THE ECONOMIC IMPACT OF IMMIGRATION FOR THE HOST COUNTRIES

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ABSTRACT:

In this paper, we will investigate the economic consequences of immigration for the host countries. Recently, the debate has been centered on the role of immigration in the process of aging. A priori, the immigration of workers is likely to affect the economic situation of the host country in multiple ways, both positive and negative. Most studies focused on the labor market reveal a weak net gain of immigration whose distribution depends on the skill structure of immigrants and domestic labor force. Empirical studies show that past immigration had only a weak impact on native wages and unemployment rate. The net effects on welfare benefits are not clear and are related to the composition of migrant flows. Studies analyzing the relations between the labor force migrations and the dynamics of growth of the concerned areas put forward different mechanisms according to whether one uses exogenous or endogenous growth models. However, whatever the theoretical framework considered, the immigrants' skills will be the determinant variable.

JEL CLASSIFICATION: F22, J31, J61.

KEYWORDS: International Migration, Geographic Labor Mobility, Immigrant Workers.

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INTRODUCTION

For many reasons, international migrations have always been a subject of concern, both for the countries of origin and reception. Recently, the debate has been centered on the role of immigration in the process of aging (United Nations, 2000). Indeed, acting on immigration rather than on the fertility rate in order to attenuate demographic trends has the advantage of having immediate effects. However, the extent of migratory flows to implement largely depends on the demographic objectives. UN simulations reveal that a stabilization of the dependency ratio until 2050 imply migratory flows of an unrealistic size. Hence, Europe should annually accommodate 12.7 million immigrants, either on the whole 700 million from here to 2050 (for an initial population of 372 million inhabitants) and the US 10.8 million, or nearly 600 million in 55 years.

Unrealistic as they may be, these projections lead us nonetheless to some interesting conclusions. On the one hand, it confirms that massive immigration cannot alone constitute a solution to aging in the long run. Indeed, as time goes by, the fertility behavior of immigrants is aligned with that of the natives. On the other hand, as recently recalled by the European Commission, immigration can be used in order to alleviate sectoral labor shortages or to hire highly skilled foreign workforce. Therefore, this debate on replacement migrations arrives at the same time as that of selective migrant policies. Several countries, such as the US, Australia or Canada, have already set up selection programs aiming at increasing the proportion of skilled foreign workers. These selective policies allow these countries to face possible labor shortages in some sectors, such as information technology and to create a flexible labor pool. In the context of skilled labor shortages where recruitment difficulties can develop in just a few years as a result of aging, many countries have to consider outlining a new migratory policy.

A priori, the immigration of workers is likely to affect the economic situation of the host country in multiple ways, both positive and negative. Any serious evaluation must take all the implemented mechanisms into account and evaluate their relative importance. In this article, our aim is to outline the economic effects of migratory flows from the host country point of view. We will successively present the recent trends in international migrations, the consequences of immigration on the labor market and on government budgets, and finally the long-term economic implications.

1. TRENDS IN INTERNATIONAL MIGRATION

Despite difficulties in comparing international data, there are both a number of characteristics common to the majority of OECD countries and notable changes in the size and composition of migratory flows. Historically, the US have always been an immigration country since they are the largest net recipients of immigrants (850 000 aliens entered

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in 2000). Europe has experienced net flows of migration for four decades. This is particularly the case of Germany (as well as France, Switzerland and the UK), which receives nearly four times more immigrants than the majority of other European countries. In Japan, immigration has traditionally been negligible, even if the relaxation of restrictions aiming at temporary migrations allowed 346 000 arrivals in 2000. Since the early 1980s, net migrations have constituted the main population growth factor for the European Union taken as a whole as well as for the US.

Reflecting the increase in immigration over the last two decades, the stock of foreigners in OECD countries grew by over 13 million between 1988 and 1998, reaching approximately 57 million people, i.e. 7% of the total OECD population (OECD, 2001). On the whole, more than half of the migrants are accommodated by a limited group of rich countries (Table 1). North America is in first place with more than 30 million immigrants. Western Europe – The European Union and Switzerland - constitutes the second of these poles. More than 20 million aliens are established there, of which two thirds come from non EU countries. Finally, Australia accommodates 4,5 million immigrants. In Europe, the share of foreigners in the total population is relatively weaker (approximately 5% in 2000) in comparison with the much more important proportions in some countries (reaching almost 20% in Australia and Canada and 10% in the US).

Table 1. Foreign or foreign born (a) population in selected OECD countries in 2000

<table>
<thead>
<tr>
<th></th>
<th>Inflows of foreigners (Thousands)</th>
<th>Stock of foreigners (Thousands)</th>
<th>Share of the total population (%)</th>
<th>Foreign workers (Thousands)</th>
<th>Share of the working population (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>673,9</td>
<td>7 297</td>
<td>8,9</td>
<td>3 429</td>
<td>8,8</td>
</tr>
<tr>
<td>Australia</td>
<td>92,3</td>
<td>4 517</td>
<td>23,6</td>
<td>2 365</td>
<td>24,5</td>
</tr>
<tr>
<td>Belgium</td>
<td>68,6</td>
<td>862</td>
<td>8,4</td>
<td>366</td>
<td>8,4</td>
</tr>
<tr>
<td>Canada</td>
<td>227,2</td>
<td>4 971</td>
<td>17,4</td>
<td>2 839</td>
<td>19,2</td>
</tr>
<tr>
<td>France</td>
<td>95,2</td>
<td>3 263</td>
<td>5,6</td>
<td>1 571</td>
<td>6,1</td>
</tr>
<tr>
<td>Italy</td>
<td>271,5</td>
<td>1 388</td>
<td>2,4</td>
<td>246</td>
<td>1,1</td>
</tr>
<tr>
<td>Japan</td>
<td>345,8</td>
<td>1 686</td>
<td>1,3</td>
<td>155</td>
<td>0,2</td>
</tr>
<tr>
<td>UK</td>
<td>288,8</td>
<td>2 342</td>
<td>4,0</td>
<td>1 220</td>
<td>4,2</td>
</tr>
<tr>
<td>Switzerland</td>
<td>87,4</td>
<td>1 384</td>
<td>19,3</td>
<td>717</td>
<td>18,3</td>
</tr>
<tr>
<td>United-States</td>
<td>849,8</td>
<td>28 400</td>
<td>10,4</td>
<td>17 384</td>
<td>12,4</td>
</tr>
</tbody>
</table>

a) Data for the US, Canada and Australia refer to foreign-born population.

Source: Trends in International Migrations, OECD.

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2 For more precisions, see the different editions of the OECD annual report, Trends in International Migrations.
The migration motivations of this foreign population have considerable importance in our debate. Even if they vary significantly from one country to another, family reunification prevails in the flows of entries of almost all OECD countries. In developed countries, they generally represent nearly half of the new entries, even reaching 3/4 of the new arrivals in the US and in France. Recently, the number of asylum seekers has also increased, reaching relatively large proportions in some countries. Thus, the extrapolation of past trends would leave little room for a selective immigration policy.

The characteristics of the foreign population differ significantly from those of the nationals and explain the growing interest taken in replacement migrations or in selective immigration policies. First of all, the age structure of this population, even if it tends more and more to approach that of the natives, is often slightly younger. For example, the median age of a new immigrant is 30 whereas that of the OECD total population is 36. Then, the fertility rates of immigrant women are generally relatively higher. Foreign births contribute to the natural population increase and slow aging. However, this phenomenon primarily depends on the persistence of migratory flows. Indeed, a prolonged stop in immigration results in appreciably reducing these positive effects in the long term, insofar as the fertility rate of foreign women tends to align itself to that of natives. Finally, the immigrant population is often characterized by a lower skill level than that of the natives. Indeed, in a great number of OECD countries, more than half of the adult foreign population has only a lower secondary level of diploma (Table 2).

<table>
<thead>
<tr>
<th></th>
<th>Lower secondary</th>
<th>Upper secondary</th>
<th>Third level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Foreigners</td>
<td>Nationals</td>
<td>Foreigners</td>
</tr>
<tr>
<td>Unites-States</td>
<td>30,1</td>
<td>9,3</td>
<td>24,7</td>
</tr>
<tr>
<td>Germany</td>
<td>48,5</td>
<td>15,1</td>
<td>36,1</td>
</tr>
<tr>
<td>France</td>
<td>66,7</td>
<td>34,9</td>
<td>19,6</td>
</tr>
<tr>
<td>Italia</td>
<td>55,0</td>
<td>55,8</td>
<td>32,1</td>
</tr>
<tr>
<td>UK</td>
<td>30,1</td>
<td>18,8</td>
<td>29,1</td>
</tr>
<tr>
<td>Canada</td>
<td>22,2</td>
<td>23,1</td>
<td>54,9</td>
</tr>
<tr>
<td>Switzerland</td>
<td>33,6</td>
<td>10,5</td>
<td>42,6</td>
</tr>
</tbody>
</table>

Source: Trends in International Migrations, OECD.

Hence, past tendencies clearly show an immigration with different socio-economic characteristics than those of natives. Let us now focus on the economic consequences of immigration for the host country.
2. Immigration and Labor Market

2.1. Theoretical developments

The theoretical analysis of the labor market does not lead to a clear answer to the impact of immigration on natives' wages and unemployment. In standard models, the impact of immigration on the labor market is analyzed as a shock on a factor of production, i.e. labor supply or even low skilled labor supply. However, the effects are actually multiple: on total population, on final demand, on capital per worker, on employment and unemployment, and on income distribution.

The most analyzed outcome is the direct effect on labor supply. Since Borjas (1995), it is well known that an entry of foreign labor not accompanied by physical capital reduces the equilibrium wage rate and involves a redistribution process. While increasing the work supply from $N$ to $L$, immigration induces a fall in the marginal product of labor and in wages from $w_0$ to $w_1$ (Figure 1). Then, national income increases going from $ABNO$ to $ACLO$. Immigrants grant a share equivalent to $w_1M$. The return on other inputs increases and is now equivalent to $Aw_1C$. This increase can be divided into two parts: $w_0BDw_1$ is an income transfer from native workers and to thebenefit of other factors of production; $BCD$ is the net contribution of immigrants to the natives' income, entirely collected by factors of production other than work. As such, immigrants only capture a part of the wealth they contribute to creating. As a result, the natives then receive an "immigration surplus".

Figure 1. The Immigration Surplus (Competitive Market)

Borjas (1995) has estimated that the immigration surplus in the US was only on the order of 0.1% of GDP. Even if the value of the surplus is low, immigration has a substantial economic impact. "The relatively small size of the immigration surplus—particularly when compared to the very large wealth transfers caused by immigration—probably explains why the debate over immigration policy has usually focused on the
potential harmful labor market impacts rather than on the overall increase of native income. In other words, the debate stresses the distributional issues (the transfer of wealth away from workers) rather than the efficiency gains (the positive immigration surplus).” (Borjas, 1995)

The consequences of a change in the labor supply structure are related to the degree of complementarity or substitutability between immigrant labor and other categories of labor (and even other factors of production). Until now, we have considered that the migrant workers were perfectly substitutable with the domestic workers. However, many observations tend to show that this substitutability is imperfect and that migrant workers with the same observable characteristics have lower wages than natives (Borjas, 1994). Hence, it is essential to consider the existence of several categories of workers, either by identifying the factors of production of which immigration modifies the total supply (Borjas, 1995) or by considering migrant workers as a specific factor of production (Grossman, 1982; Greenwood and Hunt, 1995; Greenwood, Hunt and Kohli, 1996). Such studies lead to the well-known result summarized by Friedberg and Hunt (1995): “In a closed economy model, immigrants will lower the price of factors with which they are perfect substitutes, have an ambiguous effect on the price of factors with which they are imperfect substitutes and raise the price of factors with which they are complements.”

Exclusively focused on labor markets, these studies disregard important channels whose presence is likely to modify the results and their interpretation. A change of perspective is then necessary. According to Altonji and Card (1991), the use of a partial equilibrium model can be erroneous. At the same time, migrations shift the labor supply and, through the demand for goods and services, the labor demand. As immigrants raise the scale of the economy, the marginal product of capital and labor increases. This additional effect can enlarge the size of the immigration surplus in a substantial way. The final consequences of a simultaneous increase in the labor supply and demand, induced by a higher goods and services demand, strongly depend on the overall level of returns in the economy. Beyond certain thresholds, it seems reasonable to consider that immigration increases the congestion and that the returns to scale are decreasing in the presence of non-reproducible factors.

International mobility of goods and capital can modify the incidence of the immigration effects. Consequently, the analysis of the goods market channel must be undertaken at the same time as the relations between immigration and foreign trade (Borjas, Freeman and Katz, 1997). According to the Heckscher-Ohlin theorem, the mobility of goods and factors induces a convergence of the factor price between the different regions considered. Most of the argumentation rests on a possible substitutability between imports and domestic production, whose supply can be reinforced by immigration. For some goods, the nationals can satisfy their demand by importing these goods from low-cost labor countries or they can "import" workers and produce there.
If trade can be a substitute to factor mobility, particularly to the migration of workers, the mechanisms at work are complex and cannot be reduced to a one-to-one relation. Several theoretical contributions have established that while deviating, even marginally, from the standard framework, free trade did not necessarily involve the equalization of the factor prices. Trade and migration could then appear as complementary. For example, the existence of technological differences between countries (Markusen, 1983) and of specific production factors (Jones, 1971) questions the idea of a substitutability between immigration and foreign trade, which is confirmed by the empirical study of Collins, O' Rourke and Williamson (1997).

Furthermore, it seems inappropriate in the long term to assume the stability of natives stock of production factors. Indeed, the change in the labor supply induced by the arrival of immigrants is also the consequence of indirect effects through the reaction of the indigenous population. On the one hand, the fall of wages induced by immigration leads native workers to review the amount offered on the labor market derived from choices between work and leisure. On the other hand, migrations can also influence the qualitative aspects of the labor supply, particularly the skill choices. Indeed, the domestic population can react to the modification of relative wages through training, thereby decreasing the manpower of unskilled workers to increase the skilled worker supply (Chiswick, 1989).

Finally, taking into account natives' migratory movements seems to be crucial. Native migration may attenuate the local impact of immigration. By migrating away from areas of relatively large immigrant concentration, or not migrating to such areas, natives avoid the potentially adverse impacts that may be forthcoming through the production structure channel. At the same time, these migratory movements may not be sufficient to produce noticeably significant effects at the macro level. Thus, internal migrations could distort the estimation of the immigration consequences on the labor market.

### 2.2. EMPIRICAL STUDIES

Although no clear relation between immigration and unemployment emerges (Figure 2), migratory flows remain perceived as tending to increase the unemployment rate of natives and decreasing their earnings. Measuring the effects of immigration on the labor market gives rise to a vast literature. It is difficult to estimate the size and the nature of these effects since they depend on the volume of immigration, on the composition of the successive waves and on the migrants' assimilation. However, there is a consensus on the effects of the immigrants' arrival on the host labor market.

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1 See Schiff (2000) for a detailed presentation of these works.
Source: *OECD*.

Empirical studies based on US data don’t reveal any clearly negative effects on native wages and employment opportunities (Table 3). On average, these studies conclude that native wages are slightly lower in areas with a strong rate of immigration. Therefore, the elasticity of the native wage with respect to the number of immigrants generally lies between –0,01 % and –0,02 %. It means that a rise of 10 % of immigrants in a given geographical area would result in a fall in the native wage of about 0,2 % in this area. However, the immigrant skill level determines the size of this effect, through the complementarity (or the substitutability) between immigrant and national workers.

**Table 3. Elasticity of native wages with respect to the number of immigrants**

<table>
<thead>
<tr>
<th>Study</th>
<th>Impact on</th>
<th>Dependant variable</th>
<th>Elasticity estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bean, Lowell and Taylor (1988, p. 44)</td>
<td>Native Mexican men Black men</td>
<td>Annual earnings</td>
<td>-0,005 to +0,05</td>
</tr>
<tr>
<td>Borjas (1990, p. 87)</td>
<td>White native men Black native men</td>
<td>Annual earnings</td>
<td>-0,01</td>
</tr>
<tr>
<td>Grossman (1982, p. 600)</td>
<td>All natives</td>
<td>Factor share of native workers</td>
<td>-0,02</td>
</tr>
<tr>
<td>LaLonde and Topel (1991, p. 186)</td>
<td>Young Black natives Young Hispanic natives</td>
<td>Annual earnings</td>
<td>-0,059</td>
</tr>
</tbody>
</table>

Source: *Borjas (1994).*

Borjas, Freeman and Katz (1992) put forward the considerable decline in the earnings and employment prospects of unskilled workers in the US. They estimate that immigration and
foreign trade accounted for 3 to 5 points of the 9% fall in unskilled wages between 1980 and 1988. According to them, the increase in the trade deficit in the 1980's (representing an unskilled implicit supply) and the increase in immigration have raised the unskilled labor supply by approximately 30%. This shock on the work supply would explain 30 to 50% of the increase in inequalities in the US between 1980 and 1988. Similar results were obtained in a more recent update (Borjas, Freeman and Katz, 1997) like in a similar study undertaken by Jaeger (1996).

Borjas (1999) has advanced a more fundamental criticism on the empirical approach of these studies. Most attempts to estimate the impact of immigration on wage rates use a spatial correlation approach. However, when the mobility costs remain reasonable, the economic theory suggests that any factor generating interregional differences in welfare led to migrations from the weakest welfare areas towards the highest. Therefore, Filer (1992) and Card (1997) show that natives seem to leave the areas where immigration significantly increases. This would spread out the immigration repercussions over the entire territory and would prevent the seizing of effects by an interregional comparison. Moreover, the reactions of the domestic population concentrate primarily on the unskilled, who are the closest substitutes for new immigrants.

Few studies focus on the impact of immigration on the native employment opportunities. Table 4 summarizes the representative results in the literature. The bulk of the work again relates to the US labor market. Estimates such as those of Simon, Moore and Sullivan (1993) and Winegarden and Khor (1991) reveal a weak positive impact of immigration on the US unemployment rate. Nevertheless, these results cannot be directly transposed to the European case. Indeed, the labor markets in Europe are distinguished from the US market for three reasons: slower adjustment to economic differences, unemployment hysteresis and stronger imperfections. European studies of the immigration impact on labor market are fewer but lead to the same conclusions as work on US data.

**TABLE 4. ELASTICITY OF NATIVE EMPLOYMENT WITH RESPECT TO THE NUMBER OF IMMIGRANTS**

<table>
<thead>
<tr>
<th>Study</th>
<th>Impact on</th>
<th>Dependant variable</th>
<th>Elasticity estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Weeks worked</td>
<td>-0,062</td>
</tr>
<tr>
<td></td>
<td></td>
<td>White native men</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Labor force participation rate</td>
<td>-0,01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Black native men</td>
<td></td>
</tr>
<tr>
<td>Muller and Espenshade (1985, p. 100)</td>
<td>Black natives</td>
<td>Labor force participation rate</td>
<td>+0,04</td>
</tr>
<tr>
<td>Simon, Moore and Sullivan (1993)</td>
<td>Natives</td>
<td>Unemployment rate</td>
<td>-0,01</td>
</tr>
<tr>
<td>Winegarden and Khor (1991, p. 109)</td>
<td>Young White natives</td>
<td>Unemployment rate</td>
<td>+0,01</td>
</tr>
<tr>
<td></td>
<td>Young Black natives</td>
<td>Unemployment rate</td>
<td>-0,003</td>
</tr>
</tbody>
</table>

**Source:** Borjas (1994).
Although Winkelman and Zimmermann (1993) found that immigration contributed slightly to increasing unemployment in Germany in the 1970s, Muhleisen and Zimmermann (1994) did not find any effect in the 1980s. In terms of wage effect, it is also necessary to distinguish between skilled and unskilled domestic labor force. For example, DeNew and Zimmermann (1994) demonstrated that immigration appeared to have depressed the wages of unskilled German workers but had an opposite effect on those of the skilled workers. They suggested that a 1% increase in the number of immigrants would result in a fall of 4.1% of the average wages, a fall of 5.9% of the unskilled wages and an increase in 3.5% of the skilled one. Thus, the total effect seems to be more significant than in the US case.

Over the period 1974-1994, Gross (1999) studies the impact of immigrant inflows on the French labor market distinguishing between short and long-term consequences. This study proposes a negative relationship between long-term unemployment and immigration, suggesting a compensation of the employment occupied by immigrants by the increased demand they create. Alternatively, in the short term, an increase in the number of immigrants temporarily raises unemployment. In addition, the estimates of Jayet and al. (2002) over the period 1990-1997 hardly reveal any negative effect on native employment opportunities as well as on wage levels.

A comprehensive study of Gang and Rivera-Batiz (1994) on both the US and European labor markets aims to isolate the specific skill characteristics of the immigrant and the domestic labor force. Amongst other results, they suggest that a 1% increase in the labor force related to Turkish immigration would reduce the average wages of a Dutch worker by 0.09% whereas German workers would only experience a 0.01% fall. A 1% rise in Asian immigrants would reduce average UK wages by 0.08% and French wages by 0.1% while North-African inflow would reduce French wages by 0.07%. As recently pointed out by Borjas (1999), the national origin mix of the immigrant flows is the main factor accounting for the skill differences across the population of the source countries.

Other well-known studies analyzed the adjustments following "natural" migratory shocks. Card (1990) observed the impact of the massive exodus of Cubans towards Miami in the 1980s, Hunt (1992) the return to France of the "pieds-noirs" of Algeria and more recently, Angrist and Krueger (2003), the migrations following the wars in Bosnia and Kosovo. Despite the importance of these migratory shocks, these studies showed tiny effects on labor markets since adjustments were partially facilitated by internal migrations of natives and firms mobility.

The conclusions of these studies are convergent: the immigration impact on wages and employment is minimal. It is suggested that the immigrants are usually complementary rather than substitutable to the indigenous labor force. Therefore, the negative consequences of immigration will initially be endured by unskilled indigenous workers, especially if the two groups tend to be concentrated in the same sector. These conclusions are all the more robust as they are based on a large variety of data and methodological approaches.
3. IMMIGRATION AND GOVERNMENT BUDGETS

Another part of the debate focuses on the impact on government budgets. The comparison between the benefits drawn by immigrants from the public system (welfare expenditures, education, health, retirement) and the contribution they bring is not only important from the point of view of the public finance. It can also be a criterion for policymakers to encourage or, conversely, discourage immigration.

In the US, a vast literature attempts to explain the differences in behavior between immigrants and natives in the use of social programs. Blau (1984) showed that immigrant households had roughly the same probability as native households to receive public assistance in 1976. Nevertheless, with similar socio-economic characteristics, immigrants received lower benefits than nationals. However, a recent study of Gustman and Steinmeier (2000) demonstrates that the likelihood for an immigrant to receive social welfare payments increased between the beginning of the 1970s and the late 1990s, in line with the declining skills of recent immigrants. Borjas (1994) finally displays the existence of an adaptation period resulting in an increase in the welfare participation rate for a specific immigrant wave.

The most direct way to evaluate the consequences on net welfare benefits is to compare immigrants’ taxes and transfers for a particular fiscal year. Most applied studies have again been carried out on US data. A first wave studied the effects at a local level (see Rothman and Espenshade (1992) and Vernez and McCarthy (1996) for a survey of this literature). Despite contrasting results according to the time-period, the geographical area and the method employed, these studies suggest that immigration represents a net load for the budgets of immigration states, whereas the balance is rather positive at the federal level. However, these studies are not necessarily representative at the national level because of the concentration of immigrants in some geographical areas.

In the early 1990s, the works of Huddle (1993), Passel (1994) and Borjas (1994) calculated the overall net surplus for a particular year. Huddle claims that immigration represents an annual net cost of $43 billion. Passel criticizes these conclusions, which overestimate the real immigration costs, and ends at a fiscal surplus of roughly $30 billion. In view of these quite different conclusions, Borjas (1994) conducted his own estimates in order to show the great sensitivity to the key parameters. Initially, he shows that the difference between immigrants’ taxes and benefits represents a net surplus of $61.6 billion. However, all taxes are only compared with means-tested entitlement programs, which largely distorts the calculations. Taking this argument into account, immigrants represent a fiscal burden of $16.2 billion for social programs.

Hence, these studies cannot precisely evaluate the sign and the extent of migrants’ net contribution to the welfare system. Indeed, their static nature cannot take of the future taxes and benefits generate by immigrants into account. Simon’s (1984) approach is single insofar as the calculated balance is quasi-longitudinal. The costs of successive immigration cohorts are measured so as to evaluate the configuration of taxes paid and benefits
received by immigrant households throughout their life. The author shows that all immigrant cohorts that arrived in the US after 1950 are net contributors. But this attempt obviously questions whether the benefits associated with successive cohorts can be regarded as a life cycle estimate of the tax position of migrants. Hence, this study largely over-estimates the benefits related to recent immigration waves by including neither the costs associated with immigrants' children nor the changes in age and skill profiles since the 1970s. Therefore, the only meaningful calculation is longitudinal. For example, one knows that immigrant incomes grow with time whereas benefits received decrease; that a part will claim its old-age pension later like the natives, that another part will return to its country of origin. Finally, these studies are not appropriate for evaluating the impact of a migratory policy change.

Using a partial equilibrium model, Lee and Miller (1997) projected the long-term fiscal impact of immigration in the US. Using CPS (Current Population Survey) data, they initially built the age profiles of taxes and benefits of various immigrant generations in 1994. The benefits profiles of natives and immigrants appear quite similar but immigrants pay considerably lower taxes at each age. Then, they project the long-term impact and demonstrate that an immigrant has a positive average fiscal impact of $80,000 (Table 5). The positive fiscal impact is strongest when immigrants are 10 to 30 years old and highly depends on their skills (especially for the first immigrant generations).\(^5\)

### Table 5. Average Long Term Fiscal Impact of an Immigrant by Education Level in the US

<table>
<thead>
<tr>
<th>Group</th>
<th>&lt; High School</th>
<th>High School</th>
<th>&gt; High School</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigrants only</td>
<td>-89 000</td>
<td>- 31 000</td>
<td>+ 105 000</td>
<td>- 3 000</td>
</tr>
<tr>
<td>Descendants</td>
<td>+ 76 000</td>
<td>+ 82 000</td>
<td>+ 93 000</td>
<td>+ 83 000</td>
</tr>
<tr>
<td>Immigrants and descendents</td>
<td>- 13 000</td>
<td>+ 51 000</td>
<td>+ 198 000</td>
<td>+ 80 000</td>
</tr>
</tbody>
</table>

1996 dollars

**Source:** Lee and Miller (1997).

Other recent studies, based on generational accounting methodology, consider the impact of changes in immigration policy on the average fiscal burden of different age cohorts. The results differ somewhat depending on whether they are carried out in the US or in Europe. Auerbach and Oreopoulos (1999) show that the fiscal impact of US immigration is small. Whether there is a gain or a loss relies on the extent to which the existing fiscal imbalance will be borne by future generations. Moreover, the extent of expenditure unrelated to population size will largely determine the fiscal impact of immigration. Finally, a change in immigration policy that alters the composition rather

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\(^5\) Similar results were obtained in a recent update (Lee and Miller, 2000) taking account of higher projected rates of productivity, recent tax reform and last demographic projections.
than the level of migratory flows can potentially reduce the fiscal burden bequeathed to future generations. Conversely, Bonin and al. (2000) for Germany and Collado and al. (2003) for Spain, lead to a positive and significant effect of immigration on the intertemporal budget constraint, which can be substantially strengthened by a selective immigration policy. These apparently contradictory results rely on the much more dramatic nature of population aging in Europe compared to that in the US.

Contrary to previous partial equilibrium studies, Storesletten (2000) calibrates a general equilibrium overlapping generations model. Agents in the model economy differ in age, skill and legal status (natives, legal and illegal immigrants). Immigrants are also distinguished from natives by a higher fertility rate and return migrations are introduced. The author explores whether a selective immigration policy could be used to balance the US budgets in a context of population aging. The net discounted gain to the government of admitting one additional representative immigrant is a mere $7,400. But this figure masks strong disparities: the net contribution of a highly skilled immigrant is $96,000 whereas a medium and a low skilled immigrant represent a respective fiscal burden of $36,000 and $2,000. The optimal immigration policy able to satisfy the government long-term budget constraint with unchanged fiscal policy would be to increase the flows of high and medium skilled middle age migrants. This assumes an increase in the number of annual entries from 0.44% to 0.62% (that is to say 1.6 million annual entries) restricting them to 40-44 year-old high skilled immigrants (Table 6). Hence, if the age and skill composition of the new immigrants is similar to that of the current one, an increase in migratory flows could not help to balance the budget in the long run.

<table>
<thead>
<tr>
<th>Skill level</th>
<th>20-34</th>
<th>25-29</th>
<th>30-34</th>
<th>35-39</th>
<th>40-44</th>
<th>45-49</th>
<th>50-54</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-skilled</td>
<td>1.89</td>
<td>0.84</td>
<td>0.66</td>
<td>0.62</td>
<td>0.62</td>
<td>0.77</td>
<td>2.01</td>
</tr>
<tr>
<td>Medium-skilled</td>
<td>-</td>
<td>3.13</td>
<td>2.01</td>
<td>1.79</td>
<td>2.13</td>
<td>3.86</td>
<td>-</td>
</tr>
<tr>
<td>Low-skilled</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

* No positive number large enough to balance the budget in the long run.

Source: Storesletten (2000).

4. IMMIGRATION AND ECONOMIC GROWTH

Most studies presented up to now were conducted over a short time span. However, immigration is also likely to modify the labor/capital ratio and the technological choices in the long run. All in all, beyond the labor market adjustments, immigration influences the growth and the organization of the production system. Although the recent theoretical works have progressed in explaining the links between immigration
and economic growth, few empirical studies have been conducted. Moreover, the effects can be different according to whether the force driving growth is endogenous or exogenous.

Solow's model constitutes the starting point to study the links between immigration and growth. Widening the model to migrations implies a certain degree of mobility of work and human capital (but the economy remains closed with respect to foreign goods and assets). In such a model, the determinant variable will be the immigrant skills and therefore the human capital quantity they bring. Along the balanced growth path, the per capita income is an increasing function of the capital stock per efficient unit of work. Consequently, when the migratory flows are composed of relatively low skill labor, they intuitively imply a reduction of the per capita capital and of the per capita income of the host country. Hence, migrations induce a convergence in the living standards across countries when, as predicted by the market forces, they are carried out from the poorest countries towards the richest. Thus, migrations have an expansionist impact for the host country if the migrants are relatively more skilled than the natives and a recessionist impact in the opposite case. Table 5 summarizes the results in a modified Solow model.

**Table 7. Immigration effects in exogenous growth model if immigrants are less skilled than natives**

<table>
<thead>
<tr>
<th></th>
<th>Growth rate</th>
<th>Speed of convergence</th>
<th>Steady state output level</th>
<th>Current output level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigrants' human capital</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Net immigration rate</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Saving rate</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>=</td>
</tr>
<tr>
<td>Standard capital requirement</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>=</td>
</tr>
</tbody>
</table>

*Source: Dolado, Goria and Ichino (1993).*

Obviously, this kind of model has some drawbacks. First of all, the flows are determined by an ad hoc migration function instead of an optimizing choice of households. Then, the capital mobility is restricted to the human capital brought by the migrants. Braun (1993) proposed various extensions postulating variable degrees of capital mobility and a migratory function rising from optimizing decisions. Consequently, if we consider two countries of different development levels, people and capital will move towards the economy with the best technology. In order to prevent only one area from remaining populated in the long run, Braun introduced the concept of a natural resource subject to a congestion effect. However, the results are still similar except for the speed of convergence across economies that now relies on the degree of congestion of the fixed factor and on the sensitivity of the migration rate to the remuneration gap between countries.

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5 See Barro and Sala-i-Martin (1995) for a more detailed presentation.
Few studies have tried to empirically validate these results. The answers brought by empirical studies are sensitive to the period considered. Barro and Sala-i-Martin (1995) estimated the effect of migration on convergence for the US, Japan, Germany, Italy, France, Spain and the UK. When the migration rate is excluded from the list of explanatory variables, the results obtained are close to the usual one. When the net migration rate is included in the regressions, contrary to expectations, the estimate of $\beta$ with an OLS specification does not decrease when the net rate of migration is held constant. The results are probably influenced by the endogeneity of the net migration rate. Then, the authors try to isolate the exogenous shifts in migration by using the technique of instrumental variables. Consequently, the net migration rate is explained by 3 explanatory variables: the log of per capita income, the population density (reflecting a possible congestion effect) and the average temperature (representing a pure amenity). The difference between the convergence speed estimated while excluding and including the migration rate is weak. Hence, the uncertainty of the results indicates that migration plays only a minor role in convergence.

Conversely, the studies covering the period 1850-1914 demonstrate the dominating role of migrations in the convergence process (Taylor and Williamson, 1994; Williamson, 1995). Migrations account for a very large share of the convergence in GDP per worker and real wages. Therefore, the empirical validation of the exogenous growth model results seems limited and contradictory depending on the period considered. This mitigated impact on convergence supposes that migration also induces divergent phenomena not taken into account by the exogenous growth models.

The literature on labor migration and endogenous growth is mostly focused on the problem of brain drain. Consequently, the main purpose is to study the consequences of the migrations of skilled workers from poor countries to rich countries. The endogenous growth theories highlight some interdependencies (a possible source of divergence) between the quantitative and the qualitative characteristics of the migratory flows and the technological development. Several works, Miyagiwa (1991), Mountford (1994) and Haque and Kim (1995), take up the general framework of the Lucas model, including migrations. They assume the existence of two countries producing a homogeneous good through human capital, which is the only production factor. These studies show that the impact of immigration on the growth rate of host countries is rather ambiguous. It depends on the migrants’ and natives’ relative level of knowledge as well as the extent of the migratory flows. Indeed, when the flows are relatively important and the immigrants’ human capital is relatively weak, immigration has a negative impact on the long-term growth rate of the host country. Only an entry of highly skilled labor would have a positive impact on the long-term dynamics of the host country. In that case, immigration would be a potential source of divergence between the host and the source countries.

Robertson (2002) confirms this negative impact of low skilled immigration. He modifies the growth model of Lucas in order to integrate unskilled labor as a separate factor.

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6 See Domingues Dos Santos (1997) for a more detailed discussion.
He shows that an unanticipated rise in the stock of unskilled workers leads the economy on a transitional growth path with a slow growth of human capital relative to the balanced path. Indeed, in response to this exogenous rise of unskilled workers, the economy temporarily reduces the level of investment in human capital and increases goods production. Intuitively, the desire for current consumption outweighs the loss of future consumption from a lower growth rate of human capital.

Lundborg and Segerstrom (2002) used the framework of a quality ladders growth model like that of Grossman and Helpman. They consider two structurally different countries. The two areas are distinguished by the R&D capabilities of their workers. In equilibrium, all "High Tech" production takes place in the North. Then, the authors simulate the effect of a migration of southern workers towards the North equivalent to a 5% rise of the North's population. This policy increases the growth rate of per capita GNP in both the North and the South but results in a reduction of the real wages of the northern workers. Northern firms respond by allocating more resources to R&D activities, improving the probability of innovation. However, this higher rate of market turnover tends to reduce firms' expected discounted profit. On the whole, immigration reduces the discounted welfare of the northern population. But the growth rate only relies on the R&D activity that firms carry out. Indeed, this model does not take the externalities related to the human capital brought by immigrants into account (and therefore the importance for the host country to follow a selective immigration policy).

CONCLUSION

The purpose of this article is to evaluate the main economic effects of immigration. Most studies focused on the labor market propose a weak net gain of immigration whose distribution is related to the immigrants’ skills and to how those skills compare with the skills of natives. Empirical studies show that past immigration only had a weak impact on natives’ wages and unemployment rate. The net effects on welfare transfers are unclear and strongly depend on the composition of the migration flows. Nevertheless, we have seen that a selective policy on age and skills could represent an alternative instrument to the traditional economic policies with regards to aging. The studies analyzing the relations between migration and the dynamics of growth of the receiving and sending areas are of two types. Firstly, when the dynamic of growth is treated as exogenous, unskilled migratory flows speed up the convergence of wages and per capita GDP between the source and the host countries. Secondly, the endogenous growth theories highlight some interdependencies, maybe sources of divergence, between the quantitative and the qualitative characteristics of the migratory flows and the technological evolution.

To conclude, the skill composition of the immigrant population determines the social and economic consequences of immigration for the country. Thus, the positive effects stemming from future immigration mainly depend on the possibility of following a selective policy, as well as on the age and on the skill level of immigrants.
REFERENCES


