Factor share (relative share of income accruing to factor I) b. Translog production function	a. Cross section assuming strong separability between capital stock and all other inputs. b. Six subgroups: native and foreign low-skilled blue collars, native and foreign high-skilled blue collars, native and foreign white collars	Log (foreign low-skilled blue collars) Log (foreign white collars)	62 industries	None	White-collar immigrants are substitutes to low-skilled blue- and white-collar natives. Low-skilled blue-collar immigrants tend to be substitutes of low-skilled blue-collar natives. All other groups are complementary. The effect of immigration on wages of all native groups is negligible.

(*continued*)

131

Table 3.2 *(continued)*

Study	Country, period, data	Dependent variable	Type of analysis	Variable used to measure immigrants	Analysis dimension	Instrumental variables (if any)	Results
Winter-Ebmer and Zweimuller (1996)	Austria, 1988–91, Sample of young employees from social security records	a. Log individual monthly earnings for male blue-collar natives below 31 b. Joint determination of log individual monthly earnings (male blue-collar natives below 31) and share of aliens in the firms' workforce c. Individual earning growth between May 1988 and May 1991	a. Wage regression with Heckman correction (probability of being blue vs. white collar). Crosssection 1991 b. Simultaneous equations following Nelson and Olsen framework and Heckman correction c. Equation on wage growth with Heckman correction (probit employment equation)	a. Share of foreign workers in an industry and in a region b. Foreign share at firm's level c. Change of the share of foreign workers	a. Industries and regions b. Firm's level c. Industry level; region level; firm level d. Separately, movers and stayers	a. Foreign share in 1981, employment growth 1981–91, share of blue collars 1991, share of women 1991 (regional or industrial basis), mean foreign wage b. Foreign share lagged one or two, share of blue, women, and expected mean wage of immigrant at firm level c. Foreign share in 1988	Immigration has a positive effect on native wages (+2.1–3.7% at regional level; +0.2–1.0% at industry level). Immigration has a positive effect on wages (+0.1–0.5%) especially in large (>50) firms. Increase in the share of foreign workers: • Lowers wage growth at firm level (stayers only) • Is insignificant at regional level • Raises earnings at industry level

Study	Data	Dependent variable	Method	Independent variables	Subgroups/Levels	Instruments	Results
Winter-Ebmer and Zweimuller (1999)	Austria, 1988–91, sample of young employees from social security records	Probability of unemployment entry within one year (1, 0)	a. Probit analysis pooled cross sections (with and without instruments) b. Random effects analysis	Share of immigration in industry and share of immigration in region	a. 46 industries b. 76 regions c. Different subgroups: men, women blue, whites seasonal, nonseasonal foreigners already employed	Lagged foreign share, share of women and blue-collar workers, mean wage of immigrants at regional as well as industry levels	Modest impact of immigration on the unemployment risk for native young employees. Seasonal workers and foreigners already employed are more affected by immigration. The negative effect is always shown by the share of immigrant at industry level; the share at regional level, when significant, always has a positive effect.
							Increase in the share of foreign workers (both at industry and regional level) reduces earnings of stayers (-0.5–2.9%), is not significant or positive for movers.

Table 3.2 (*continued*)

Study	Country, period, data	Dependent variable	Type of analysis	Variable used to measure immigrants	Analysis dimension	Instrumental variables (if any)	Results
Winter-Ebmer and Zimmermann (1999)	Austria and Germany, 1985–94 (A), 1987–94 (G), aggregate (industry) data	a. Employment growth b. Native employment growth c. Wage growth	Reduce-form equation: weighted regression with sectoral employment shares as weight	a. Variation in the log foreign share (A) b. Variation in the log foreign share (G) c. Variation in the log eastern Europe foreign share (G) d. Variation in the log share of ethnic Germans (G) e. Russian share X f. Variation in the log share of ethnic Germans (G)	a. 30 industries (A) All and 3 subsamples: low-wage, high-import, high immigr. b. 12 industries (G) All and 3 subsamples: low-wage, high-import, high immigr.	a. Lagged levels of immigrant shares, lagged levels and changes in minimum wages, shares of blue-collar workers, EU output (A) b. Lagged levels of immigrant shares, lagged levels and changes in union wages, shares of blue-collar workers, EU output	Immigration has no impact on employment at large (A). Immigration reduces native employment, especially in high-immigration industries (−.13%) (A). Immigration reduces overall wages (−0.16%) (A). Immigration has an unclear effect on employment at large (G). • Total foreigner significant and positive only for high-import industries • Negative for Russian ethnic • Positive for eastern Europe

134

					None	Immigration has a negative effect on domestic employment except for high-import industries, positive for eastern Europe (G). Immigration (especially eastern Europeans) has a positive (but significant only in few cases) effect on wages (G).
Butare and Favarger (1995)	Switzerland, 1950–90, national statistics	Native employment	CES, translog, Zellner estimate method	Number of foreigners in the labor force	30 years	Foreign labor is complement to native labor. Elasticity 0.51–0.35; foreign labor and capital 0.06, and native labor and capital 0.11–0.08.

(continued)

Table 3.2 (*continued*)

Study	Country, period, data	Dependent variable	Type of analysis	Variable used to measure immigrants	Analysis dimension	Instrumental variables (if any)	Results
Kohli (1999)	Switzerland, 1950–90, national statistics	Residents' wage and unemployment	Production theory approach: cost function and GNP function translog	Number of nonresidents that includes only recent immigrants. Old immigrants are considered as natives.	30 years	None	Nonresident workers depress the wages of residents, but the impact is very small. The effect of foreign workers on natives' employment is negative (elasticity −0.2%), but this is imputed to the fixed-wage hypothesis. More important, foreigners and trade always complement each other.
Gang and Rivera-Batiz (1994)	1988–92 Eurobarometre, northern European Countries	Individual's wage (Wi) is made up of physical labor (bu) plus a return for education (Edi) and experience (Exi). $Ln(Wi) = bu + bdEdi + bxExi + ui$	Production theory, translog, SURE	Immigrants by origins: Portugal Po, Spain Sp, Turkey Tk, Italy It, North Africa AF, Asia As, Ireland Ir	Cross region	None	The effect on the average worker's wage in France is −0.07 by NA, −0.11 AS, −0.04 Po, −0.03 Sp, and −0.01Ir; in the Netherlands −0.01 Tk, −0.07 Po, −0.06 Sp, −0.04 It, −0.03 Ir; in Germany −0.01 Tk, −0.05 Po, −0.02 Sp. The results are greater for unskilled workers, but the sign changes for workers with some schooling.

136

Table 3.3. *Wage and employment effects of immigration in southern Europe*

Study	Country, period, data	Dependent variable	Type of analysis	Variable used to measure immigrants	Analysis dimension	Instrumental variables (if any)	Results
Hunt (1992)	France, 1962–68, census	Unemployment rate among natives, and wages	Cross-section OLS, GLS, and IV wage both level with fixed effect and first differences (1968–62)	Share of repatriated from Algeria (skilled labor)	Cross-departments	Temperature and early repatriates	1% increase in the number of emigrants returning from Algeria causes a 1.3% decrease in wages, in the VAR Department −5.7% (where they were concentrated 7.5%), an aggregate increase in unemployment 0.3 and in Var 1.4%.
Garson et al. (1987)	France, 1985, employment survey	Individual wage	Léontief and translog with regional control variables	North Africans, southern Europeans, and other immigrants	–	Employed in each group	A 1% increase in Algerians, Tunisians, and Moroccans increases native wages by 0.03;[a] 1% increase in Spaniards, Turks, Portuguese, and Yugoslavs by 0.09, whereas competition exists between groups of immigrants and elasticities are −0.01, −0.04.

(continued)

137

Table 3.3 (*continued*)

Study	Country, period, data	Dependent variable	Type of analysis	Variable used to measure immigrants	Analysis dimension	Instrumental variables (if any)	Results
Gross (1999)	France, 1974–94, quarterly data	Native unemployment rate	VAR model	a. Immigration rate (IR) b. IR adjusted by the foreigners regularized in 1981 (IRA) c. Immigration rate of family members	40 observations	None	Unemployment falls with immigration in the long run. Family-reunified immigrants reinforce the negative impact because they reinforce the additional demand effect. In the short run, by raising aggregate wages (low-skill immigrants are complement to high-skill natives) an increase in the labor force produces an increase in temporary unemployment.

Study	Data	Dependent variables	Methodology	Immigration measure	Sample	Instruments	Results
Carrington de Lima (1996)	Portugal, mid-1970s, aggregate data, district data	a. Aggregate wage b. Aggregate wage and unemployment c. District wage in the construction sector	a. Compare trends in wages in Portugal with France and Spain b. Regression of 1962–81 wage and unemployment c. Cross-regional analysis of wages in the building sector	Returnados from Angola and Mozambique in three years, more skilled than domestic labor force	18 years and 18 districts	None	Wage trend is similar to French and Spanish ones. Small effect on unemployment. Districts with the highest population growth show lower construction wage growth.
Dolado, Jimeno, and Duce (1996)	Spain, 1990–92, administrative register of work permits	$\Delta ln\, w_u$ (wage of unskilled) $\Delta ln\, w_s$ (wage of skilled) $\Delta ln\, N_u$ (employment of unskilled) $\Delta ln\, N$ (total employment)	Cross sectional equation in differenced forms $\Delta Y_j = c\Delta m_j + \Delta X_j b + e_j\ (j = 1, 2, \ldots, 50)$	Change in the proportion of immigrants in each province (out of total employment)	50 provinces and two groups of natives: skilled and unskilled	Lagged immigration rate and its square to instrument the immigration rate change; lagged unemployment change to instrument current unemployment change	The effect of immigration on wages of unskilled workers is small but positive (between 0.024 and 0.036), not significant on the wages of skilled workers. The effect of immigration on employment of unskilled workers is negative but not significant. The effect of immigration on total employment is positive (elasticity of 0.05).

(continued)

139

Table 3.3 *(continued)*

Study	Country, period, data	Dependent variable	Type of analysis	Variable used to measure immigrants	Analysis dimension	Instrumental variables (if any)	Results
Gavosto, Venturini, and Villosio (1999)	Italy, 1990–95, administrative data on dependent employees (INPS)	1° stage: Δ Log indiv. real wages 2° stage: Coefficients of the joint regional and branch dummies for 5 years from the 1° stage	Two-stage procedures à la Moulton on repeated cross sections	a. Rate of inflow of immigrants into employment (difference in the share of employed immigrants to natives between two periods) b. Cumulative inflow of immigrants into employment starting in 1989 divided by the amount of native employment and its square	Branch (20) and region (20) jointly	None (lagged foreign share, share of women and blue-collar workers in the workforce)	Inflow of immigrants raises the wages of native manual workers; larger effect in small firms and in the north (overall elasticity +0.01). The cumulative inflow of immigrants is positive but nonlinear (it increases at a decreasing rate). The threshold is reached when the share of immigrants reaches 7.7% of total employment – 10% in small firms and 12.2% in the north.

| Venturini and Villosio (2002a) | Italy, 1993–97, individual data from the Labour Force Survey | a. Probability of finding a job (transition from unemployment to employment) b. Probability of losing a job (transition from employment to unemployment) | a. Logit estimation, with White heteroschedasticity consistent estimator b. Linear probability model with a two-stage procedure, à la Moulton | Foreign share by branch and region in the dependent employment | a. Region (19) b. Branch and Region (19 × 5) | Lagged foreign share, share of women and blue-collar workers in the workforce, mean wage of immigrants at regional and branch levels | The share of immigrants has no effect on the native transition from employment to unemployment and on the transition from unemployment to employment for workers looking for a new job; for people looking for a first job (the young), the negative effect is limited in amount, restricted to the first year and to the south, whereas the effect is positive in the most recent periods and in the north. |

Pischke and Velling (1994) analyze a slightly earlier period (1985–89)[28] and test a county cross section by using a different source of data: the Office of Federal Statistics. The authors are very careful in presenting their results. After controlling for the changes in the regional unemployment rate, this work shows that immigration has little or no effect on the wages and unemployment of natives. The authors attribute the diversity of their results with respect to those of De New and Zimmermann (the only ones available) to the different periods examined. They analyze a period of expansion, whereas the other authors look at a period of recession. Furthermore, Pischke and Velling analyze differences, whereas the others analyze levels. Finally, they suggest there might be endogenous problems due to the self-selection of immigrants. Another result of this work differs from the U.S. results of Filer (1992): the absence of any immigration effect on the internal mobility of German workers.

In a later work on the German case, Haisken–De New and Zimmermann (1995, 1999) again use the individual data of the GSOEP but for a longer period (1985–92) and test a monthly earnings equation with a random effect model. And using region-specific foreign shares by industry, they find that the latter variable has a positive effect on native earnings; they have no effect on low-skilled wages but have a positive effect on high-skilled wages. The authors also introduce trade variables and find that a trade deficit has a negative effect on wages in all specifications.

Bauer (1997) also analyzes the German case but with a translog production function for 1990 in a cross-industry approach. He finds competition between white-collar immigrants and blue- and white-collar natives, as well as between low-skilled blue-collar immigrants and highly skilled blue-collar natives; in the other cases, however, complementarity prevails. The author stresses that even when competition prevails, the coefficients are extremely small, and thus the effect of immigration is limited.

It is difficult to reconcile such varied results, but it might be useful to remember that foreigners are usually in low-wage sectors. Therefore, with sector analyses such as the ones by De New and Zimmermann (1994) and by Bauer (1997), it is consistent to find that competition prevails, but because immigrants generally settle in high-wage regions, a cross-region analysis concludes that there is complementarity. This finding is confirmed by

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[28] In a later work published in *Review of Economics and Statistics* (1997), the same authors report only employment figures. This is a great pity because there is agreement between the effect of immigration on employment levels in Germany, whereas different results were obtained for the effect on wages, measured as wages and earnings.

Pischke and Velling (1994). However, this interpretation is not sufficient to solve the puzzle because a cross-regional analysis carried out by Hatzius (1994a) reveals a competitive relationship, whereas Haisken–De New and Zimmermann (1995, 1999), considering different regions in a cross-sector study that brings together both aspects, do not find competition.

The results of Gang and Rivera-Batiz (1994) show the same trend, even though the size of the effect is much smaller. They break a worker's wage into two components – education and experience – and, using the data from a survey by EU Eurobarometro, they calculate the cross elasticities between the various components of wages and the impact of various kinds of immigrants on natives having different characteristics. In the Netherlands, France, Great Britain, and Germany, a negative cross elasticity prevails between immigrants of different nationalities and the "average worker," with small exceptions. The relevant result is, however, that the elasticities are never higher than −0.1. In France and Germany they are lower than in the Netherlands, with values that are frequently equal to −0.02. There are examples of complementarity between immigrants and natives only in education, but (in Table 3.3) negative signs prevail.

It is natural to compare the case of France – where Hunt (1992) analyzes how immigrants returning home from Algeria in 1962 affected the local market[29] – with the work done by Card (1990) on Cuban immigrants. The effect on wages at an aggregate level is found to be high: an elasticity of −1.3%, with a peak of −5.7% in the Region of Var, where immigrants returning home were concentrated. The effect on unemployment was also negative – that is, at an aggregate level the estimated elasticity was 0.3%, and in Var it was 1.4%. The differences are surprising because they show opposite results for similar percentages of density of immigration. In the Region of Var in 1968, 7.1% of the labor force was made up of immigrants returning home from Algeria, just as in Miami 7% of the labor force was made up of immigrants from Cuba. The lack of data regarding prices at a local level (and therefore the need to use nominal wages) can lead to overestimation of the effect of competition between foreigners and natives. Still, the difference between the two cases is substantial.

Returning to the case of France, the research done by Garson et al. (1987) seems, in contrast, to suggest complementarity between foreigners and natives. Using the individual data of the National Survey of INSEE of 1985 with a regional cross section, the authors propose a Leontief model, which

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[29] Immigrants returning from Algeria in 1968 numbered 900,000 and represented about 1.6% of the labor force.

reveals weak complementarity between immigrants and natives. The elasticity of the wages of natives to the growth of various groups of immigrants varies from 0.03 (in the case of Algerians, Tunisians, and Moroccans) to 0.009 (in the case of Spanish, Portuguese, Yugoslavs, and Turks). In contrast, there seems to be slight competition between groups of immigrants, with a negative wage elasticity that varies between −0.01 and −0.04. This result, which contradicts the one presented in the previous case (Hunt 1992), shows that the French labor market reacted very slowly to immigration. However, in the long term it seems to have been absorbed into the internal market.

This conclusion is also reached by the fine study of Gross (1999). Using a general equilibrium approach, Gross tested[30] the long- and short-term relationship between unemployment and immigration in France from 1974 to 1994. She finds a net demand effect because unemployment falls with immigration in the long term. She also finds that the introduction of family-reunified immigrants reinforces the negative effect of immigrant workers on unemployment, highlighting their lower probability of getting a job. In contrast, in the short term, by raising aggregate wages (that is, low-skill immigrants are complementary to high-skill natives), an increase in the labor force produces an increase in temporary unemployment during the adjustment period.

Butare and Favarger (1992) analyzed the situation in Switzerland using an aggregate production function and found clear complementarity between native and foreign workers. Depending on the specifications, it fluctuates from 0.5 to 0.35. The study uses an aggregate approach similar to the work of Borjas, Freeman, and Katz (1992), and its results contradict those prevalent in Europe, such as those of the authors mentioned earlier for the United States. The study generates another surprising result in that complementarity between foreigners and capital is repeated in all the specifications used. There is either very low complementarity or net competition between capital and native workers. The authors point out that the foreigners' high average human capital may be the result of grouping sectors with low human capital for foreigners and sectors with high human capital, a combination that may mask composition effects. Similar conclusions are reached by Ulrich Kohli (1999) using an aggregate production function approach for the same period. Nonresident workers depress the wages of residents, but the impact is extremely small. Moreover, the effect of foreign workers on natives' employment is negative (elasticity –0.2%), but that is to be imputed to the

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[30] The methodology used is the traditional Johansen time series.

fixed wage hypothesis more than to the foreigners themselves. It is more important to note that foreigners and trade always complement each other. However, trade can be a substitute for domestic labor.

A comparison of the results in Europe and the United States shows two different examples: one where there is an example of competition at least in the short term (Hunt, Hatzius) whereas in the long term complementarity dominates (Bauer, Garson et al., Butare and Favarger); and one where complementarity prevails in the short term but competition seems to prevail in the long run.

The first possible explanation is the reduced flexibility of the European labor markets, especially the difficulty for native workers to vote with their feet because of the high costs of moving, the rigidity of the housing market, and the linguistic barriers to jobs as white-collar workers. This interpretation appears to confirm the results of the study by Pischke and Velling (1994) and especially those of Winter-Ebmer and Zweimuller (1996) for Austria. The authors reveal that the effect of immigration on natives' wages between sectors and regions is negligible. When workers are divided into job-stayers and job-changers, the impact of the former is negative, whereas the latter is positive, confirming the proposed interpretation.

These differences in mobility between European labor markets and the U.S. labor markets are well known. The OECD study (1990, p. 85) clearly shows that the number of people who change region of residence within the country from 1970 to 1987 is limited, but the values are more than double in the case of the United States compared with Europe. The values decrease (from 1970 to 1987) from 3.6% to 2.8% in the United States, and from 1.8% to 1.1% in Germany, and from 1.8% to 1.3% for France.[31] Canada and Australia also show greater internal mobility than the European countries, but it is rather limited: 1.6% and 1.5%. In such cases, it should be remembered, the interpretation of complementarity was based on successful selective migration policies. The case of Switzerland can be aligned with the Canadian and Australian cases, where the migration policy is selective both in theory and in practice.

The results for Europe are conditioned by the period of economic recession, where competition between groups of workers can be stronger. If the research had referred to the 1960s or the early 1970s, the results would be more homogeneous, with a general complementarity among the various segments of the labor force.

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[31] In Europe, only the northern countries of Norway and Sweden show values that can be compared to those in the United States.

3.2.2 Implications and Evidence for the Southern European Countries

There are few empirical studies or estimates for the southern European countries that can be compared to those presented for the northern European countries and North America. The reason for this is simple: The migratory phenomenon is still too recent. There have been many regularization measures in Italy, Spain, and Portugal, and one in Greece. Foreigners are underrepresented in the labor force surveys, and so the data are not reliable.

Local Research

In all the countries of recent immigration there are numerous and accurate local and local sector studies. However, these studies have many limits in their use in interpreting complementarity or substitution between workers.

First, the local dimension does not facilitate an analysis of the effects of immigration on the labor market as a whole because the effects cannot be extended to other professions or localities. In addition, the continuous evolution of the migratory phenomenon causes the area of reference to change quickly. Research carried out in the area of Trento (Borzaga, Carpita, and Covi 1995) serves as an example. It shows that in one year, immigration of political refugees from Yugoslavia introduced irregular activities that had never been offered to African immigrants in the region, and this has overturned the conclusion that there was not any irregular work in the area.

Most of these studies have another methodological problem: They generally analyze only the economic activity of foreigners. In Figures 3.2a and 3.2b, for example, they analyze the segment $N'iEi$ and $NiEi$, from which it is not possible to infer anything about native employment; it might have remained the same, or it might have decreased or increased. The general tendency in these studies is to conclude that there is complementarity between foreigners and natives. We do not claim that this is impossible, but we do claim that it cannot be sustained by the arguments made so far.

Two Laws from Previous Experiences

To analyze the role of foreigners in the labor market of the southern European countries, we can use the experience of countries where there has been immigration for a long time: the United States, Canada, Australia, and northern Europe. Two laws have been shown to be relevant in determining the

effect of immigrants in the U.S. and European contexts: the more restrictive the migratory policy of the receiving country and the more flexible the labor market, the less the competition between foreigners and natives. In the case of southern European countries, the two laws lead us to predict that competition between low-skilled immigrants and low-skilled natives is likely.

1. The "immigration" policy of the southern European countries, as is shown by the repeated amnesties in Italy, Spain, and Portugal and in Greece, has been neither selective nor planned. If a system of selected access – in which immigration is coordinated with the needs of the national labor market – is foreseen by the laws of these countries, it, in fact, has not been achieved because legal access was "closed."[32] If there is a relationship, it is only through the informal market, and it is outside legal control.

2. The labor market in the southern European countries is shown to have less interregional flexibility compared with the U.S. labor market. The only other country considered in the previously mentioned OECD study (1990) is Italy, where interregional mobility involves only 0.6% of the population. In the Spanish case the research of Bentolila and Dolado (1991) shows similar values to those in Italy (0.6% of the population) for the 1960s, and even lower values (0.4%) for more recent periods (1976–86), and there has been no sign that the trend has been reversed.

Bentolila and Dolado (1991) trace the limited mobility of the labor market to the possibility of the unemployed receiving support from their families – support that would be lost if they moved. Faini, Galli, and Rossi (1996) and the same three authors with Gennari (1997) come to a similar conclusion for Italy, where, in conditions of wide differences in unemployment, internal mobility is discouraged by the higher cost of living in the possible destination areas. When the rate of unemployment also increases in the possible destination area, the probability of finding work decreases, and so internal mobility[33] is decreased even further.

There is low internal mobility in Portugal, too (Baganha 1998), and there are large variations in the rates of regional unemployment. The rate of unemployment in the region of Alentejo in 1993 was 8.1%, almost double

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[32] In Italy in 1995 it was possible to get an authorization to enter to do domestic work, and later annual and seasonal quotas were set.

[33] In addition, Antolin and Bover (1993) underline a change in the nature of the internal migration during the 1980s and the discouraging role played by the structure of the unemployment benefits.

the national average (4.9%), and yet internal mobility was limited. The level of unemployment also varies widely in Greece. In 1995 it reached 11% in Attica, whereas it was only 4% in Crete and 7% in Tessalia (Eurostat 1995b).

If the relationships found in the United States, Canada, Australia, and northern Europe are valid in the case of the southern European countries, then the impact of foreigners on the local and domestic labor markets should be neither limited nor positive.

Effect on Natives: Characteristics of Foreign Employed
and Native Unemployed

The high level of unemployment in the southern European countries might lead us to conclude that perhaps the supply of foreign workers willing to accept worse working conditions than those accepted by the natives means that firms are discouraged from undertaking restructuring processes. The process that the foreigners introduce into the productive system seems to be similar to indirect competition in the Dell'Aringa and Neri model (see section 3.1.1): In this model, the presence of foreigners decreases the employment of the more highly skilled natives, and the lower wages attract capital to the low–human-capital-intensive sectors employing fewer skilled workers. If this process actually takes place, the presence of foreign workers willing to do certain unpleasant work discourages the modernization of such processes. Fewer nurseries and more immigrants from the Philippines results in less mechanized agriculture, fewer skilled agricultural workers, and more seasonal work in agriculture, often irregular.

In an attempt to explain the role played by foreigners in the labor market, the previous analysis suggests that foreign workers are generally complementary to natives when the high demand for labor is not satisfied by natives and when the migrants' skills are complementary to those of the natives. Therefore, it is necessary to clarify the characteristics of the foreign labor force in the four countries being examined before we try to suggest an interpretation.

Immigration to the southern European countries in the 1980s and the early 1990s has the following characteristics:[34]

- The immigrants are mostly unskilled, or if skilled they do not use their skill or their qualifications in the job they are doing in the receiving country.

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[34] For a more detailed specification see Chapter 1.

- The sectors where they are concentrated are agriculture, traditional industrial production, and building and, in the service sector, catering and hotel services and domestic work. Irregular activities also follow this pattern, particularly in the services and agriculture (except in Portugal).
- The firms that use foreign labor are mostly small or medium-sized. Large firms in the industrial sector have gone through a long crisis or modernization, so they do not need unskilled workers. What is more, in their case the strong presence of trade unions increases negotiation costs and discourages the employment of foreign workers. Modern firms that have restructured production processes with significant capital-intensive investment do not use labor to counter the economic cycle, and if they do they need highly skilled labor. The firms that take on foreign workers are traditional firms that cannot find unskilled workers on the labor market or respond to positive fluctuations in the economic cycle by taking on workers and not by investing.

Can such characteristics displace weak native workers – young people, women, or manual workers who are excluded from the productive process? In the southern European countries, and especially in Italy and Spain, the level of unemployment of young people (15–24) is very high. In Spain it passed from 25.4% in 1980 to 32.3% in 1990, 31.1% in 1991, 34.6% in 1992, 42.4% in 1993, 45.1% in 1994, and 37.1% in 1997 (OCDE figures). In Italy it was 25.2% in 1980, 25.7% in 1990, 32.4% in 1994, and 33.6% in 1997, with wide territorial variations: higher values in southern Italy and lower in the north.

In Portugal unemployment of young people reached 15.2% only in 1994; previously it had always been lower (10% in 1990), but it remained at the higher level in subsequent years. Unemployment of young people in Greece was 21.9% in 1985 and 21.5% in 1990; then it increased to 27.7% in 1994 and reached 31% in 1997 (OECD figures).

Unemployment for women in these countries is very high, about twice that for men. In 1990, 1994, and 1997, in Spain the levels were 24.2%, 31.4%, and 18.4%, respectively; in Italy the percentages were 17.1% (12.8% according to OECD figures), 15.7%, and 16.84%; and in Portugal, 6.3% and 8.1%, and it stayed at a similar level (7.9%) despite a sharp rise in the employment of women. In the same years the levels in Greece were 10.8% and 13.7%, with a further increase to 15.1% in 1997 (OECD figures). Unemployment for workers of working age (25 to 54) – and at this age unemployment usually means having lost a job – increased only in Greece

and Italy; in the other countries it decreased slightly, depending on the respective levels.

The high levels of unemployment for women and young people might lead to the conclusion that foreigners have displaced the weak segments of the labor force. If young people and women's unemployment is caused by structural change rather than economic change, then foreigners might have increased this exclusion by stealing jobs from the natives.

Effect on Natives: Spain and Italy

As was pointed out in the theoretical section, competition between native workers and immigrants is highlighted by a fall in wages and employment in labor markets that have flexible wages, and such a reaction was found to be weak in the United States and sometimes stronger in Europe.

In their study on Spain, Dolado, Jimeno, and Duce (1996) try to identify the effect of the 1991 regularization on overall employment, on low-skill employment, and on wage differentials between skilled and unskilled workers. Using a cross section of fifty regions, they consider changes in the relevant variables between 1990 and 1992. They determine the percentage of foreign workers by comparing the number of work permits issued with total employment in each region.

As the results in Table 3.4 show, the effect on unskilled workers' wages (Wu) is positive in all the estimates, whereas the effect on skilled workers' wages (Ws) is positive and not significant. The effect of immigration on the employment of unskilled workers (Nu) is negative but never significant, whereas it is positive and significant for total employment.

It is a surprising result because it contradicts all previous expectations and rules as well as international experience. However, similar results are repeated in a study of Italy by Gavosto, Venturini, and Villosio (1999) using different data and methods.

The authors first gather from individual administrative records (INPS) data on the number of foreigners legally employed in the private sector from 1987 to 1995 and the percentage of foreigners employed compared to natives by region and sector. They then make a two-stage estimate of the individual wage changes of native workers. In the first stage, they insert region–sector dummies. In the second stage, the coefficients of the dummies from 1989 to 1995, corrected as in Bonjour and Pacelli (1998), are explained not only by aggregate demand control variables but also by the percentage of foreigners by joint region and sector. Surprisingly, the results concur with those of Spain: Foreigners seem to have a positive effect on unskilled workers' wages

Table 3.4. *The effect of immigration on the Spanish labor market*

Variable/Estimation	(OLS)[a]	IV[b]	(IV′)[c]
1. $\Delta\ ln\ W_u$	4.19	4.23	3.47
	(1.39)	(3.57)	(1.77)
2. $\Delta\ ln\ W_s$	1.38	1.84	1.60
	(1.48)	(1.79)	(2.02)
3. $\Delta\ ln\ N_u$	−3.84	−2.70	−0.88
	(2.22)	(3.78)	(1.74)
4. $\Delta\ ln\ N$	5.75	6.85	6.24
	(2.14)	(2.94)	(2.63)

[a] Equation estimated with OLS
[b] Equation estimated with IV for the level of unemployment and the rate of change of immigration (instrumented by the constant, the migration rate lagged one year, its square, the lagged unemployment rate, and predetermined variables)
[c] As in equation (2), with the lagged rate of change in immigration, which, being exogenous, is not instrumented.
Source: Dolado, Jimeno, and Duce (1996)

and a positive and not significant effect on nonmanual workers' wages. Furthermore, in the areas where foreigners are concentrated most – small firms and in the north – their effect is complementary: They have a positive effect on workers' wages in that area. Gavosto, Venturini, and Villosio (1999) use different measures to get the percentage of foreigners (see Table 3.5), both for the rate of change and for the stock – that is, changes from the beginning of the period up to a certain year and its square. The first two measures are always positive, whereas the square of the stock has a negative sign and is significant. The level at which the variables change sign is about 7–8%.

The authors, making allowance for the regularizations that took place during the period and the small dataset, tentatively suggest that a small share of foreigners has a positive effect caused by the high level of demand in the system. In Italy the percentage of foreign workers, on average, is about 2–3%, but if the percentages are higher – for example, equal to the percentage of foreigners in Germany – then a negative effect will be set in motion.

Both the Spanish and the Italian authors propose this interpretation, but there are other possible explanations of why immigration does not appear to affect the wages of native workers, as expected, from the empirical study. First, a regularization is not a natural event, and it can be foreseen. Important regularizations, as occurred in both Spain and Italy, meant that many immigrants had been working illegally in the country for some time,

Table 3.5. *The effect of immigrants on natives' wages – various groups in Italy*
(t-statistics in parentheses)

Group	Share of foreigners by branch and region[a]	Square of share of foreigners by branch and region[a]	Changes in the share of foreigners
All	0.22	−0.034	0.09
	(3.1)	(−3.4)	(1.8)
Blue collars	0.48	−0.08	0.118
	(6.1)	(−5)	(2.)
White collars	0.08	−0.02	0.047
	(0.9)	(−1.3)	(0.7)
Dim 0–50	0.80	−0.10	0.15
	(7.6)	(−4.8)	(2)
Dim > 50	0.17	−0.03	−0.011
	(1.6)	(−1.5)	(−0.15)
North	0.73	−0.08	0.19
	(4.7)	(−3.7)	(1.9)
Center	−0.14	0.01	0.06
	(−0.7)	(0.3)	(0.5)
South	0.10	0.17	−0.067
	(0.8)	(0.3)	(−0.6)

[a] Regression instrumented by share of employed foreigners in the earlier period by region and sector, share of women employed by region and sector, share of workers employed.

Source: Gavosto, Venturini, and Villosio (1999)

and it is possible that the wages had already incorporated such an effect. The effect of a regularization on native wages would therefore develop during the years before the actual regularization. However, there is the opposite argument, which suggests that the effects of a regularization should be spread over the years that follow the law because labor markets are slow to adjust in that wages are fixed by negotiation for more than one year, and so on.[35]

Such arguments regarding tight regulation of southern European labor markets and strong trade unions lead to the conclusion that there will be a greatly reduced elasticity of wages because of exogenous changes. Thus, one could imagine labor markets in which prices are so rigid that changes are brought about by changes in quantities such as employment.

[35] Gavosto, Venturini, and Villosio (1999) try to allow for the fact that the effect of the regularization will be spread over time in their model, which uses the percentage of the stock of foreigners. Such a variable reflects the difference between the stock in a given year and its size before the regularization in 1991. Because the number of regular immigrants increases mostly in that year, its effect is carried over into later years.

Table 3.6. *Probability of transition from unemployment to employment for those looking for their first job in northern and central Italy*

Category of worker	1993	1994	1995	1996	1997
All	−0.35 (−2.5)	−0.03 (−0.3)	0.01 (0.1)	0.20 (1.3)	0.27 (1.9)
High education	−0.37 (−1.3)	−0.44 (−1.6)	0.06 (0.2)	0.22 (0.8)	0.19 (0.8)
Medium education	−0.48 (−2.9)	0.13 (1.0)	0.10 (0.6)	0.18 (1.1)	0.19 (1.2)
Low education	−0.25 (−1.6)	−0.14 (−1.1)	−0.11 (−0.6)	0.21 (1.2)	0.36 (2.3)

Relative coefficient of the share of foreigners employed (t-statistics in parentheses)

Probit regression

Source: Venturini, and Villosio (2002a)

The results reported by Dolado et al. (1996) for Spain show that the effect on overall employment is positive, and it is significant for unskilled workers. Venturini and Villosio (2002a) use ISTAT's quarterly labor force survey (from 1992 to 1996) to analyze the effect of the percentage of foreigners in the labor force on the probability of those employed losing their jobs and those unemployed finding jobs, using annual probit cross-section estimates (see Table 3.6). The percentages of foreigners and the other aggregate variables are fixed, respectively, at regional and sector levels in the former case and only at a regional level in the latter.[36]

When the probability of natives becoming unemployed is considered, it is found that the effect of the percentage of foreigners on the regions and sectors in which natives are employed is either negative – that is, the probability of losing a job is reduced – or is not significant. Similarly, the effect on unemployed workers looking for a new job, usually adults, does not appear to be competitive, although there is a slight competitive effect on young people looking for a first job in the first few years. Looking more closely at a territorial distribution, there are traces of such an effect in northern and central Italy only for the medium-educated, and in fact it turns out not to be significant for the two other education groups.

Such results do not contrast with high native unemployment. Some 85% of the foreign population in Italy is from Africa and eastern Europe, and immigrants settle where the demand is highest: There are relatively few immigrants in the south (10%) and many in the north (65%), where the

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[36] To counter the aggregation bias (different levels of aggregation were present in the equation: individual, sector, and region) in the probit equation, a heteroschedasticity-consistent estimator has been used and, in the linear probability model, a two-stage procedure, as suggested by Bonjour and Pacelli (1998). To check for the endogeneity of a migrant's choice of location, the share of foreigners was instrumented by lagged foreign share, the share of women employed, the share of blue-collar workers employed in the region, and the average wage among immigrants.

level of unemployment (6.7%) is half the national average (11.9%), which is almost half the level in the south (21%). If a simple correlation between the unemployment rate and the percentage of foreigners holding a work permit is calculated for each region, the result is –0.7.

In Spain – where there is, as in Italy, a high level of unemployment (28.2% in 1997, OECD) and a high regional spread, even though it is less than in Italy[37] – the link is not so strong. The flows of Africans and Asians[38] in the past decade were concentrated mainly in four regions: Catalonia, Madrid, Andalusia, and Comunità di Valencia. The rate of unemployment in 3 regions out of 4 was lower than the national average in the 1990s.[39]

The correlation between the best proxy for immigrants who came to work in the past few years – that is, the percentage of Africans – and the level of regional unemployment is only –0.2 (in 1990 and in 1991). According to Jimeno and Bentolila (1998), the regional markets were not very responsive to the level of unemployment, and the adjustment between regions was weak. Spanish unemployment is largely caused by deep structural changes that can be traced to post-Franco economic reform – which opened protected markets to competition[40] – and to the economic recession of 1992–93. Added to this is the increasingly frequent and widespread use of temporary contracts, which have transformed employment in the Spanish labor market. In 1991, 32.2% of dependent employment was made up of temporary contracts, compared with 5.4% in Italy (OECD 1993). According to Jimeno and Toharia (1992), the introduction of these contracts was not a factor in increasing efficiency. They seem to be linked negatively to productivity, which after 1985 reversed its procyclic trend.

The immigrants of the 1980s do not seem, however, to compete with native workers: On the one hand they are mostly low-skilled workers, and the percentage of unemployed Spaniards with low school qualifications (without qualifications or with only elementary schooling) decreased from 70%

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[37] The figure for the unemployment rate in Italy is almost half what it was in Spain. For example, in 1987 it was 11.2% for Italy and 20.1% for Spain. But the standard deviation, considering twelve regions in the former and eleven in the latter, was 0.47 and 0.24, respectively.

[38] The overall figure by area is not very representative because it includes a large number of U.S. and European tourists and retired people.

[39] Unemployment in Catalonia and Madrid is 30% lower than the national average, whereas for the Communità of Valencia it is slightly lower and for Andalusia, 40% higher.

[40] Jimeno and Toharia (1994) describe the situation of the labor market in this way: "Thus the foremost cause of employment losses in the 1975–85 period is a structural one, whose viability was based on the existence of cheap labour and lack of competition and the change in the economic environment."

of the total in 1976 to 40% in 1988 and settled at this level (Blanchard et al. 1995, p. 30).

On the other hand, the impact of young people on long-term unemployment decreased in the 1980s for the 14–29 cohort, decreasing from 57% in 1979 to 40% in 1989 to 34% in 1991. Later it increased following the economic recession of 1992–93. But in that period, fewer work permits were granted as well.

It therefore appears that the groups of workers – young people and foreigners – followed the same trend in demand during the expansion of the 1980s and during the recession of the last year of the decade, 1990.

Effect on Natives: Portugal and Greece

There are no empirical investigations into the impact of recent immigration on the Portuguese economy. De Lima and Carrington (1996) analyze the impact of Portuguese returning from Angola and Mozambique in the mid-1970s. These immigrants accounted for about 10% of the labor force (in three years) and had a higher level of human capital than the national average. The scarcity of data led the authors to adopt three lines of approach. First, they compared the trend of wages in Portugal with the wages in the neighboring European countries: Spain (which, like Portugal, had undergone important political changes) and France. These comparisons did not reveal any relevant differences in the trend of wages, and even though the difference in the rate of growth of unemployment in Portugal after 1975 is evident, the unemployed were absorbed rapidly, and it does not appear to have had any permanent effect on the Portuguese labor market.

The second line of approach was to perform a regression analysis of a time series of data from 1962 to 1981. This test shows that the lagged immigration rate had a positive effect on average Portuguese wages. The effect was complementary, but, at the same time, there was a positive effect on unemployment, indicating competition. The limited data available, however, discourage the authors from considering the results to be conclusive.

The third approach used a cross-regional analysis of the effect of the level of *returnados* on the trend of wages in the building sector. It was found to be strongly negative, but this is interpreted circumspectly. Although the results tend to favor the conclusion that workers returning to Portugal had a competitive effect – similar to that of workers returning to France from Algeria; see Jennifer Hunt (1992) – the authors are less confident in suggesting that immigration has a negative effect.

In any case, whatever lesson can be learned from the study carried out by De Lima and Carrington (1996) on the *returnados* in Portugal, it is a special case, for two reasons: because the flow lasted so long and was so large, and because of the high quality of the workers returning home. The more recent immigration into Portugal is very different.

Recent immigration into Portugal is made up of skilled European workers and Brazilians as well as immigrants coming from the former colonies (PALOP[41]) who do low-skilled work, often in the informal urban sector. Moreover, immigration accounts for only 2.5% of the labor force (Baganha 1998; Baganha, Ferrao, and Malheiros 1998). As Maria Baganha (1998) points out, the European and Brazilian workers were employed in the rapidly growing modern sectors of the economy and were complementary to the low-skilled domestic labor force (about two-thirds of the Portuguese have a junior school certificate or less). The latter group are concentrated in the metropolitan area of Lisbon (MAL), which grew less than the rest of the country (0.45% compared with 0.6% per year from 1981 to 1991), and are mostly unskilled or self-employed. They find regular or irregular work in sectors that native Portuguese have left so as to take advantage of opportunities offered by the EU. Brazilian workers work in the building sector, traditional industries, commerce, catering, and domestic service, often without a proper labor contract. Baganha emphasizes that the immigrants from the old Portuguese colonies compete with low-skilled native workers for urban jobs, but not in agriculture, where native workers are still predominant. However, elements of competition have also appeared recently between skilled foreign workers and young, highly qualified Portuguese in the professions, such as medicine and dentistry (Baganha et al. 1998). These comments on the situation in Portugal come from a sociological analysis that favored single cases, but they are not incompatible with the results described earlier for Spain and Italy, which offer an overall picture of the phenomenon and do not in any way exclude cases of individuals or groups of workers being replaced.

The southern European countries have a long history of irregular employment that partly attracts illegal immigrants, as in the case of Greece. The research, of Lianos et al. (1996), which investigates the role played by foreign workers in the north of Greece, shows a very high presence of foreigners, especially in the area bordering Albania (17% of the population). This means that the number of temporary as well as permanent immigrants in the labor force increases to 13%, of which about half are irregular. The foreigners who

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[41] PALOP stands for African countries that have Portuguese as their official language.

work irregularly are concentrated in this area because the national average, again according to the estimates of the research, is around 4.5%.

The strong presence of regular and irregular foreign workers leads us to believe that a displacement effect takes place between native workers and foreign workers. The interviewees were asked to estimate the direct substitution and gross substitution, as defined by the authors, of natives by foreigners in employment – that is, how many jobs previously done by Greeks were now occupied by foreigners. The values obtained were very high: about 12.7% with reference to regular immigrants, and about 21% for irregular immigrants. These values, however, constitute an overestimate of the phenomenon because they do not take into account changes in supply – that is, the fact that many Greek workers are no longer willing to do certain jobs or tasks. Cleansed of that value, the rate of gross substitution would be almost nil, whereas the rate of net substitution for regular workers would be 0.5%, and 5.8% for irregular workers.

This result is not surprising because in the irregular market, competition is certainly stronger, wages are more flexible, and it is easier to replace workers. Foreigners receive a lower wage than natives, but it is interesting to note that the difference is proportionate to the worker's lower productivity.

In the agricultural sector, for example, Lianos, Sarris, and Katseli (1996) found about 20% substitution and even higher levels of complementarity. About 34% of skilled work and 18% of unskilled work would not be done if the foreign workers were not available. Thus, it is calculated that they make a net contribution of immigration to income growth of about 3%.

The competition of foreign workers in Greece is also the subject of an empirical study by Tsamourgelis (1995). Using Eurostat data on net migration from 1977 to 1990, the author finds a positive link with the rate of unemployment and a negative but insignificant link with wages.[42]

Effect on Natives: The Non-Regular Foreign Workers

Most empirical research in all European countries is concentrated on the effect of regular foreign employment on the native wages and employment (sections a and b in Figure 3.1). But this is only part of the story. Especially in southern European countries, where the flow of immigrants into the legal

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[42] Tsamourgelis's work is very interesting for its theoretical model, from which the empirical version is derived. The results obtained, however, are not very convincing because the study uses a time series of net flows – net of returns to the country of origin – which include not only the net flows of foreign immigrants but also the flows of Greeks who have returned to Greece. Thus, it is implied that Greeks who return home have the same effect as foreign immigrants, and that invalidates their significance for the study of immigration.

labor market was affected by amnesties, the impact of illegal immigration is also an important part of the picture (sections c and d in Figure 3.1).

To see whether irregular immigrants displace those who do irregular work with respect to regular employment, Venturini (1999) uses ISTAT estimates of units of irregular labor to measure whether irregular immigrants "replaced" regular employment in Italy. ISTAT estimates are split into various items, including foreigners, who, since 1987, have been the fastest-growing component. To find out the effect of irregular labor on regular employment, the author tests a production function differentiated by sector from 1980 to 1995 (a cross-section time series). The employment of regular workers is a function of regular workers' wages, the total number of workers (regular and non-regular native workers as well as non-regular foreigners), output, and lagged employment.[43] The aggregate results show that the activity of workers in the informal sector is one of substitution; it has a negative effect on formal employment, but this impact is extremely small. In the long term, when it is at its peak, it reaches only −0.01; if the activity of non-regular foreigners increases by 1%, regular employment falls by 0.01%. This effect, as well as being small, is also less than the effect on regular workers of native workers who work in the informal sector, which is −0.02; that is, if the native non-regular activity increases by 1%, regular employment falls by 0.02%. This result is not surprising because natives who work irregularly are more homogeneous with regular native workers. It is therefore reasonable to conclude that their competitive effect is greater.

This kind of analysis was repeated for the main macro-sectors: agriculture, industry, building, and tradable and nontradable service sectors, and a breakdown by sector gives varying results. As shown in Table 3.7, the negative effect of non-regular employment is not distributed uniformly. For example, in agriculture and building it is negative or even, whereas in nontradable services it is positive. The higher elasticities in the two sectors are not surprising because irregular employment is traditionally strong in these sectors.

Competition is strongest in the agriculture sector. The effect on the regular employment of natives who work irregularly is –5.5, and the effect of foreigners is −3.8: These figures are lower than for agriculture in northern Greece (−5), as shown in Lianos, Sarris, and Katseli (1996).

The high values of the coefficients confirm that there is competition, but perhaps the substitution caused by irregular work is overestimated. It is

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[43] For a discussion of the ISTAT estimates of non-regular labor, see Venturini (1999) and ISTAT (1993).

Table 3.7. *Long-term elasticity between regular employment and irregular employment by sector in Italy*

Group	Agriculture	Industry	Building	Tradable services	Nontradable services
OLS					
Foreigners	−2.78	−0.19	−0.68	−0.10	0.38
Natives	−5.01	−0.07[a]	−1.77	−0.20	1.22
IV					
Foreigners	−3.82	−0.14	−0.23[a]	−0.08	0.03[a]
Natives	−5.50	−0.16	−1.37	−0.14	2.39[a]

[a] Not significant.

Source: Venturini (1999)

possible to identify a form of discouragement in which natives, both men and women, voluntarily leave agricultural work.[44]

Slight competition prevails in the other economic sectors, and the long-term elasticities vary from −0.08 to −0.2 for non-regular foreigners, and –1.8 to –0.14 for non-regular natives. There is a degree of complementarity between non-regular foreign workers and natives in the sector of nontradable services.

The sector analysis shows that the effect of non-regular work done by foreigners varies greatly depending on the economic sector. It also shows that the overall view hides compound effects of different signs. However, the negative effect of foreigners doing irregular work is always smaller than that of natives who work irregularly, although it exists and amplifies the effect of irregular natives.

The strong segmentation of the labor markets conditions the effect of irregular foreign workers, which follows the prevalent trend in the sector. Foreigners who entered these markets later did not change the productive structure, but they probably reinforced the prevalent methods of production. They are employed in the sectors that show greater responsiveness to changes in labor costs and less responsiveness to changes in production and "slower" adjustments in the regular labor market. This finding highlights either the specificity of these activities or the choice of production methods.

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[44] It is difficult to distinguish between, on the one hand, leaving employment voluntarily and, on the other hand, discouragement due to the worsening working conditions that follow from the presence of foreigners working in such activities. These conditions become unacceptable to natives who consume in the destination country.

Research into Spain carried out by Blachard, Jimeno, et al. (1995, p. 23) concludes that "unrecorded employment is not likely to be a significant explanatory element of the high Spanish unemployment." As pointed out earlier, this phenomenon was caused by structural changes. Because irregular foreigners do not represent a significant share of irregular labor, they, too, will have little effect on native employment.[45]

There are other forms of indirect and direct competition that have not been researched, so other approaches can be proposed. Little can be said about direct competition between natives and foreigners in the informal sectors, something that is particularly important in southern European countries, where irregular activities are substantial and often constitute an important part of the family income.

The lack of competition in the regular labor market and competition in the irregular labor market can hide relevant effects of poverty growth in important segments of the population that are already marginal. This topic can be described only by field studies and detailed interviews conducted by privileged observers. Such studies have not yet been done.

Similarly, little can be said about indirect substitution between productive sectors or territorial areas. In fact there is little evidence whether domestic mobility and productive relocation (sections e and f in Figure 3.1) are slowed by increases in the number of foreign workers in areas where territorial mobility for both workers and firms is low and the demand for labor is growing.

The method chosen to measure wage and direct employment effects is based on a territorial cross section (and sector). This method uses territorial variations to measure the effect foreign workers have in areas where they are most concentrated, so it cannot reveal territorial or sector displacement.

Effect on Natives of Testing a Macroeconomic Model: Greece and Spain

Another way to investigate the effect of illegal immigration (illegal presence in the territory) or irregular labor (which can also take place when the worker has only a valid residence permit) has been proposed by Sarris and Zagrafakis (1999) and by Ferri et al. (2000) using two computable

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[45] According to labor force surveys, the level of unemployment, after allowing for informal activities, should be 4–5% lower; but the authors, after careful examination of other sources, including self-employed work, reach the conclusion reported.

general economics (CGE) models; the former is applied to Greece, and the latter to Spain. The big advantage of these models is that they can be used to explain macroeconomic relationships and therefore trace the overall effect of growth in the labor supply and repercussions on the labor market. In particular, these models make it possible to analyze sector and territorial competition introduced by immigration. The results of these models are strictly dependent on the hypotheses on which they are based. In both models, wages are flexible, foreign workers are unskilled and substitute unskilled native workers, and they are complementary to skilled native workers. The wages received by irregular unskilled foreign workers are 40% less than those paid to regular unskilled workers. Irregular foreign workers send about 50% of their earnings to their country of origin, a practice called *remittance.*

The Sarris and Kografakis model assumes that the effect of immigration on wages and native employment levels depends on the balance of payments. If there is a surplus (exports are greater than imports), the increase in employment and the decrease in unskilled wages cause the prices of goods to decrease. An increase in exports leads to an increase in domestic demand, canceling the negative effect on wages and employment of unskilled native workers. If there is a balance of payments deficit, the decrease in wages and prices is accompanied by a smaller increase in domestic demand, an increase that is not sufficient to offset the negative effect on unskilled native workers' wages and employment. Remittances abroad, which are equal to imports, make the macroeconomic picture worse.

The results of the basic model conform to the working hypothesis of the model. The workers' annual income increases by 1.5%, and real wages decrease by 36%, as does native employment. The latter decreases by 47,000 units per annum, about one-third of the total new flows of immigrants. The decreases in wages and employment are concentrated in agriculture and in unskilled employment, whereas wages and employment for skilled workers increase (see Table 3.8).

Various hypotheses are compared to this basic case. If native workers' wages are fixed, there is a smaller increase in wages and there is a greater degree of substitution of unskilled native workers. That is, unemployment increases for Greeks,[46] whereas if foreign workers are regularized they receive the same wage as natives and there is no change with respect to the reference case.

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[46] This specification describes an unusual effect on income distribution, where total wages bill would not change because the loss in jobs is offset by there being no loss in wages.

Table 3.8. *Macroeconomic effects of illegal immigration in Greece*

Factor	Reference value	Base scenario change
GDP at factor cost	8,239,762[a]	1.47%
Consumer price index	1.13	−2.04%
Real wage	0.69	−6.22%
REAL WAGES[b]		
Agriculture	0.48	−36.50%
Unskilled urban	0.74	−28.27%
Semiskilled urban	0.81	5.40%
Skilled urban	1.15	3.18%
GREEK EMPLOYMENT[c]	3992	−47.10
Agriculture	70	−6.24
Unskilled urban	982	−64.67
Semiskilled urban	766	16.64
Skilled urban	433	5.56

[a] Million Drac

[b] Employees

[c] Thousands of employees

Source: Sarris and Zografakis (1999)

This result is highly relevant to the Greek debate, where it was feared that the regularization of foreigners would have a negative effect on income growth. Both the fear and the results are repeated in the Spanish study.

Ferri et al. use a slightly more complex model, which assumes that the public sector is always in equilibrium. They analyze the effect of an increase in the Spanish labor force of 875,000 units and get results similar to those for Greece (see Table 3.9). However, because the table shows aggregate employment levels, there does not appear to be any substitution of employment for unskilled natives in this case.

As immigrants are only unskilled workers who are perfect substitutes for unskilled native workers and as total illegal immigration accounts for about 13% of unskilled labor, in the Spanish case if all the immigrants were employed, there would be a substitution of natives of about 8% (13% minus 5%), which is equal to an elasticity of –0.01 around 100,000 units.[47] The authors distinguish between illegal and legal immigration and show that, when there is legal immigration, only the wages of unskilled workers decrease; income, employment, and wages of skilled workers all increase. If wages are rigid, the loss in wages of unskilled natives is less (0.8 in the case

[47] I wish to express my thanks for this specification, which was provided by the author at my specific request.

Table 3.9. *Macroeconomic effects of changes in the rate of legal and illegal immigration in Spain*

Factor	Illegal immigration	Legal immigration
GDP	1.93	2.56
Price index	0.01	1.21
Unskilled employment	5.09	6.34
Skilled employment	2.32	2.89
Unskilled workers' rent	−1.48	−1.79
Skilled workers' rent	0.94	1.22
Return on capital	3.26	4.50
Wage differentials unskilled/skilled	−2.39	−2.97

Source: Ferri et al. (2000)

of illegal immigration and 1 in the case of legal immigration), but the other variables are worse, when compared with the basic model.

Extreme care should be taken in interpreting these results because their reliability depends on how well they can measure all the interrelationships in the economic system. The results are interpreted as long-term effects under the conditions measured by the models. For example, in the Sarris and Zografakis study, the public sector is not considered, and in the work of Ferri et al. the public sector is always in equilibrium, which could alter the results. But the message is clear: If the economy is open and wages are flexible, the effect of immigrants on natives' wages and employment depends on the trend in the goods market, and in an open economy this means dependence on exports and imports. The more rigid wages are, the smaller will be the decrease in wages for low-skilled workers, but the benefits for the other branches of production will also be less. Analysis of the models shows that overall, income distribution gets worse for unskilled urban workers in Greece, whereas in Spain, it remains the same for families whose breadwinners are not skilled workers. In the latter case, living conditions are worse when there is illegal immigration than when it is legal. This conclusion allayed fears of regularization, if anything providing arguments in its favor.

The models also carried out an important analysis of the effect of immigration on sector growth and the sector growth of skilled and unskilled employment. The hypothesis of perfect mobility of labor between sectors, however, means that such results are interesting as a possible scenario but are not realistic in countries, such as the southern European countries, where mobility is limited.

3.3 CONCLUSIONS

It is clear from this survey that it is difficult to extend the general working rules of the migratory phenomenon taken from different economic and historical contexts. Territorial contexts differ, and local labor markets are strongly segmented.

The southern European countries serve as ideal candidates for countries where there will be competition between immigrants and natives. First, the unemployment rate in those countries is high, and internal mobility is low because of institutional, economic, and social ties. In addition, there have been repeated amnesties. These regularizations highlight a nonselective migration policy and, what is more, access to the labor market through informal activities, where competition is higher or "unfair."

More specific studies have shown that the migrant who works in the formal market in Spain and Italy has a positive effect on the wages of unskilled native workers. These studies also show a competitive but not significant effect on the level of employment of unskilled workers in Spain, and on the transition out of unemployment for young people looking for their first job in Italy. In Portugal, only recently has competition between skilled immigrants and highly skilled young Portuguese become apparent (sections A and B in Figure 3.1). Numerically, however, it has been very limited. A more important form of competition is found in the informal labor market, which is a characteristic of more or less all the southern European countries (sections C and D in Figure 3.1).

Empirical studies show that in Greece and Italy there is competition between irregular labor and regular labor. However, it is limited in absolute terms, albeit higher in agriculture. Irregular work by foreigners in Greece, in contrast, causes high product growth in the sectors where foreigners are employed and seems to be a complement to the more skilled segments of the labor force.

If wages in the labor market are fixed by national contracts, the possibility of wage competition is reduced. Furthermore, if businessowners discriminate slightly – that is, if they employ foreigners only when there are no native workers, when the foreigners offer a better product or service than the native workers for the same wage, or when immigrants accept working conditions that native workers will not accept – there will be limited competition.

In the irregular labor market, where there are no contracts and the cost of getting rid of workers is nil, production costs are lower, and, in theory, competition is stronger. However, the fact that competition is weak can be explained by the segmented demand for labor. There is effective competition

with regular workers in only two sectors: agriculture and, in some cases, building. In these two sectors, no specific human capital is needed and turnover costs are low, and this means that employers can choose those workers who are willing to work at the lowest cost.

The role played by foreigners depends on the structural characteristics of the productive sector in which they work. Strong competition in agriculture is probably due more to the type of technology, which determines the kind of work demanded, than to the characteristics of the foreign workers. Depending on their specific human capital, foreigners find work in sectors that already employ a similar labor force, and they adopt the same recruitment procedures, either regular or irregular.

In general, the effects of immigration on the local labor market are viewed optimistically, and this can be traced to the limited incidence of foreigners in such local markets. Where there is competition, it is limited and similar to that described by Dell'Aringa-Neri – that is, it reflects the continued use of inefficient traditional production methods that do not attract capital because of the cheap labor supply.

This is probably what emerges from general economic equilibrium analyses, which describe a clearer picture of competition. This transformation, however, is not rapid. Rather, it takes place over time in economies that always accept new flows of unskilled labor at low wages and poor working conditions. Similar conclusions seem to have been reached in research into the past 100 years of immigration into France (Tribalat et al. 1991), where the complementarity found between foreigners and natives hides the overall effect of slowing the modernization process.

Foreigners may therefore cause a kind of technological unemployment, which is the opposite of traditional opinion. Added to traditional unemployment caused by labor-saving technology at high levels of industrial growth, a lack of technological innovation would result in insufficient demand for skilled labor and therefore unemployment or discouragement in an industrial country with a skilled labor force. Available evidence, however, does not seem to confirm this view. Even if the high unemployment in the southern European countries is not concentrated in the low-skilled groups, neither is it prevalent in the groups of those with an intermediate level of education. To discuss this possible effect of immigration it would be necessary to know the number of additional jobs that the most modern technology can create. It is difficult to get an overall view of such a situation because it varies greatly among economic systems, sectors, and periods. General economic equilibrium analyses have highlighted, both in Greece and in Spain, how the effect of immigration on the local labor markets depends on changes in

the overall economic system; the labor market settles at lower wage levels for native workers with the same skills as immigrants, and there is a possible and probable competitive effect for jobs – but all that depends strictly on the balance of payments deficit.

The southern European countries, however, have yet another reason to be careful in their choice of migration policy. On the one hand, the level of unemployment for natives is high, especially in Italy and Spain, but high unemployment is concentrated in areas where the demand for labor is lower; immigrants, who are more mobile, satisfy any excess demand where it exists. A possible competition could take place between immigrants in high-demand areas and natives in low-demand ones, but no evidence is available of possible discouraged internal mobility of natives due to the presence of immigrants (section E in Figure 3.1). Immigrants in high-demand areas could discourage the decentralization of production in high-unemployment areas (section F in Figure 3.1) and thus could play an additional competitive role. In turn, this would lead southern European countries toward a more restrictive migration policy.

On the other hand, immigration discourages the decentralization of production in foreign countries, thus keeping traditional production in southern Europe. What is more, these countries are experiencing a decrease in population due to a low birth rate, something that would lead them to favor an open migration policy. The downward trend of a nation's population creates a potential demand for additional labor. This demand could be satisfied in part by growth in female labor, but it also creates a demand for foreign labor.

In a flow model of the labor market, the rate of generational replacement identifies how many jobs are created for those who enter the labor market generationally (the 16–65 cohort) by those who leave the labor market generationally (the 65 and over cohort). Generational replacement reaches 0.94 in the decade 1990–2000, and 1.98 in 2000–2010 for the countries of the northern basin of the Mediterranean (Portugal, Spain, France, Italy, and Greece) (Bruni and Venturini 1995). This means that for every person who enters the labor market, in theory, there will be a job waiting for him or her, if only for generational reasons. Thus even if the economic system is not able to create additional jobs, young people will have jobs to go to. In the north of Italy, this phenomenon will be even more evident; for every male who entered the labor market in the five years from 1996 to 2001, there were 1.5 jobs available (Bruni 1994).

The level of unemployment, however, can increase in terms of quality, not quantity, if there is a mismatch between demand and supply that can

be satisfied by workers whose skills and aspirations differ from those of the natives. This reduces the incentives to adopt technology in line with the supply of labor.

Empirical research does not reveal strong competition between natives and foreigners, and immigrants do not seem to be the cause of increased unemployment and reduced wage growth among native workers. Analyses based on the general economic equilibrium models reach opposite conclusions, but they look at the long term and are based on simplifying hypotheses. Thus, the elements of competition revealed are different from those in previous studies and do not contradict them. Instead, they identify a basic trend in the economic system that has not yet been established and perhaps never will be established but that is an underlying tendency.

At this point, it is worth reflecting again on the famous "rules" that favor complementarity between foreigners and natives. If there are no clear signs of competition between natives and foreigners in the short term, the general characteristics of a migration policy (not very selective) and of the labor market (not very flexible) can in the long term offset the positive effects revealed up to now and favor a radical change in the role of immigration.

For these reasons, the "indications" offered by the experience of countries having a long tradition of immigration suggest that less restrictive migration policies should be adopted in order to discourage irregular immigration. As has been seen, this is the most difficult to control. But any policies should be selective so as to favor the economic integration of immigrants.