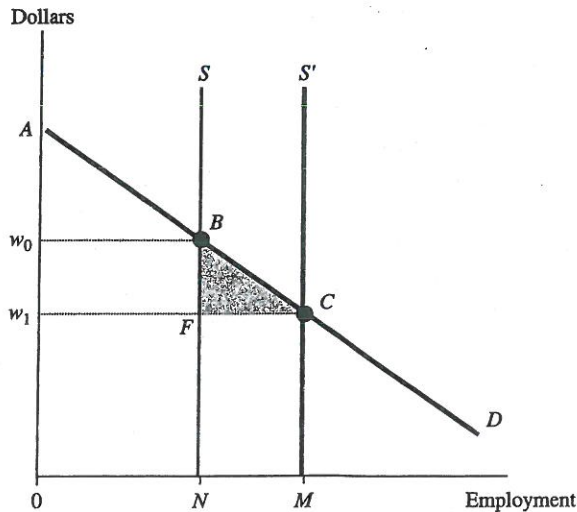


FIGURE 8-11 The Immigration Surplus

Prior to immigration, there are N native workers in the economy and national income is given by the trapezoid $ABNO$. Immigration increases the labor supply to M workers and national income is given by the trapezoid $ACMO$. Immigrants are paid a total of $FCMN$ dollars as salary. The immigration surplus gives the increase in national income that accrues to natives and is given by the area in the triangle BCF .



Recall that the labor demand curve is given by the value of marginal product schedule, so that each point on the demand curve tells us the contribution of the last worker hired. As a result, the area under the demand curve gives the total product of all workers hired. Hence, the area in the trapezoid $ABNO$ measures the value of national income prior to immigration.

What happens to national income when immigrants enter the country? If we assume that immigrants and natives are perfect substitutes in production, the supply curve shifts to S' and the market wage falls to w_1 . National income is now given by the area in the trapezoid $ACMO$. The figure shows that the total wage bill paid to immigrants is given by the area in the rectangle $FCMN$, so that the increase in national income accruing to natives is given by the area in the triangle BCF . This triangle is the **immigration surplus** and measures the increase in national income that occurs as a result of immigration and that accrues to natives.

Why does an immigration surplus arise? Because the market wage equals the productivity of the *last* immigrant hired. As a result, immigrants increase national income by more than what it costs to employ them. Put differently, all the immigrants hired except for the last one contribute more to the economy than they get paid.

The analysis in Figure 8-11 implies that if the demand curve is perfectly elastic (so that immigrants had no impact on the native wage rate), immigrants would be paid their entire value of marginal product and natives would gain nothing from immigration. Therefore, the immigration surplus exists *only* if native wage rates fall when immigrants enter the country. Therefore, immigration redistributes income from labor to capital. In

terms of Figure 8-11, native workers lose the area in the rectangle w_0BFw_1 , and this quantity plus the immigration surplus accrue to employers. Although native workers get a lower wage, these losses are more than offset by the increase in income accruing to native-owned firms.

Calculating the Immigration Surplus

Recall that the formula for the area of the triangle is one-half times the base times the height. Figure 8-11 then implies that the dollar value of the immigration surplus is given by

$$\text{Immigration surplus} = \frac{1}{2} \times (w_0 - w_1) \times (M - N) \quad (8-8)$$

This formula can be rewritten so as to obtain the immigration surplus as a fraction of national income. After rearranging the terms in the equation, we get³⁷

$$\frac{\text{Immigration surplus}}{\text{National income}} = \frac{1}{2} \times (\% \text{ change in native wage rate}) \\ \times (\% \text{ change in employment}) \\ \times (\text{labor's share of national income}) \quad (8-9)$$

where labor's share of national income is the fraction of national income that accrues to workers.

Immigrants have increased labor supply by about 15 percent in the United States. Some of the available evidence suggests that wages fall by around 3 percent for every 10-percent increase in supply, so that a 15-percent increase in supply would lower wages by around 4.5 percent.³⁸ Finally, it is well known that labor's share of national income is on the order of 0.7. This implies that immigration increases the real income of natives by only about 0.24 percent (or $0.5 \times 0.045 \times 0.15 \times 0.7$). The gross domestic product (GDP) of the United States is around \$15 trillion, so the economic gains from immigration are relatively small, about \$36 billion per year.³⁹

It is worth reemphasizing that this estimate of the immigration surplus is a short-run estimate. In the long run, neither the rate of return to capital nor the wage is affected by immigration. As a result, the long-run immigration surplus must be equal to zero. Immigrants increase GDP in the long run, but the entire increase in national income is paid to immigrants for their services. Ironically, in a constant-returns-to-scale economy, the economic benefits from immigration can only arise when workers in the receiving country are hurt by immigration. Equally important, *the larger the adverse wage effects, the greater the economic benefits.*

³⁷ In particular, we can rewrite the immigration surplus as

$$\frac{\text{Immigration surplus}}{\text{National income}} = \frac{1}{2} \times \frac{w_0 - w_1}{w_1} \times \frac{M - N}{M} \times \frac{w_1 M}{\text{National income}}$$

³⁸ George J. Borjas, "The Labor Demand Curve Is Downward Sloping: Reexamining the Impact of Immigration on the Labor Market," *Quarterly Journal of Economics* 118 (November 2003): 1335-1374.

³⁹ George J. Borjas, "The Economic Benefits from Immigration," *Journal of Economic Perspectives* 9 (Spring 1995): 3-22; and George E. Johnson, "Estimation of the Impact of Immigration on the Distribution of Income among Minorities and Others," in Daniel S. Hamermesh and Frank D. Bean, editors, *Help or Hindrance? The Economic Implications of Immigration for African-Americans*, New York: Russell Sage Press, 1998, pp. 17-50.