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Work Effort, Moderation in Expulsion, and Illegal Migration

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Abstract

Illegal migrants supply a valuable productive input: effort. But their status as illegals means that these migrants face a strictly positive probability of expulsion. A return to their country of origin entails reduced earnings when the wage at origin is lower than the wage at destination. This prospect induces illegal migrants to exert more work effort than comparable workers who face no such prospect. The lower the probable, alternative earnings, the harsher the penalty that illegal migrants will be subjected to upon their return, for a *given* probability of expulsion, and the higher the level of effort they will exert at destination. While the home-country wage that awaits the illegal migrants upon their return is exogenous to the host country, the *probability* of their return is not. Given the home-country wage, a higher probability of expulsion will induce illegal migrants to supply more effort. Hence, different combinations of probabilities of expulsion and home-country wages yield the same level of effort. Thus, variation in the extent to which receiving countries undertake measures aimed at apprehending and expelling illegal migrants can be attributed not to characteristics of the illegal migrants themselves but to a feature that pertains to the illegal migrants' country of origin.

1. The General Argument

Countries differ in the extent to which they are lenient or harsh toward the illegal migrants in their midst, and particular countries appear to treat such migrants differently at different times. Most of the countries of southern Europe, whose illegal migrants come largely from North Africa where wages are very low, have been much more lenient than the countries of northern Europe whose illegal migrants have often come largely from southern Europe where wages are not so low. Illegal migrants in Israel have lately been treated very harshly—a special government authority was set up to arrest and expel illegal migrants—a policy shift that closely follows a compositional change in the population of illegal migrants from workers coming largely from the West Bank and Gaza Strip to workers who increasingly originate from eastern Europe. While there could be cultural, sociological, or political reasons for this diversity, there may be an economic explanation for the apparent variation in the degree of moderation in expulsion policy, henceforth referred to as the "tolerance" accorded to illegal migrants.

Illegal migrants supply a valuable productive input: effort. But their status as illegals means that they face a strictly positive probability of expulsion. A return to their country of origin entails reduced earnings for them when the wage at origin is lower than the wage at destination. This prospect induces illegal migrants to exert more effort than comparable workers who face no such prospect. The lower the probable alternative home-country earnings, the harsher the penalty for illegal migrants on their return—for a *given* probability of expulsion—and the harder they will work at

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destination. While the home-country wage that awaits the illegal migrants upon their return is exogenous to the host country, the *probability* of their return is not. Given the home-country wage, a higher probability of expulsion will induce illegal migrants to apply more effort. Hence, different combinations of probabilities of expulsion and home-country wages yield the same level of effort. In particular, a high home-country wage combined with a high probability of return will elicit the same level of effort as will a low home-country wage combined with a low probability of return.

Similarly, a change in the composition of the group of illegal migrants by country of origin, or a change in the wage rate in a given country of origin, will induce a corresponding shift in enforcement policy in the receiving country. Thus, variation in the extent to which receiving countries undertake measures aimed at apprehending and expelling illegal migrants can be attributed not to characteristics of the illegal migrants themselves, but to a feature of the illegal migrants' countries of origin.

2. Detailed Reasoning

An advantage associated with the "admission" of illegal migrants is that they supply more effort for a given destination wage than legal migrants (Proposition 1 below). The reason for the differential supply response is that while by definition legal migrants have permission to stay, illegal migrants face a strictly positive probability of expulsion, and consequently a strictly positive probability of losing the high wages that they enjoy at present. Even if the probability that legal migrants will be asked or be compelled to leave is not zero, this probability is likely to be lower than the corresponding probability for illegal migrants. (When the downswing of a business cycle hits hard, legal migrants are often induced, requested, or even pressured to return to their home country. Similarly, social pressures by an alienated indigenous population can compel return migration.) Given a strictly positive probability of expulsion, a lower wage at origin will elicit greater effort at destination (Proposition 2 below). The reason for this relationship is that since a lower home-country wage inflicts a harsher penalty upon expulsion, the response aimed at mitigating the adverse outcome is stronger.

Let W_F be the wage rate at the destination country, and let W_H be the wage rate at the home country, such that $W_F > W_H$. Let e be the level of work effort, henceforth effort, exerted by illegal migrants at destination, and let $-U(e)$ be the twice differentiable disutility of effort, measured in money terms, such that the marginal utility from exerting effort is positive and rising: $(\partial U/\partial e) > 0$; $(\partial^2 U/\partial e^2) > 0$. Let t be a measure of the tolerance of the government of the country of destination toward the illegal migrants in the country, and let $P(e,t)$ be the twice differentiable probability of *not* being expelled, such that the first order effects of e and t on P are positive, and the second order effects are negative, namely the impact of effort exertion on the probability of not being expelled is positive,[1] $(\partial P/\partial e) > 0$, and declining, $(\partial^2 P/\partial e^2) < 0$; the impact of the level of tolerance on the probability of not being expelled is positive, $(\partial P/\partial t) > 0$, and declining $(\partial^2 P/\partial t^2) < 0$; and, since the impact of both the degree of effort exertion and the level of tolerance on the probability of not being expelled is positive, the effect of an increase in the level of tolerance on the impact that effort bears on the probability of not being expelled is assumed to attenuate this impact, $(\partial^2 P/\partial e \partial t) < 0$. For simplicity's sake, let the level of effort exerted by the illegal migrant at the home country be normalized at zero.

The illegal migrant seeks to maximize his net earnings, that is, his expected wage minus the cost (disutility) of effort. The net earnings per illegal migrant function associated with effort level e is thus

$$V(e) = P(e,t)W_F + [1 - P(e,t)]W_H - U(e). \tag{1}$$

Equation (1) can be rewritten as

$$V(e) - W_H = P(e,t)(W_F - W_H) - U(e), \tag{1′}$$

where the left-hand side of (1′) is the net gain to the illegal migrant from working in the destination country. Without loss of generality, we assume that $V(e) - W_H \geq 0$.

The decision problem of the illegal migrant is how much effort to exert. In this setting, since

$$\frac{\partial V(e)}{\partial e} = \frac{\partial P}{\partial e}(W_F - W_H) - \frac{\partial U}{\partial e},$$

the illegal migrant's chosen level of effort,[2] $e*(t, W_H, W_F)$, is implicitly given by

$$\frac{\partial P}{\partial e}(W_F - W_H) - \frac{\partial U}{\partial e} = 0. \tag{2}$$

PROPOSITION 1. *Illegal migrants supply more effort for a given destination wage rate than legal migrants.*[3]

PROOF. Legal migrants can be characterized by a large t, while illegal migrants can be characterized by a small t. Since from (2),

$$\left(\frac{\partial^2 P}{\partial e^2}de* + \frac{\partial^2 P}{\partial e \partial t}dt\right)(W_F - W_H) = \frac{\partial^2 U}{\partial e^2}de*,$$

we have that

$$\frac{de*}{dt} = \frac{-\frac{\partial^2 P}{\partial e \partial t}(W_F - W_H)}{\frac{\partial^2 P}{\partial e^2}(W_F - W_H) - \frac{\partial^2 U}{\partial e^2}} < 0.$$

Hence the proposition follows. □

PROPOSITION 2. *Given a strictly positive probability of expulsion, a lower wage rate at origin elicits a larger effort at destination.*

PROOF. Since from (2),

$$\frac{\partial^2 P}{\partial e^2}(W_F - W_H)de* - \frac{\partial P}{\partial e}dW_H = \frac{\partial^2 U}{\partial e^2}de*,$$

we have that

$$\frac{de*}{dW_H} = \frac{\frac{\partial P}{\partial e}}{\frac{\partial^2 P}{\partial e^2}(W_F - W_H) - \frac{\partial^2 U}{\partial e^2}} < 0.$$

Hence the proposition follows. □

COROLLARY. *The same level of effort by illegal migrants will be elicited by a combination of a low wage at origin and a low probability of expulsion as by a high wage at origin and a high probability of expulsion.*

Apprehending and expelling illegal migrants is costly. While (ordinarily) the government of the host country cannot affect the wage rate that prevails in the illegal migrants' home country, it can, at least to some extent, choose the level of resources it allocates to interdiction. From the perspective of the host-country government, the sanction of expulsion is an effective but not costless policy tool to procure a desirable degree of effort. Since expulsion lowers earnings, illegal migrants seek to dampen the probability of their expulsion by exerting more effort. Yet maintaining any positive level of the probability of expulsion requires outlays on apprehension and deportation. Suppose that the balance of benefits and costs associated with the "production" of expulsion probability $1 - P(e,t)$ yields an optimal level of effort (from the perspective of the government of the host country), $\tilde{e}$, for a given home-country wage $\tilde{W}_H$. From the Corollary it follows that a destination country that is anxious to encourage the efforts of its illegal migrants can "buy off" the desirable effort $\tilde{e}$ more cheaply when the illegal migrants' home-country wage is lower than $\tilde{W}_H$.

To see how the optimal outlay on apprehension and deportation of illegal migrants rises in tandem with the illegal migrants' home-country wage or, put differently, how a lower home-country wage enables the host country to economize on the optimal cost of interdiction as a device for eliciting desirable effort, consider the following framework.

The host country and the illegal migrant play a Stackelberg game in which the host country is the leader while the illegal migrant is the follower. In the first step of the game, the host country sets and announces the tolerance level t. In the second step, the illegal migrant chooses the effort level e. The host country finds the optimal tolerance level by backward induction. If the host country sets a "target" level $\tilde{e}$, then the corresponding tolerance level $\tilde{t}$ is the solution to the equation $\tilde{e} = e*(\tilde{t}, \tilde{W}_H, W_F)$. Specifically, let $C(t)$ be the cost of migration law enforcement per illegal migrant in the host country at the tolerance level t, $(\partial C/\partial t) < 0$. The host country's economy benefits from the illegal migrant's exertion of effort, e. Let the benefit be $B(e)$ with $(\partial B/\partial e) > 0$. Thus, the host country will have a net benefit (economic rent) of $B(e) - C(t)$ per illegal migrant in terms of its GDP. For simplicity, let us assume that the host country maximizes the surplus $B(e) - C(t)$. The first-order condition is

$$\frac{\partial B(e)}{\partial e}\frac{\partial e^*}{\partial t} = \frac{\partial C}{\partial t}. \tag{3}$$

Solving (3) yields the host country's optimal tolerance level $\tilde{t}$; and then at $\tilde{t}$, the illegal migrant's optimal level of effort $\tilde{e} = e*(\tilde{t}, \tilde{W}_H, W_F)$ for a given home-country wage $\tilde{W}_H$. With a higher $\tilde{W}_H$, $\tilde{t}$ has to fall to elicit the same level of effort $\tilde{e} = e*(\tilde{t}, \tilde{W}_H, W_F)$, that is, $\left.\frac{\partial \tilde{t}}{\partial \tilde{W}_H}\right|_{d\tilde{e}=0} < 0$. Hence we have that $\left.\frac{\partial C(\tilde{t})}{\partial \tilde{W}_H}\right|_{d\tilde{e}=0} > 0$.

This consideration suggests that a country that hosts illegal migrants from poorer countries will be more tolerant of illegal migration than a country whose illegal migrants originate from countries that are less poor. An apparent warm compassion could be the outcome of cool consideration. Likewise, a country that seeks to elicit a particular level of effort from its labor force of illegal migrants and that faces a rise in the share of migrants from poorer countries, can relax its apprehension and

deportation policy. While this approach gives the appearance of benevolent tolerance, the underlying reason for the policy shift is a recognition that it is possible to procure toil more cheaply.

This result relates to the interesting issue of the role and prevalence—or absence—of altruism as a motive in human and economic affairs. Let us refer to illegal migrants who originate from a country in which the wage rate is relatively low as poor, and to illegal migrants who originate from a country with a relatively high wage rate as less poor. A straightforward implication of altruistic inclinations is to accord the poor a more generous treatment than the less poor. The inference from conduct to motive suggests that altruism is at work when a country with poor illegal migrants is more lenient toward the illegal migrants than a country with less poor illegal migrants. The reason provided in this paper for the differential treatment of the poor and the less poor implies that inferring from consequence to reason requires caution; seemingly altruistic acts can emanate from pure self(country)-interest.

3. Concluding Remarks

By and large, wage rates have featured in migration research in one of two ways: explaining migration, and explaining labor market outcomes. The explanatory variable of migration that has been studied most closely is the wage differential. There has also been considerable interest in the wages that migrants earn. Presumably this interest has arisen because these wages are seen as a measure of migrants' relative and absolute success and as determinants of their consumption (savings), their remittances, and their capacity to self-finance human capital investments. Correspondingly the productive characteristics of migrants as determinants of their wage earnings were studied closely. A related interest has been the effect of the arrival of migrants on the wage earnings of native-born workers. Recently attention has been drawn to the wages that migrants do *not* earn as determinants of migrants' performance. This line of work is prompted by the idea that although the economic performance of migrants in the host country undoubtedly depends on qualifications, it is also affected by inclinations. Given the probability of return migration, a behavioral link has been established between the incentive of migrants to save in their country of destination and the prevailing wage rate in their home country such that migrants coming from a low-wage country have been shown to optimally save more than migrants from a high-wage country (Stark, 2002). It has further been shown that the relationship between the home-country's wage and the optimal level of savings at destination can shed fresh light on the intertemporal variation in the economic performance of successive cohorts of migrants from a given country of origin.

Much of the interesting literature, eloquently reviewed by Lalonde and Topel (1997), on the convergence of the earnings of migrants and those of the native-born views the observed pattern as an artifact; the pattern arises not from an upgrading of the skills of a given cohort of migrants but from a change in the unobserved skills of successive cohorts of migrants. Suppose that cohort $k+1$ is drawn from a section of the home-country distribution of unobserved skills that is to the left of the section from which cohort k is drawn. If skills, productivity, and earnings correlate positively, the cohort k migrants will outperform the cohort $k+1$ migrants, giving rise to the false impression that the performance of migrants improves over time spent at destination. The finding that a lower wage at origin prompts higher savings at destination suggests a new explanation of the observed pattern. Presumably, in time, the home-country's wage rises. The finding implies that the incentive facing the cohort $k+1$ migrants differs from

the incentive that the cohort k migrants had faced, such that the optimal savings and thereby the mean income of the cohort $k+1$ migrants are *lower* than those of the cohort k migrants. The variation in the economic performance of migrants may thus be explained by neither skills nor assimilation but rather by incentives.

The present paper continues this line of research. It shows how the wage at origin *after* migration, that is, the wage that migrants have given up but would earn if compelled to return, affects behavior at destination, and how variation in this wage interacts with a variation in the degree of tolerance accorded to illegal migrants by the host country. The complete story of how pre-migration wages impinge on post-migration preferences, choices, and outcomes is yet to be written.

References

Lalonde, Robert J. and Robert H. Topel, "Economic Impact of International Migration and the Economic Performance of Migrants," in Mark R. Rosenzweig and Oded Stark (eds.), *Handbook of Population and Family Economics*, Amsterdam: North-Holland (1997).

Stark, Oded, "On a Variation in the Economic Performance of Migrants by their Home Country's Wage," *Pacific Economic Review* 7 (2002):115–21.

Notes

1. Illegal migrants who work diligently and hard (say put in more hours a day) are less likely to be fired, be unemployed, be lured into unproductive activities, get into trouble with the law, or constitute a burden to the society that hosts them.
2. From the properties $(\partial^2 P/\partial e^2) < 0$ and $(\partial^2 U/\partial e^2) > 0$, it follows that the second-order condition for a maximum, $\frac{\partial^2 V(e)}{\partial e^2} = \frac{\partial^2 P}{\partial e^2}(W_F - W_H) - \frac{\partial^2 U}{\partial e^2} < 0$, holds.
3. Clearly, if all the migrants are to be treated equally and if the migrants' continued stay in the country of destination is independent of their effort, then all the migrants will exert the same effort and their home-country wage will play no role in determining their effort.