A theory of permissible illegal immigration

Arye L. Hillman a,b, Avi Weiss a,*

a Department of Economics, Bar-Ilan University, 52900 Ramat-Gan, Israel
b CEPR, London, UK

Received 1 March 1999; received in revised form 1 July 1999; accepted 1 August 1999

Abstract

In many countries laws are not enforced against visibly present illegal immigrants. The visibly present illegal immigrants also tend to be concentrated in particular sectors. We explain such permissible illegal immigration in an endogenous-policy model where selective sector-specific illegality transforms illegal immigrants from non-sectorally specialized to sector-specific factors of production. Under initial conditions where no immigrants are present, the median voter opposes immigration. When, however, a population of illegal immigrants has accumulated, ongoing illegal immigration becomes an endogenous equilibrium policy, at the same time that a majority of voters opposes legal immigration and opposes amnesty that would legalize the immigrants’ presence. We also establish a basis for domestic voters preferring that illegal immigrants be employed in service rather than traded-goods sectors. © 1999 Elsevier Science B.V. All rights reserved.

JEL classification: J61; D72

Keywords: Illegal immigration; Sector-specific; Traded-goods sector

1. Introduction

The substantial numbers of illegal immigrants who are present in many countries (see Jahn and Straubhaar, forthcoming) tend to be employed in selected industries (see Altonji and Card, 1989; Card, 1990; Hill and Pearce, 1990; Taylor,
Thus, in the U.S. and Europe, illegal labor is found concentrated in agriculture, as well as in service sectors such as housecleaning, extended baby-sitting and child care, care for the aged, gardening, restaurant employment (cooks and waiters), and other services of a personal nature. The same sector-specific concentration is found elsewhere. In Japan, illegally present foreigners are employed as bar hostesses. In Israel, illegal workers are employed as carers for the aged and as house cleaners. The illegal immigrants in these different cases are employed visibly and openly. Their employment is not surreptitious, as we would expect to be associated with illegality. Yet, although visible, the illegal immigrants appear to be ignored by enforcement authorities. Moreover, more illegal immigrants arrive, ostensibly unhindered, to join those present.

These observations of illegal immigrants concentrated in selective sectors and visibly present suggest, when taken together, suggest selective sector-specific enforcement of immigration laws. Empirical studies indeed support a perception that we are observing permissible illegal immigration.

Dávila and Pagán (1997), for example, provide econometric evidence that they interpret as indicative that U.S. "immigration authorities (have) pursued a de facto selective enforcement policy across industries". They note that illegal Mexican workers in the U.S. are seven times more likely to be apprehended in manufacturing industries than in agriculture, and 12 times more likely to be apprehended in manufacturing than in services sectors, and that selective enforcement has had the consequence of concentrating illegal workers in those industries in which enforcement is lax. They conclude that "the INS's (U.S. Immigration and Naturalization Service) policy (has had) the effect of turning weakly monitored industries into safe-havens for undocumented recent immigrants".

Vaupel and Martin (1987) reach similar conclusions from a study of enforcement of U.S. federal employer sanctions on farm labor contractors in California. They report miniscule enforcement in agriculture when compared with apprehension of illegal immigrations in other parts of the economy: farm labor contractors were hiring some 185,000 undocumented workers annually constituting approximately 30% of farm workers, whereas on average only 312 illegal workers were apprehended in any year.

Such observations on ostensibly permissible illegal immigration are reinforced by direct evidence of legislated selective enforcement. The U.S. Immigration Reform and Control Act designates agriculture as the only sector where immigration officials require a search warrant to enter premises (farms) when looking for illegal workers. Zolberg (1990) observes that the purpose of this "concession" can only be interpreted as being to ensure a ready supply of illegal immigrant labor for agriculture.

The above U.S. evidence on permissible illegal immigration is replicated elsewhere. In Japan, the bar girls are quite visibly foreign and are known to be illegal given the restrictive immigration policies. In Greece, illegal Albanians work overtly in agriculture. In Israel, throughout the decade of the 1990s, illegally
present workers have visibly gone about their activities unhindered, as long as they have been employed in old-age care, or in household cleaning, but only in these activities.1

The general theme of the evidence is summarized by Freeman (1994), who observes that governments in the world’s liberal democracies could, if they so wished, control the presence of illegal immigrants. Yet they choose to do so only when prompted by public opinion. The implication for policy determination is that, in various countries, the majority of voters does not object to, or perhaps supports, the presence of the illegal immigrants.

We are thus confronted with a seeming puzzle. Why do voters — or governments — permit illegal immigration? If workers are a majority in the voting population, we understand why policies are chosen that restrict and regulate immigration: models of international factor movements give the general result that domestic workers lose from immigration of competitive labor (see Venables, 1999). Yet, if governments are seen to mandate regulations controlling legal immigration, why do the same governments allow the visible presence of illegal workers? This paper seeks an answer to this question.

The theoretical background for our investigation of permissible illegal immigration is a variant of the specific-factors model of an open economy (Jones, 1971; Mayer, 1974; Ruffin and Jones, 1977), with, however, labor that has different productivities, and with non-traded goods. We view a legally resident population as earning income either as mobile labor or from non-diversified ownership of sector-specific capital. Mobile workers are the majority in the population, and policies are determined by majority voting. Since the median voter is a mobile worker who loses from immigration of foreign labor, a vote when no immigrants are present yields majority support for a policy of allowing no immigration.

The circumstances are, however, different, and the endogenous equilibrium policy changes, when a population of illegal immigrants is already present. With the presence of a population of illegal immigrants taken as a fact of history, we consider the outcomes when legal residents have the opportunity to vote on three policy alternatives. Voters can choose an amnesty for the illegal immigrants who are already present, but to allow no more immigration. Voters can, alternatively, choose to permit the illegal immigrants to remain illegally, while again permitting no more immigration. Or voters can choose to permit the illegal immigrants to remain illegally, and to permit still more illegal immigration. We show that the

---

1 Indeed, when in February 1998 protective face masks with filters were distributed to the population in response to a threat of biological and gas attack on the civilian population from Iraq, the government of Israel rejected proposals that the opportunity be used to identify and deport illegally present workers (who would have voluntarily departed if they not have protective masks). It was announced that illegal foreign workers could proceed to distribution centers to secure masks with no fear of apprehension. It was at the same time understood as a matter of fact (and as a derived consequence of selective enforcement) that illegal foreign workers were concentrated in designated sectors.
median voter has reason to prefer the third policy of maintained illegality with ongoing permissible illegal immigration.

A policy option that we do not consider is mass expulsion of the illegal-immigrant population. Such mass expulsion would benefit the median voter. Perhaps for humanitarian reasons, but also possibly for reasons of logistics, governments rarely, if ever, engage in mass expulsion of accumulated illegal-immigrant populations. We also show, however, that in a general model which acknowledges the non-traded goods that are prominently present in richer developed economies, there may in any event be no majority support for a policy of mass expulsion, even if such a policy were feasible.

The illegal immigration supported by the median voter is selective by sector of employment of illegal immigrants — which is consistent with the empirical evidence of sectoral concentration and selective enforcement of illegality. The sector-specificity of permitted illegality reflects the chosen means of enforcement of illegal-immigration laws. Enforcement can take place at the border, or can be internal within the country (see Ethier, 1986a). At the border, credible verifiable information is not available regarding the employment intentions of apprehended illegal immigrants. Internal enforcement can, however, take place after the employment of illegal immigrants is observed, and so permits the selective enforcement of laws regarding illegal presence by sector. The sector-specific enforcement has the effect of transforming the illegal immigrants, who are in principle intersectorally mobile, into sector-specific factors of production, with the sector specificity endogenously determined according to the sectors where illegality is permitted.

The fundamental role of illegality in our model is thus to deny immigrants the constitutional or legal right to free choice of occupation. Legal residents can choose any occupation or employment for which they are qualified, and for which they receive a job offer. Freedom of choice of employment can be denied to illegal immigrants, precisely because they are illegal.\footnote{There are, nonetheless, historical instances where freedom of choice of employment has been denied to residents of a country who have not been illegal immigrants. See for example Don (1994) on the restrictions placed on Jews in Europe.}

Our principal question is why illegal immigration is permitted, both in terms of permitting immigrants who are present to stay, and also in terms of permitting the entry of new illegal immigrants. A second question that we address concerns the type of jobs that illegal immigrants are permitted to hold. We pose this question because, agriculture aside, illegal immigrants in different countries tend to be concentrated in service or non-traded industries (see Bürgenmeier and Favarger, 1994). The observed concentration in services could be either coincidental or a concerted consequence of policy regarding enforcement. When we evaluate net benefits to legal residents from alternative illegal employment, we find that
domestic voters have grounds for preferring that illegal immigrants be employed in non-traded service activities rather than in traded goods’ sectors.

We begin in Section 2 with a model where only traded goods are produced, and where workers differ in individual absolute productivities but have the same comparative advantage in employment in different sectors. Section 3 introduces non-traded goods into the model. Whether or not non-traded goods are produced, resident mobile labor’s real income is unaffected by illegal immigrants when a sufficiently large population of illegal immigrants is present, because of specialized sectoral employment (see also Djajić, 1997). The empirical evidence consistently shows that illegal immigration has minor effects on wages and employment of legally resident workers (see Greenwood and McDowell, 1984; Card, 1990; Friedberg and Hunt, 1995).

Still, sometimes illegal employment is not specialized, and illegal and legal workers are found employed side-by-side in the same activities. To encompass this in the model, Section 4 introduces differences in intersectoral comparative advantage. We show that if sufficient numbers of legal workers are employed side-by-side with illegal immigrants, the equilibrium policy can be an amnesty for the illegal immigrants who are present, together with enforcement to prevent further immigration. The equilibrium policy chosen by the median voter is again permissible illegal immigration, if (as to be expected) a relatively small number of legal residents has an individual comparative advantage in the same employment as illegal immigrants. The final section compares our conception of permissible illegal immigration with the views of illegal immigration of previous literature.

2. A basic model

2.1. Production and incomes

Consider a competitive open economy populated by \( n = n_L + n_A + n_B \) individuals, who are also voters. A number \( n_L \) of the population earn incomes as domestically mobile labor, and \( n_i, i = A, B \), respectively, receive income from ownership of \( K_a \) and \( K_b \) endowments of sector-specific capital. We shall subsequently introduce non-traded goods, but, to begin with, let the economy produce only traded goods. An individual worker supplies \( l \) efficiency units of labor per unit of time. The productivity of workers is perfectly observable by employers. Workers differ in their absolute productivities, so that \( l \in (l_1, l_\bar{L}) \). The pdf of workers’ abilities is \( g(l) \) and the cdf is \( G(l) \). A worker whose value of marginal product is insufficient to warrant payment of an economy-wide nominal minimum wage per unit of time \( W \) is unemployed. Factor returns, and hence real incomes, are competitively determined, and given the constant returns to scale
production technologies \( x_i = F_i(L_i, K_i) \), \( i = A, B \) nominal wages per efficiency unit of labor are

\[
\bar{w}_a = \bar{F}_a F_a^a(L_a, \bar{K}_a) \quad \text{and} \quad \bar{w}_b = \bar{F}_b F_b^b(L_b, \bar{K}_b),
\]

where \( F_i^i \) is marginal product, \( \bar{F}_i \) is the given world price for output \( i \), and \( L_a \) and \( L_b \) denote labor employment in efficiency units. Since there are only two factors of production and the production functions are CRS, \( L_a \) and \( K_i \) are complements, i.e., \( F_{iK_i}^i > 0 \). Workers are indifferent between employment in the two sectors, so that in equilibrium \( \bar{w}_a = \bar{w}_b = \bar{w} \). The economy’s factor supply constraints are

\[
L_a + L_b \leq \bar{L} \quad \text{and} \quad K_a \leq \bar{K}_a \quad \text{where} \quad \bar{L} = \int_0^{\bar{L}} g(l) dl \quad \text{and} \quad \bar{K} = \int_0^{\bar{K}} G\left(\bar{w}/\bar{w}\right) dl,
\]

where \( g(l) \) and \( G(l) \) are distribution functions for labor and capital, respectively, and \( L_a, L_b \) are the numbers of employed workers. Capital-owners receive the residual nominal returns \( r_a \) and \( r_b \) which are (by Euler’s Theorem):

\[
r_a = \bar{F}_a F_a^a(L_a, \bar{K}_a) \quad \text{and} \quad r_b = \bar{F}_b F_b^b(L_b, \bar{K}_b).\]

Real income is measured by an individual’s indirect utility. Assuming a Cobb–Douglas utility function, the indirect utility is expressed by

\[
\hat{u} = y \cdot \frac{p_A}{\bar{p}_A},
\]

where \( y_i \) is the nominal income of individual \( i \), and \( \alpha \) is the proportion of consumer expenditures spent on good \( A \).

There are more employed workers in the economy than capital owners, that is, \( n_a > n_a + n_b \), where \( n_a \) is the number of employed workers. Policies are determined by majority voting (see Mayer, 1984). A voter supports a policy that raises his or her real income, opposes a policy that lowers real income, and abstains from voting when a policy decision does not affect real income.

2.2. Legal immigration

We begin by posing initial conditions where there are no immigrants present in the economy. Let the issue placed before voters be whether to permit entry of a proposed number of legal immigrants \( M > 0 \). Voters are aware that the immigrants who would be admitted to the country have the same relative production efficiency as resident labor.\(^3\)

Immigration would change the economy’s labor constraint to

\[
L_a + L_b + M \equiv \bar{L} + \bar{M}
\]

where \( \bar{M} = \int_0^{\bar{M}} h(l) dl \), \( h(l) \) is the pdf of abilities of immigrants, and only immigrants with sufficient ability to attain at least the minimum wage migrate.\(^4\)

---

\(^3\) Although we treat \( M \) here as endogenous, the number of immigrants can be endogenized via a reservation income or utility-requirement for immigrants (see for example Ethier, 1986a).

\(^4\) We assume for exposition that the minimum wage \( \bar{W} \) also applies to immigrants. Our analysis is substantively unchanged if immigrants are subject to a wage penalty, or if an emigration-reservation income determines the wage at which immigrants are available.
Voters’ preferences over permitting immigrants to enter the country are single-peaked, since immigration of any number \( M > 0 \) of people reduces the real income of labor and increases the real incomes of owners of capital in either sector:

\[
\frac{\partial u^L}{\partial M} = \left( \frac{P_a}{T_b} \right)^{1-a} F_{LL}^{a} < 0 \quad \text{and} \quad \frac{\partial u^K_{i}}{\partial M} = \left( \frac{P_a}{P_j} \right)^{1-a} F_{iL}^{i} > 0,
\]

\( i, j = a, b; \ i \neq j. \) (5)

The first of these inequalities holds because of diminishing marginal returns, and the second because of the complementarity of the factors of production. The only workers who are not negatively affected by immigration are those who are unemployed, and their numbers are assumed to be such that even when grouped with capital owners, they are still outnumbered by employed workers. Since the median voter on the issue whether to permit the entry of \( M \) immigrants is an employed mobile worker, entry of any number \( M > 0 \) of immigrants is opposed by the majority of voters, and hence:

**Proposition 1.** In initial conditions where no immigrants are present in the economy, the endogenous policy is to allow no legal immigration – and to strictly enforce the illegal-immigration policy.

### 2.3. Illegal immigration

Proposition 1 specifies an equilibrium where no immigrants are present, and the median voter consistently simply does not desire immigrants. Immigration, if it does take place, can only be illegal and involuntary from the perspective of the median voter. Suppose that such undesired illegal immigration has taken place. This defines new initial conditions for policy choices where a population of illegal immigrants is now present. Suppose, moreover, that the mass expulsion of the population of illegal immigrants is not considered a feasible policy this assumption is discussed below. Voters are confronted with a choice from among the following three policies. With \( M \) illegal immigrants as a fact of past history, voters can choose:

**(P1)** An amnesty for the \( M \) illegal immigrants who are present, with strict enforcement (we assume enforcement is possible) of illegal-immigration laws so that no additional immigrants are permitted;\(^5\)

\(^5\) An additional option is an amnesty with continued immigration. From Proposition 1, this option is dominated by (P1) for the median voter (the workers).
(P2) Ongoing tolerance of illegality that permits the $M$ immigrants to remain in the country illegally, with selective sectoral enforcement of illegality, and with no additional illegal immigration tolerated (with enforcement again presumed possible);

(P3) Ongoing tolerance of illegality that permits the $M$ immigrants to remain in the country illegally, with selective sectoral enforcement of illegality, and permitted increases in the size of the illegal immigrant population.

For (P2) and (P3), let the anti-immigration laws be enforced in sector $B$ but not in sector $A$, i.e., immigrants will be employed only in sector $A$. The economy then confronts, in addition to Eq. (2), a resource constraint

$$L_a \leq \bar{L},$$

i.e., the number of workers in sector $B$ cannot exceed the native labor force.

With $M$ sufficiently large, all legal workers with productivity that allows them to earn at least the minimum wage are employed in sector $B$. Such complete sectoral segregation of illegal and legal workers occurs when

$$L^*_a \leq \bar{M}$$

where $\bar{M}$ is the labor supplied by illegal immigrants and $L^*_a$ is the labor that would be employed in sector $A$ with legal immigration of $\bar{M}$ effective units of labor.

When Eq. (6) holds, legal residents and illegal immigrants have both become sector-specific factors of production, by the policy contrivance of selective illegality. Denote by $w_l$ and $w_N$ the wages of illegal and legally resident labor (per efficiency unit). For immigration beyond $L^*_a = \bar{M}$,

$$\frac{\partial w_l}{\partial M} = \frac{\partial w_N}{\partial M} = 0$$

Let $w^*$ be the wage that all workers (original residents and immigrants) would receive if the same number of immigrants were legal. With more immigrants employed in sector $A$ than if employment were unconstrained by Eq. (6), we have the relation

$$\bar{w} > w_N > w^* > w_l,$$

where $\bar{w}$ is the equilibrium wage when $M = 0$ (as defined above).

Under Proposal (P1) an amnesty would be granted to the $M$ ($> L^*_a$) illegal immigrants who are present, and immigration would remain illegal for further immigrants. Under Proposal (P2) illegal immigrants remain illegal and are con-

---

6 We assume for exposition that internal enforcement is costless. Otherwise we are obliged to designate resources as expended in enforcement, and to reduce residents' incomes correspondingly — and to include deadweight losses of taxation, which further reduce residents' welfare.
fined to sector A, and their number does not expand beyond the M who are present. Under Proposal (P3), illegal immigrants remain illegal, and increases in the \( M > L_A \) illegal immigrants who are present are permitted conditional on selective enforcement of illegality in sector B but not in sector A.

The amnesty proposal (P1), which would transform the illegal immigrants to legal residents, would release immigrant labor for employment economy-wide (that is, in sector B). From Eq. (7), the illegally present \( M \) immigrants favor (P1) over (P2) or (P3), but they do not vote — since they are illegal immigrants. Legal workers prefer either (P2) or (P3) to (P1), and are indifferent between (P2) and (P3) since additional immigration does not affect them once condition (6) holds. The median voter thus opposes (P1) and is indifferent between the two policy variants of permissible illegal immigration; he or she does not care whether more illegal immigrants enter the country or not.

Owners of capital in sector B favor the amnesty (P1) over both (P2) and (P3), since the amnesty releases immigrants for employment in sector B. They are also, like legal labor, indifferent between (P2) and (P3).

Owners of capital in sector A favor (P2) and (P3) to the amnesty (P1), since selective illegality contains immigrant labor to sector A. They prefer (P3) to (P2) because of the increased returns to their specific capital when the number of immigrants, and hence the number of workers contained to their sector, increases.

When (P1) is set before either (P2) or (P3), the amnesty (P1) is defeated, because the median voter opposes the amnesty over continued illegality. When (P2) is set before (P3), the policy (P3) of permitting additional illegal immigrants wins majority support of those who vote. We thus conclude:

**Proposition 2.** Under initial conditions with a sufficiently large population of illegal immigrants present, the equilibrium policy with majority support is not to provide an amnesty, and to permit more illegal immigrants to enter the country.

We have not included mass expulsion among feasible policies (and it is generally not observed). Note, however, that owners of capital in sector A where the illegal immigrants are employed, as well as owners of capital in sector B where legal workers are employed, have an economic self-interest in ensuring that mass expulsion is not a policy alternative. That is, capital owners have an economic self-interest in supporting the case that mass expulsion is not a humanitarian policy.\(^7\)

\(^7\)We have not introduced the non-economic motives that can affect countries' immigration policies (see, for example, Benhabib, 1996). We observe, however, that economic incentives here counter any such non-economic considerations. That is, a small immigrant population may evoke less non-economic discontent than a large immigrant population, but the economic incentives are precisely the contrary — provided that the immigrants are illegal.
3. Non-traded goods

The above model is an incomplete description because of the absence of non-traded goods. We now introduce non-traded goods — which permits us to ask whether the observed concentration of illegal immigrants in service industries might reflect a systematic preference on the part of the legally resident population. That is, if illegality is selective by sector, does a legally resident population have an interest in choosing selective enforcement that makes illegal immigrants specific to non-traded goods’ sectors? In addition, we show that, with non-traded goods, resident mobile workers benefit from increases in selectively illegal immigration. As a result, even if mass deportation were feasible, quite independently of humanitarian considerations, no legal resident may have an economic self-interest in such a policy.

3.1. The model with non-traded goods

To introduce non-traded goods, we re-characterize the two production sectors as a non-traded good $N$ and a composite traded good $T$, with relative price of non-traded output $P_N$. For analytical simplicity we assume that movements in the production possibilities frontier of the economy as a result of changes in the labor supply are homothetic (i.e., the slope of the ppf remains constant on all rays through the origin), and that the immigrants’ utility function is also Cobb–Douglas with the same relative weights on the various goods as for natives. In this case, legal immigration will leave the relative price of output $P_N$ unchanged. Mobile labor loses, and owners of capital in either sector gain from legal immigration, which allows immigrants to choose any employment they please. When there are no immigrants present and the policy question is whether to permit legal immigration, the outcome expressed in Proposition 1 is repeated: no immigration is permitted.

Now, consider the initial conditions that underlie Proposition 2, that is, a population of illegal immigrants has accumulated in the country. The effect of selectively enforced illegal immigration on legal residents’ real incomes then depends on whether selective illegality is enforced in the traded or non-traded sector of the economy.

---

8 Making the traded good a composite good allows us to exhibit the results graphically, and involves no loss of generality.

9 This will occur, for example with Cobb–Douglas production functions, and equal capital/labor intensities across goods. While this would ordinarily lead to a linear ppf given CRS production functions, when capital is industry specific concavity is retained while maintaining the property of homothetic shifts. Note that if capital/labor intensities differ across industries, shifts will not be homothetic.
Suppose that selective illegality makes immigrants specific to the non-traded goods sector. We again confront voters with the choice among three policies toward illegal immigrants:

(P1a) The amnesty that legalizes the presence of the \( M \) already-present illegal immigrants, while admitting no more immigrants;
(P2a) Allowing the illegal immigrants to remain illegally, and allowing no more immigrants, with illegality selectively enforced in the non-traded goods sector,
(P3a) Allowing increases in the number of illegal immigrants, provided they remain illegal, with illegality again selectively enforced in the non-traded goods sector.

For the same reasons as in the comparison in the absence of traded goods, the median voter opposes the amnesty, and when (P1a) is placed against the policy (P2a) or the policy (P3a), the amnesty is therefore defeated. The choice is, therefore, again between (P2a) and (P3a). Legal labor, and therefore the median voter, is now, however, not indifferent between maintained illegality and allowing no more illegal immigrants to enter (i.e., P2a) and maintained illegality while allowing the number of illegal immigrants to increase (i.e., P3a). Nor need any owners of capital lose from increasing the number of illegal immigrants. We have:

**Proposition 3.** When illegal immigrants are selectively employed in non-traded goods production, the equilibrium policy is maintained illegality of immigrants and permitting increased illegal immigration (P3a), and there may be consensus among all voters in favor of this policy.

The basis for consensus is that, once employment segregation has occurred, immigration can only increase the output of non-traded goods, which decreases the relative price of non-traded goods \( P_N \). All consumers, whatever their source of income, then substitute in consumption. In Fig. 1 (which assumes that a minimum-wage constraint is not binding) the same consumption ratio can be maintained along RR until the point \( D \), where Eq. (6) holds with equality. Past this point, further immigration, and further declines in the relative price \( P_N \), move consumption to SS, and then to TT. Real incomes of legally resident workers and capital owners in the traded-goods sector are, at the same time, increasing. For capital-owners in the non-traded goods sector, real incomes could be rising or falling. With sufficiently elastic domestic demand for non-traded goods, however, real incomes of owners of capital in the non-traded goods sector increase (see the Appendix), in which case all real incomes in the economy increase.\(^{10}\) The

\(^{10}\) For a consensus favoring illegal immigration not to arise, we would require, for example, that an expanded supply of kitchen workers expands output of restaurant meals sufficiently that the price of restaurant meals falls more than to offset the benefits to restaurant owners of greater availability of complementary labor (expressed in the increased rent to their sector-specific capital, that is, their restaurant facilities).
Fig. 1. The effect of selectively enforced illegal immigration on relative prices and consumption.

presence of non-traded goods, with the illegal immigrants employed in the non-traded goods sector, thus strengthens the foundations of an endogenous policy equilibrium where ongoing illegal immigration is preferred to amnesty for existing illegal immigrants with no more immigration.

Legal labor strictly prefers \( P_{3a} \) to \( P_{2a} \). Capital owners in sector A can likewise prefer \( P_{3a} \) to \( P_{2a} \), since their gain from increased immigration and A-sector employment can more than outweigh the loss from the lower prices for their product. Thus, certainly a majority of, and likely all, voters prefer \( P_{3a} \) to \( P_{2a} \).

Also, we now observe that domestic mobile workers need not have an interest in mass deportation — even if mass deportation were feasible. This is so since, when the illegal immigrants are selectively employed in, say, non-traded goods sectors, expulsion increases nominal wages, but also increases the relative price \( P_S \) of the non-traded goods that legal mobile labor consumes. It is unclear, a priori, which effect is greater. This same result carries over to the case when the immigrants are employed in the traded goods sector.

3.2. Employment of illegal immigrants in the traded-goods sector

For comparison, suppose now that selective illegality makes illegal immigrants specific to traded-goods production. The outcome of majority voting in the choice
between the amnesty with no more immigration (\(P1a\)) and either (\(P2a\)) or (\(P3a\)) is again against the amnesty. The median voter opposes the amnesty, since this would release the sectorally-confined illegal labor to the remainder of the economy.

This leaves the choice between (\(P2a\)) and (\(P3a\)). Increasing the numbers of illegal immigrants increases the relative price \(P_n\), since the new immigrants consume non-traded goods but no more non-traded goods are produced subsequent to the additional illegal immigration. Legally resident labor, which is a contrived specific factor in the non-traded goods sector, thereby gains from increased immigration, so the median voter favors permitting increased illegal immigration. The policy (\(P3a\)) thus wins over (\(P2a\)).

3.3. The choice between employing illegal labor in traded and non-traded goods sectors

Thus, whether selective illegality makes immigrants specific to non-traded or to traded goods production, the policy of selective illegality with increased immigration is the equilibrium policy. Which type of selective illegality does the domestic median voter prefer?

To answer this question, we begin with the observation that, whether illegal immigrants are made specific to traded or non-traded goods, the gainers from illegal migration gain more, and the losers lose more, the larger the relative-price change that takes place as a consequence of immigration. We thus need to establish whether relative price changes are greater when illegal immigrants are specific to non-traded or specific to traded goods.

We now make the following assumption regarding consumption bias of legal residents and illegal immigrants:

**A1.** Consumption references of illegal immigrants are biased toward traded goods relative to the domestic legal population.

The rationale for (A1) is that immigrants are, in general, poorer than the legally resident population. They consequently spend a larger part of their incomes on basic food and clothing, live in less expensive housing than do legal residents, and they avail themselves less of the services that the higher-income legally resident population consumes (restaurants, entertainment, and other personal services).

Subject to (A1), and given the assumptions made above, the magnitude of the relative-price change due to selectively illegal immigration is greater when immi-
grants are employed in non-traded goods sectors rather than in traded-goods sectors. This is because immigrants then produce only non-traded goods, and their consumption preferences are biased against these goods. The greater relative price change implies a greater increase in the median voter’s real income (that is, the real income of mobile workers) due to illegal immigration, if selective enforcement makes immigrants specific to non-traded goods production. We therefore conclude:

**Proposition 4.** *Ceteris paribus, and subject to (A1), the median voter prefers that selective illegality confines immigrants to non-traded goods sectors rather than to traded-goods sectors.*

Propositions 1–3 provide an analytical basis for the empirical observation that illegal immigrants tend to be concentrated in selected sectors of the economy. Proposition 4 provides support for the supplementary empirical observation, that in many countries, the sectors of concentration of illegal immigrants tend to be service industries.

4. Employment of immigrant and local workers in the same sector

The endogenous policies that we have established have arisen in circumstances where the labor-market equilibrium completely segregates employment of illegal immigrants and legally resident workers. We noted in the introduction that such segregation is the outcome most commonly indicated by the empirical evidence. Yet, still, on some occasions, illegal immigrants might work side-by-side in the same type of employment as legal residents. In this section we extend the model to encompass such possibilities.

Suppose that, besides differing in absolute productivities, mobile workers also have different intersectoral comparative advantages (see Mussa, 1982). To allow for different intersectoral comparative advantages, let aggregate labor supply be described by the density function \( g(l_a, l_b) \), and let \( e = l_a/l_b \) denote the relative efficiency of a worker in sector \( A \). For simplicity, we assume that no worker has an absolute advantage over another in the production of both goods, so that the support of \( g(l_a, l_b) \) is a one-dimensional and downward-sloping locus in the \((l_a, l_b)\) plane. We define that support as a function \( l_b = f(l_a) \), and use it to define the

---

12 On this issue capital owners have contrary interests, which become more divisive because of the enhanced stakes (see Ursprung, 1990) when relative-price changes are greater.

13 In the absence of a homothetic production possibilities frontier and/or in the absence of homothetic preferences, more conditions with regards to the levels of prices and marginal productivities will be required. However, in any case, (A1) will provide an outcome in the stated direction.
labor supply to sector A by the density function $g^*(I_a) = g(I_a, I_b^*(I_a))$. At relative efficiency $e$, the density of effective labor in the production of $A$ is

$$
\theta_a(e) = I_a g^*(I_a)
$$

and similarly for $\theta_b(e)$.

The principle of comparative advantage implies that, given a relative wage for employment in sectors $A$ and $B$ of $\hat{e}$, workers for whom $e < \hat{e}$ will choose employment in sector $B$, and those for whom $e > \hat{e}$ will choose employment in sector $A$. The total labor available to sectors $A$ and $B$ given $\hat{e}$ is then

$$
L_a(\hat{e}) = \int_0^{\hat{e}} \theta_a(e) \, de; \quad L_a(\hat{e}) = \int_\hat{e}^{\infty} \theta_a(e) \, de
$$

In a market equilibrium, the wage determined in Eq. (1) and the relative wage $\hat{e}$ in Eq. (9) coincide. Workers for whom $lw = lw$ are indifferent between employment in the two sectors. All other workers are inframarginal, and so remain unresponsive in employment decisions to marginal changes in the relative wage.

If immigration is legal and immigrants have more or less the same distribution of relative abilities as residents, wages will again decrease, and the median voter (a worker) opposes legal immigration (Proposition 1 again).

Under selective enforcement, let illegal immigrants be specific to sector $A$. It is reasonable to assume that there will be some self-selection among potential immigrants, so that only those who can receive at least the minimum wage in sector $A$ will migrate. Immigration then depresses the wage in that sector, and pushes marginal legal workers into sector $B$, where the wage also declines (although less than in sector $A$, as otherwise no worker will have moved). All legally resident workers are disadvantaged by continued illegal immigration, until the threshold of illegal immigration is attained, at which point the wage for the marginal worker (the worker who is indifferent between sectoral employment opportunities) has declined to the level of the minimum wage. Subsequent illegal immigration pushes legally resident workers with the least comparative advantage in sector $A$ into unemployment, and no longer affects the wages of workers in sector $B$ (and if there are non-traded goods, it will improve their welfare). Some legally resident workers (those with the greatest comparative advantage in sector $A$) now remain in sector $A$ together with the illegal immigrants.

---

14 But see Footnote 18 for the effect of relaxing this assumption.

15 Workers’ absolute productivities are sufficiently high to be consistent with employment according to comparative advantage at the minimum wage.

16 That is, workers are imperfectly mobile.

17 It is only the marginal worker who earns the minimum wage. All other workers in both sectors $A$ and $B$ are inframarginal and earn in excess of the minimum wage.
We again confront voters with the policy choices \((P1), (P2)\) and \((P3)\). The result is now:

**Proposition 5.** In the presence of non-traded goods, when workers differ in their intersectoral comparative advantage, the median voter prefers \((P3)\) to \((P1)\) and \((P2)\), if the number of legally resident workers whose comparative advantage places them in the same sector as illegal immigrants is small — that is, if the median voter is not employed in the sector where illegal immigrants are concentrated. Without traded goods, \((P3)\) wins only if the number of capital owners in the industry with the illegal immigrants is greater than the number of domestic workers remaining in this industry.

Under the conditions of Proposition 5, legal mobile workers do not all have the same self-interest. The legal residents who remain to work alongside illegal immigrants oppose all immigration, whether legal or illegal. They, moreover, favor the amnesty over continued illegal status of immigrants, since the amnesty would result in the exit of illegal immigrants from employment in the sector where they have a comparative advantage and where they therefore remain if employed. These workers also have a preference for \((P2)\) over \((P3)\). The workers who have an economic self-interest in favoring the amnesty and in opposing additional illegal immigration are not only those obliged to work in the same sectors as illegal immigrants, but also those who have been pushed into unemployment as a result of the illegal immigration.\(^{18}\)

\(^{18}\) Note that while there are still legal workers employed in sector \(A\), these workers, once the threshold of illegal immigration has been reached, are not in competition with the other legal workers since the \(\gamma\) cannot work in sector \(B\). Thus, as in Section 1 of the paper, the result we seek holds only once there is no longer any movement of workers from sector to sector. This assumption can be relaxed, but requires greater specification of the functions. Assume that workers differ both comparatively and absolutely, so that the support of \(g(l, I)\) is not one-dimensional and downward sloping. Comparative advantage would still determine the place of employment of each worker, but now \(\theta(\epsilon) \approx \frac{g(l, I)}{g(l, I)}\), where \(\theta(\epsilon)\) is the ray through the origin along which \(l/I = \epsilon\). As immigrants enter sector \(A\), workers near the margin move to sector \(B\), thus depressing the wage in that sector, but by less than the decrease in the wage in sector \(A\) (as discussed in the text). Workers in sector \(B\) are harmed by this decrease in wages, but benefit from the fall in the price of the non-traded good (sector \(A\)). Without further specifying consumer’s utility functions, the density function of abilities, and production technologies, it cannot be said whether workers are made better off or worse off by additional immigration while this mobility between the sectors continues to exist. However, note that as \(w_A/w_B\) increases, fewer legal workers remain in sector \(A\), so the flow of workers into sector \(B\), and the resulting decrease in wages, slows, while the inflow of immigrants continues to depress prices in sector \(A\). At some point, the result stated in Proposition 6 can therefore hold even with continued mobility between the sectors.
5. Concluding remarks

Substantial numbers of illegal immigrants are present in many countries. Previous studies of this illegal immigration have investigated theoretical aspects of the choice of means of enforcement (Ethier, 1986a, 1986b; Bond and Chen, 1987; Todaro and Maruszko, 1987) and have examined the economic benefits and costs for the local population (for example Borjas, 1995). The previous literature would answer the question that we have addressed in this paper — how to explain the ongoing visible presence of illegal immigrants and also continued increases in their numbers — by pointing to enforcement imperfections. In our model, enforcement imperfections can underlie the past involuntary accumulation of a population of illegal immigrants. Our model shows that, once a population of illegal immigrants is present, illegal immigration need no longer be an unintended consequence of laxity in enforcement. Illegal immigration may rather be aconcertedly chosen policy that combines de jure illegality with de facto selective illegality as a discipline that permits sectoral containment of immigrants.

Other reasons can be proposed for the observed sectoral concentration of illegal immigrants. These other reasons are consistent with our view of permissible illegal immigration as an endogenous policy equilibrium. Immigrants may, for example, be excluded from certain types of domestic employment because of certification hindrances for skills and education. Our model suggests that such certification difficulties where present may also be endogenous, and are likewise directed at excluding immigrants (albeit legal) from particular employment, and confining them to designated sectors. Endogenous certification difficulties encountered by legal immigrants complement our explanation for observed sectoral specialization of illegal immigrants.

In some countries foreign guest-workers are given temporary entry permits that specify the nature of permissible employment. In accord with the motives proposed in our model, this ensures that temporary foreign workers are sector-specific factors of production.

Sectoral specialization of employment of illegal immigrants can also be the consequence of personal ties with previous immigrants or network effects (see, for example, Carrington et al., 1996). Our model relates to this literature in explaining why network externalities are present in particular sectors, and why additional immigrants have been permitted to immigrate (illegally), and visibly and openly to work in these same sectors.

Budgetary restrictions have been proposed as the reason for selective industry enforcement of immigration laws (Hill and Pearce, 1990). When this is so, our

---

19 Immigration policy has traditionally been a preoccupation of the ‘new world’ (see for example Chiswick, 1988a,b; Borjas, 1990, 1994). The end of communism also introduced issues of immigration to Western Europe (see Zimmermann, 1994a,b; Siebert, 1995).
model explains why limited enforcement resources are directed to some sectors and not others.

Finally, while uncommon, amnesties for illegal immigrants do take place from time to time (while, as we have noted, mass expulsions are rare). The motives for amnesties can be placed in the domain of humanitarian gestures by society (or the median voter) that parallel the humanitarian motives for not attempting to implement mass expulsion. Our model shows that amnesties can also reflect economic self-interest. The source of the self-interest is that an amnesty benefits economy-wide owners of domestic capital beyond the sectors where illegal immigrants are concentrated, and also benefits the unemployed and those legal workers whose comparative advantage places them in the sectors where the employment of illegal immigrants is concentrated. There is therefore a constituency for an amnesty. In our model, this constituency does not have a majority. The median voter has been identified as a mobile worker employed outside of a sector where illegal immigrants are permitted to work. As long as this is so, there is no majority support for an amnesty, but there is majority support for continued illegality, and for continuing immigration that increases the size of the illegally present population. We conjecture that, beyond some size, the illegally present population becomes too large and strains the limits of credibility of immigration that is illegal yet permissible, which gives rise to amnesty proposals (that are usually not put to popular vote).

Acknowledgements

The authors thank Dennis Epple, anonymous referees, and participants in the CEPR workshop on Illegal Immigration, Thessaloniki, Greece, 1996, and in seminars at Bar-Ilan, Haifa and Tel-Aviv Universities for their helpful comments.

Appendix A

In this appendix we show the condition under which Proposition 3 holds with consensus. With immigrants restricted to the non-traded goods sector, the sole of potential opposition to permissible illegal immigration is from capital owners in that sector. Their position is ambiguous, since

\[
\frac{d\ln \xi}{dM} = \frac{d\left(\frac{y^K_N}{P^N_N P^a_T P^{a-1}_T}\right)}{dM} = \frac{d(F^N_K P^a_N P^{a-1}_T)}{dM} \\
= F^N_{KL} P^1_N P^{a-1}_T + (1 - \alpha) F^N_{KL} P^a_N P^{a-1}_T \frac{dP_N}{dM}.
\]

(A1)
The first term is positive, since, by assumption, the inputs are complements, and the last term is negative since the immigrants are employed in the non-traded goods sector. Consensus requires that (A1) be positive.

Similarly, when immigrants are secluded in the traded goods sector, consensus requires that

$$\frac{d(\kappa_T)}{dM} = F^T_{KL} P_N^{-\alpha} P_T^\alpha - \alpha F^T_{KL} P_N^{\alpha-1} P_T^{\alpha} \frac{dP_N}{dM} > 0. \quad (A2)$$

Note, in this case, that $dP_N/dM$ is positive because the immigrants are employed in the traded goods sector where prices are constant.

References


