Discrimination and Resistance to Low Skilled Immigration

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Abstract

This paper shows that the immigration of some low skilled workers can be of advantage for the low skilled natives when the host economy suffers from unemployment due to trade unions and an unemployment insurance scheme. This benefit arises if trade unions have appropriate bargaining power and preferences for members' income, labor market discrimination against immigrants is strong enough and the unemployment tax rate is low.

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1 Introduction

The high welfare participation of immigrants compared to natives, well reported in a number of studies (see, e.g., Borjas, 1994), is typically considered as a factor contributing to native resistance against immigration. However, Epstein and Hillman (2003) have challenged this view recently, showing that all native workers may benefit from immigrants even though they are perfect substitutes in production. This benefit emerges from increased labor market discipline in an efficiency wage setup, combined with a supposed priority of natives leaving the unemployment pool.

However, efficiency wages provide just one possible explanation of unemployment. Therefore, this paper tackles the question whether similar effects arise also under different labor market settings. To this end, we construct a simple model of a host economy where unemployment is due to trade union power in the low skilled labor market.[1] The treatment of low skilled natives and immigrants differs in two respects. First, labor market discrimination provides immigrants with inferior employment chances compared to natives.[2] Second, trade unions are assumed to have a higher concern for the employment of native members.[3]

We find that the immigration of some low skilled workers can indeed increase the expected income of low skilled natives. This is the case when immigrant discrimination is substantial and trade unions have appropriate bargaining power and preferences for income rather than employment of their members. Moreover, the tax rate financing unemployment benefits must not be too high.

The intuition behind this finding is simple. Low skilled immigration puts a downward pressure on the low skilled wage and the unemployment benefit. This decreases low skilled income in both the states of employment and unemployment, but increases the total number of low skilled jobs. This is the more to the benefit of the native low skilled, the less immigrants capture these jobs, and the higher the difference between net earnings and the unemployment benefit, which depends on

1 Fuest and Thum (2000) show that inferior labor market prospects for immigrants increase the total surplus accruing to natives in an economy with a dual labor market. However, they do not embark on a distributional analysis. Müller (2003) combines the dual labor market and efficiency wage assumption, providing a more detailed explanation of labor market discrimination based on the possibility of return migration.

2 See Wrench et al. (1999) for a survey of immigrant discrimination across Europe.

3 Penninx and Roosblad (2000) provide an overview on trade union attitudes towards immigration in a number of European countries.

trade union power and objectives. When these effects are strong enough, some low skilled immigration makes each native low skilled better off.

We would like to emphasize that this result is based on a mechanism similar to Epstein and Hillman (2003): Natives gain because immigrants create additional jobs, of which natives capture a disproportionate share. However, this model shows that the relevance of this mechanism is not confined to the efficiency-wage explanation of unemployment. Moreover, it shows that the existence of efficiency gains is not sufficient for low skilled consent to low skilled immigration. While Epstein and Hillman (2003) show that some immigration benefits all natives whenever their effort increases, such a gain arises in the present setup only under the above restrictions.

The remainder of this paper is structured as follows. The next section derives the equilibrium of a host country. Section 3 derives conditions under which low skilled immigration increases the expected income of low skilled natives. Section 4 concludes.

2 The Host Country Equilibrium

Consider a host economy where a large number of firms produces a single output good by means of physical capital K, high skilled labor (human capital) H and low skilled labor L. The technology is of the Cobb-Douglas type:[4]

$$Y = A\ K^{\alpha} H^{\beta} L^{1-\alpha-\beta}, \tag{1}$$

with $\alpha, \beta > 0, \alpha + \beta < 1$ and $A > 0$ as a productivity parameter. Skills enhance productivity, thus $\beta > (1-\alpha)/2$.[5]

The native population comprises both high and low skilled workers in fixed amounts N_H and N_L, respectively.[6] All natives of a given type are risk neutral and completely identical. In particular, they are all immobile. However, the total supply of low skilled labor may increase due to the immigration of low skilled individuals. Physical

4 These assumptions, in particular the Cobb-Douglas specification, are usual in the literature, see, e.g., Fuest and Thum (2000) or Casarico and Devillanova (2003).

5 This holds because the marginal productivity of the high skilled must be higher than for the low skilled when $H = L$.

6 The assumption that natives do not adjust their educational choices is only for simplicity and could be dispensed with along the lines of Casarico and Devillanova (2003) without affecting any of the results.

capital is fully mobile as the economy is fully integrated into the world capital market where the world interest rate r prevails.

The sequence of events is as follows. First, M_L low skilled immigrants arrive. Second, the government sets the contribution or tax rate $\tau > 0$ to the unemployment insurance scheme in order to finance a benefit b for the jobless, with the government following a constant replacement ratio policy defined at the aggregate level.[7] Given this, employment and remuneration decisions take place, which we model as a two-stage process according to Hoel and Moene (1988): Third, firms choose their capital stock and hire high skilled labor. While the markets for these inputs are perfectly competitive, low skilled labor is unionized. Thus, fourth, firms and trade unions bargain over the low skilled wage w_L.[8]

As usual in the literature on immigration under labor market imperfections (Schmidt et al., 1994, Dolado et al. 1996, Fuest and Thum, 2000), wage negotiations are assumed to take place at the firm level with all low skilled workers being unionized. Thus, both sides treat all economy-wide parameters, in particular the level of the tax rate and the unemployment benefit as fixed. Hence, they perceive disagreement as leading to all union members being unemployed and relying on the welfare state.

We model the wage bargain in a right-to-manage setup, augmented by Stone-Geary union preferences (Dertouzos and Pencavel, 1981). This leads to the following maximization problem:

$$\begin{aligned} \max_{w_L} \Omega &= \left([(1-\tau)w_L - b]^{\gamma}[L_N + (1-\delta)L_M]^{1-\gamma}\right)^{\sigma} (Y - w_L L)^{1-\sigma} \qquad (2) \\ s.t. \qquad & w_L = \frac{\partial Y}{\partial L} = AK^{\alpha}H^{\beta}(1-\alpha-\beta)L^{-(\alpha+\beta)}, \\ & L = L_N + L_M, \end{aligned}$$

7 Alternatively, one might consider a policy aiming at keeping the relation between the *net* wage and the benefit constant. However, the net replacement ratio depends only on technology and union preferences for the Cobb-Douglas, leaving the equilibrium tax rate indeterminate. As long as one assumes that the arbitrary pre-immigration tax rate remains effective, all the following results go through.

8 This relatively complex setup is necessary to allow for some bargaining power of part of firms in the presence of constant returns to scale. If firms decided on the other inputs while bargaining over the low skilled wage, the decision relevant profit would be zero anyway and the model would collapse to the monopoly union case. If there were only two inputs, the stage 3 marginal productivity of the second factor would be constant (set α or β equal to zero in (8) or (9)). Hence, at least three inputs are required. However, it should be stressed that the main findings are independent of the constant returns to scale assumption.

where $\sigma \in [0, 1]$ denotes the relative bargaining strength of the union, and $\gamma \in [0, 1]$ its relative preference for the income rent compared to the employment rent.

Because the firm has signed contracts on human and physical capital at the above stage to be served irrespective of the outcome of the bargain, its rent from reaching an agreement amounts to $Y - w_L L$. The union's income rent corresponds to $(1 - \tau)w_L - b$, the income surplus enjoyed by each employed member. The employment rent is measured by the weighted sum of native and immigrant low skilled employment.

We allow explicitly for unions placing more value on the performance of natives compared to immigrants.[9] This union discrimination effect is captured by the parameter $\delta(M_L) \in [0, 1]$, measuring the union's loss of an immigrant instead of a native occupying a job. According to the literature (Freeman, 1979, Penninx and Roosblad, 2000), Western European trade unions have ambiguous positions on the concerns of migrant workers. While demanding equal wage and working conditions on the one hand, on the other hand they also promoted measures to increase the job security of natives at the expense of foreigners (Penninx and Roseblad, 2000).

As a second source of heterogeneity, labor market discrimination may induce inferior labor market chances for immigrants compared to natives. Recent figures show that the native unemployment rate is lower than the foreigners unemployment rate in 18 (men), resp. 20 (women) out of 22 OECD countries (SOPEMI, 2003, Table I.14.). Of course, it can be argued that this is just a crude indirect measure of discrimination, as it certainly captures educational and occupational differences.[10] However, these discrepancies can at least partly be attributed to discrimination, such that the inferior immigrant access to good jobs (Hammar, 1985) can not only be explained by exogenous ability differences. Apart from this, there exists a number of studies trying to measure discrimination directly. Bertrand and Mullainathan (2003) find a substantial disadvantage of job applicants with African-American sounding names, receiving less callbacks for interviews.

We do not embark on a detailed modelling of the causes for such different job prospects. Rather, we assume that an immigrant's probability of getting a job is

9 See Schmidt et al. (1994) for an analysis where unions serve only the interests of natives.

10 According to SOPEMI (2003, Table I.11), the fraction of foreigners with at most lower secondary education exceeds the respective fraction of natives in 15 of 21 considered OECD countries. Moreover, foreigners are over-represented in mining, manufacturing, construction and gastronomy in most countries (SOPEMI; 2003, Table I.15).

just $1 - d(M_L)$ times the probability of a native low skilled, where $d(M_L) \in [0, 1]$, is the degree of discrimination on part of employers.[11] Apart from $d'(M_L) < \infty$, the following analysis requires no further assumptions on the functional form of $d(M_L)$. In particular, $d(M_L)$ can be convex or concave, meaning that average discrimination can both increase or decrease in the total number of immigrants.[12]

Assuming that job chances are the same for all individuals within each group, the respective employment probabilities are $p_M = L_M/M_L$ and $p_N = L_N/N_L$, which can not exceed unity for apparent reasons. Combining this with $p_M = (1 - d(M_L))p_N$ and $L_N + L_M = L$ gives the native probability to get a job as a function of the number of immigrants and the degree of labor market discrimination:

$$p_N(M_L) = \frac{L}{N_L + (1 - d(M_L))M_L}, \tag{3}$$

where total low skilled employment is bounded from above by $N_L + (1 - d(M_L))M_L$, the number of jobs when all natives get employed ($p_N = 1$) and immigrants have a respective lower employment probability.

Using this information in (2) yields the following first-order condition for the wage bargain:

$$\begin{aligned} &[(1-\tau)w_L\,[1-(1-\gamma)\sigma+(1-\gamma\sigma)\bar{\varepsilon}_L] - b\,[1-\sigma+(1-\gamma\sigma)\bar{\varepsilon}_L]] \\ &\qquad\qquad \times [L - N_L - (1-d(M_L))M_L] \;=\; 0, \end{aligned} \tag{4}$$

where $\bar{\varepsilon}_L = -1/(\alpha + \beta) < -1$ is the stage-4 wage elasticity of low skilled labor demand.

Result 1. *The negotiated low skilled wage w_L^* is finite whenever negotiations are not dominated by the unions' income rent. The bargain leads to some native unemployment when union influence is sufficiently high. Then, the net wage is a markup m on the unemployment benefit, which is increasing in both the power and the income preference of the union, but independent of immigrant discrimination:*

$$m = \frac{(1-\tau)w_L^*}{b} = \frac{1 - \sigma + (1 - \sigma\gamma)\bar{\varepsilon}_L}{1 - (1-\gamma)\sigma + (1 - \sigma\gamma)\bar{\varepsilon}_L} > 1. \tag{5}$$

This markup becomes arbitrarily high for sufficient union power and income preference.

11 A similar formulation is used by Fuest and Thum (2000).

12 Of course, both discrimination parameters can be intertwined. For example, labor market discrimination may result from preferential hiring of natives due to union representatives. However, taking such interrelations into account would not affect the findings.

Proof. (4) describes a maximum if and only if $1-(1-\gamma)\sigma+(1-\gamma\sigma)\bar{\varepsilon}_L<0$, which requires:

$$\gamma < \tilde{\gamma} = \frac{\sigma-(1+\bar{\varepsilon}_L)}{\sigma(1-\bar{\varepsilon}_L)}.$$

Solving for w_L in the first factor of (4) yields (5). However, this solution is only relevant when it precludes excess demand for low skilled labor. Hence:

$$w_L^* = \max\left[AK^{\alpha}H^{\beta}(1-\alpha-\beta)(N_L+(1-d(M_L))M_L)^{-(\alpha+\beta)}, mb/(1-\tau)\right].$$

The positive effects of γ and σ on m follow immediately from differentiating (5). Because $\tilde{\gamma}>0$ due to $\bar{\varepsilon}_L<-1$, there exist solutions to (4) with $w_L^*<\infty$ for every σ. Moreover, $\lim_{\gamma\to\tilde{\gamma}} m=\infty$. However $\tilde{\gamma}<1 \iff \sigma>(1+\bar{\varepsilon}_L)/\bar{\varepsilon}_L=1-\alpha-\beta$. Hence, the markup goes to infinity for the highest income target compatible with an interior solution if and only if unions have commensurate bargaining power.□

The economic mechanisms behind this result are the following. (4) has a solution with a finite wage unless the union's income target becomes too dominant in the wage bargain, in which case the low skilled wage approaches infinity. In what follows, we assume that the economy is indeed in such an interior solution: $\gamma<\min[\tilde{\gamma},1]$.[13] Native unemployment ($L<N_L+(1-d(M_L))M_L$) results when unions negotiate a sufficiently high wage. The independence of the wage of both labor market and union discrimination is a consequence of the employment rent being the weighted sum of native and immigrant jobs. As the number of each of these jobs is proportional to total employment, this property must hold also for the employment rent:

$$L_N+(1-\delta(M_L))L_M = \frac{N_L+(1-\delta(M_L))(1-d(M_L))M_L}{N_L+(1-d(M_L))M_L}L. \tag{6}$$

Hence, discrimination affects the level of the employment rent, but not the relative price of employment in terms of income in unions' objectives. Therefore, immigration has no impact on the wage markup.[14]

At stage 3, firms decide autonomously on the levels of human and physical capital. Anticipating the effects of these decisions on low skilled employment given by:

$$L=(1-\alpha-\beta)^{\frac{1}{\alpha+\beta}}A^{\frac{1}{\alpha+\beta}}K^{\frac{\alpha}{\alpha+\beta}}H^{\frac{\beta}{\alpha+\beta}}w_L^{*\frac{-1}{\alpha+\beta}}, \tag{7}$$

13 Otherwise, no economy-wide equilibrium would exist unless benefits were zero.

14 Schmidt et al. (1994) come to a similar conclusion for a simple monopoly union.

they hire both factors according to the following marginal productivity conditions:

$$\frac{\partial Y}{\partial H} = \frac{\beta(1-\alpha-\beta)^{\frac{1-\alpha-\beta}{\alpha+\beta}}}{\alpha+\beta} A^{\frac{1}{\alpha+\beta}} H^{-\frac{\alpha}{\alpha+\beta}} K^{\frac{\alpha}{\alpha+\beta}} {w_L^*}^{-\frac{1-\alpha-\beta}{\alpha+\beta}} = w_H, \tag{8}$$

$$\frac{\partial Y}{\partial K} = \frac{\alpha(1-\alpha-\beta)^{\frac{1-\alpha-\beta}{\alpha+\beta}}}{\alpha+\beta} A^{\frac{1}{\alpha+\beta}} H^{\frac{\beta}{\alpha+\beta}} K^{-\frac{\beta}{\alpha+\beta}} {w_L^*}^{-\frac{1-\alpha-\beta}{\alpha+\beta}} = r. \tag{9}$$

The markets for both inputs are fully competitive. Hence, w_H and K adjust such that skilled labor is fully employed and physical capital earns the same return as in the rest of the world. This leads to:

$$K = \tilde{A}_K {w_L^*}^{-\frac{1-\alpha-\beta}{\beta}}, \tag{10}$$

$$w_H = \tilde{A}_H {w_L^*}^{-\frac{1-\alpha-\beta}{\beta}}, \tag{11}$$

$$L = \tilde{A}_L {w_L^*}^{\frac{-(1-\alpha)}{\beta}}, \tag{12}$$

with $\tilde{A}_K = A^{\frac{1}{\beta}}(1-\alpha-\beta)^{\frac{1-\alpha-\beta}{\beta}}(r(\alpha+\beta))^{-\frac{\alpha+\beta}{\beta}}\alpha^{\frac{\alpha+\beta}{\beta}}H$, $\tilde{A}_H = A^{\frac{1}{\beta}}(1-\alpha-\beta)^{\frac{1-\alpha-\beta}{\beta}}r^{-\frac{\alpha}{\beta}}(\alpha+\beta)^{-\frac{\alpha+\beta}{\beta}}\alpha^{-\frac{\alpha}{\beta}}\beta$, $\tilde{A}_L = A^{\frac{1}{\beta}}(1-\alpha-\beta)^{\frac{\beta+(1-\alpha-\beta)\alpha}{\beta(\alpha+\beta)}}(r(\alpha+\beta))^{-\frac{\alpha}{\beta}}\alpha^{\frac{\alpha}{\beta}}$. Note that the responsiveness of low skilled employment on a wage change is higher than at stage 4: $\varepsilon_L^* = \frac{\partial L}{\partial w_L^*}\frac{w_L^*}{L} = -\frac{1-\alpha}{\beta} < \bar{\varepsilon}_L$, because firms can adjust their human and physical capital contracts.

Finally, the welfare state budget must be balanced. Assuming that all workers are taxed at the same rate, this requires:

$$\tau(w_L^* L + w_H H) = b(N_L + M_L - L).$$

Taking into account that $b = (1-\tau)w_L^*/m$ and that $w_H H = \bar{\varepsilon}_L/(1+\varepsilon_L^*)w_L^* L$ from (11) and (12) leads to:

$$w_L^* = \left(\frac{(1-\tau)(N_L + M_L)}{\tilde{A}_L(1-\tau+m\tau\frac{1+\varepsilon_L^*+\bar{\varepsilon}_L}{1+\varepsilon_L^*})} \right)^{-\frac{\beta}{1-\alpha}}. \tag{13}$$

Result 2. *When the number of immigrants is below a certain threshold, immigration has no effect on the low skilled unemployment rate ν. Then, ν increases in the tax rate, union power, unions' income preference and decreases in low skilled labor demand elasticities. Beyond that threshold, ν increases in the number of immigrants unless discrimination declines rapidly in M_L.*

Proof. Insert (13) into (12) to find low skilled employment for a given tax rate: $L = \min[(1-\tau)/(1-\tau+m\tau\frac{1+\varepsilon_L^*+\bar{\varepsilon}_L}{1+\varepsilon_L^*}(N_L+M_L)), N_L+(1-d(M_L))M_L]$, where the latter entry is the upper bound on the effective number of jobs. From this:

$$\nu = \frac{N_L+M_L-L}{N_L+M_L} = \max\left[\frac{m\tau\dfrac{1+\varepsilon_L^*+\bar{\varepsilon}_L}{1+\varepsilon_L^*}}{1-\tau+m\tau\dfrac{1+\varepsilon_L^*+\bar{\varepsilon}_L}{1+\varepsilon_L^*}}, \frac{d(M_L)M_L}{N_L+M_L}\right]. \quad (14)$$

The gross replacement ratio $b/w_L^* = (1-\tau)/m$ is independent of M_L, hence low skilled immigration requires no adjustment of the tax rate. The immigrant threshold value is defined by the equality of the two right hand side arguments in (14). Unless $d'(M_L)$ is very negative, there is just one such threshold. If not, the unemployment rate as a function of M_L is first constant, increases, then decreases, becomes constant again and so on. □

The constancy of the unemployment rate results from the fact that immigrants do not affect the wage markup. This makes the low skilled employment rate a constant for given τ, because the government budget constraint gives the ratio of employed to unemployed low skilled as a function of m, the (constant) elasticities and the tax rate. Moreover, the replacement ratio is independent of M_L, such that immigration generates no pressure on τ. Thus, total low skilled employment rate is proportional to the total size of the low skilled labor force, irrespective of discrimination. However, once all natives have found a job, immigration increases total low skilled employment at a rate $(1-d(M_L))-d'(M_L)M_L$, such that an increase in M_L will affect the unemployment rate in general.

3 Immigration and Low Skilled Natives

Equations (13) and (11) show that low skilled immigration generates a downward pressure on the low skilled wage and hence the unemployment benefit. While the concomitant increase in the relative scarcity of human capital increases the income of the high skilled unambiguously, the expected income of low skilled natives:

$$EI_L^N = p_N(M_L)(1-\tau)w_L^* + (1-p_N(M_L))b = \frac{(1-\tau)w_L^*}{m}\left[p_N(M_L)(m-1)+1\right], \quad (15)$$

is affected as follows:

$$\frac{\partial EI_L^N}{\partial M_L} = \frac{(1-\tau)}{m}\left[\frac{\partial w_L^*}{\partial L}\frac{dL}{dM_L}\left[p_N(M_L)(m-1)+1\right] + w_L^* {p_N}'(M_L)(m-1)\right]. \quad (16)$$

This expression shows that low skilled immigrants must harm low skilled natives when discrimination is absent ($d(M_L) = 0$) or so intense that all natives have found a job ($p_N = 1$). In both cases, the second term in (16) is zero whereas the first term in (16) is negative because of the wage decrease.

However, (3) shows that $p_N(0) = 1 - \nu < 1$ and $p_N{}'(0) = (1 - \nu)d(0)/N_L \geq 0$. Hence, the first marginal immigrant matters unambiguously for native employment prospects whenever there is both unemployment and labor market discrimination. Evaluating (16) for $M_L = 0$ yields:

$$\left.\frac{\partial EI_L^N}{\partial M_L}\right|_{M_L=0} = \frac{(1-\tau)w_L^*(1-\nu)}{m\,L}\left[\frac{1}{\varepsilon_L^*}((1-\nu)(m-1)+1) + d(0)(1-\nu)(m-1)\right].$$

Using the definition of ν, this expression is positive if and only if:

$$m\,[1 + d(0)\varepsilon_L^*(1-\tau) + \tau\varepsilon_L^*/(1+\bar{\varepsilon}_L)] < (1-\tau)d(0)\varepsilon_L^*. \tag{17}$$

Result 3. *For every rate of employer discrimination $d(0) \in (-1/\varepsilon_L^*, 1]$, some low skilled immigration benefits the native low skilled, if the tax rate is sufficiently low and unions have sufficient, but not too high bargaining power and income preferences.*

Proof. (17) can only be fulfilled when the term in square brackets is negative which requires $\tau < (1 + d(0)\varepsilon_L^*)/(\bar{\varepsilon}_L/(1+\varepsilon_L^*) - d(0)\varepsilon_L^*)$ and hence $d(0) > -1/\varepsilon_L^*$. When these conditions are met, immigration has a positive effect if and only if:

$$m > \frac{(1-\tau)d(0)\varepsilon_L^*}{(1-\tau)(1+d(0)\varepsilon_L^*) + \tau(1+\bar{\varepsilon}_L/(1+\varepsilon_L^*))}. \tag{18}$$

The right-hand side is finite, but the left-hand side becomes infinitely large for γ sufficiently close to $\tilde{\gamma}$ if and only if $\tilde{\gamma} < 1$. If $\tilde{\gamma} > 1$ instead, the highest possible markup is $(1-\sigma)(1+\bar{\varepsilon}_L)/(1+(1-\sigma)\bar{\varepsilon}_L)$, which exceeds the right hand side of (18), denoted by rhs if $\sigma > \underline{\sigma} = (1-rhs)(1+\bar{\varepsilon}_L)/(1+(1-rhs)\bar{\varepsilon}_L)$. As these conditions hold for $M_L = 0$, they are sufficient for some immigration to have a positive effect on low skilled natives by continuity. However, they are not necessary as $d'(M_L)$ can be such that $\frac{\partial^2 EI_L^N}{\partial M_L^2} > 0$ for some M_L. $\square$

This result has a simple intuition. On the one hand, immigration decreases both the low skilled wage and the unemployment benefit. On the other hand, it enhances the native probability to get a job and receive the wage markup when labor market discrimination exists. The latter effect dominates when immigrants create many jobs (low ν) of which natives appropriate a high share (high $d(0)$) and the markup is sufficiently high. However, a higher markup impinges on the total employment effect (ν increases in m), so the tax rate must not exceed a certain level in order to have a sufficient number of jobs created.

On top of that, discrimination must be substantial for a positive effect to exist, because the overall effect is unambiguously negative when all workers have the same job prospects. Using the definition of the elasticities, it turns out that the above requirement implies that immigrants must have less than half the job chances of natives: $-1/\varepsilon_L^* = \beta/(1-\alpha) > 0.5$, because $\beta > (1-\alpha)/2$.[15]

To give a quantitative impression, Table 1 reports on the minimum income orientation of unions required for a given $d(0)$ to increase low skilled native income for given union power σ. Throughout the table, we have assumed a labor share of 0.7 (Hoel and Moene, 1988, Rowthorn, 1999) such that $\alpha = 0.3$, and set $\beta = 0.4$, such that the high skilled earn a 33% higher wage after adjusting for scarcity effects (for $H = L$ we have $w_H/w_L = \beta/(1-\alpha-\beta) = 1,33$). Hence, $d(0)$ must exceed 0.571429 for an overall positive effect to exist.

Considering first the constellations $\sigma > 0.3$ and hence $\tilde{\gamma} \leq 1$, we find the threshold level increasing in the tax rate, and decreasing in both union power and the degree of discrimination.[16] Moreover, it approaches quite moderate values for high union power which are not inconsistent with usual empirical findings on γ, in particular when taking into account that these studies are typically based on the premise $\sigma = 1$. Dertouzos and Pencavel (1981) find estimates for γ ranging between 0.15 and 0.87. We also provide the respective values of $\underline{\sigma}$, the minimum union power making immigration beneficial for low skilled natives when unions are only interested in their members' income rent. Due to the proof to result 3, $\underline{\sigma} < 0.3$, but the calculated values are not far apart. In the quantitative part of their study, Hoel and Moene (1988) set σ to 0.2 and 0.8, respectively.

Finally, we would like to mention that result 3 gives a only sufficient condition for a positive effect on low skilled natives. Since (15) is not necessarily concave in M_L

15 In ten (eight) out of 22 OECD countries, the male (female) immigrant unemployment rate is more than twice as high as for the nationals (SOPEMI, 2003, Table I.14).

16 The respective critical values for the tax rate are: 0.205 for $d(0) = 1$, 0.121 for $d(0) = 0.8$ and 0.045 for $d(0) = 0.65$. It should however be noted that the best approximation for τ is the difference between tax rates on labor income and unemployment benefits and not the level of the tax rate. This holds because employment is independent of the tax rate when benefits are indexed to net wages. In a cross section of countries, Daveri and Tabellini (2000) report an average wedge between labor income and benefit taxes of 0.183.

unless proper restrictions on $d(M_L)$ are made, one can not exclude the possibility of a positive effect emerging for some $M_L > 0$.

[Insert Table 1 around here]

4 Conclusion

This paper has introduced immigrant discrimination into a simple general equilibrium trade union model. It has shown that low skilled immigration can be to the benefit of both high and low skilled natives. Therefore, the model suggests that the existence of discrimination can weaken native resistance to low skilled immigration such that some migrants are allowed in although they are substitutes in production to a substantial part or even the majority of the population.

However, in contrast to Epstein and Hillman (2003), this resistance is not eliminated in general. Rather, native attitudes depend on the interplay between the degree of discrimination, the tax rate and the wage markup, which can be traced back to union preferences and power. Therefore, the improvement for all natives can not only be attributed to the existence of efficiency gains, but on the specific distribution of these gains according to the above parameters.

The possibility of the low skilled benefitting is generated by the rise in total employment. Therefore, the flexibility of the low skilled wage is crucial for the results. We have assumed a constant replacement ratio policy with the consequence that immigration leaves the tax rate unaffected. Compromising the rise in total employment, an immigration-induced tax increase would make a beneficial effect less likely. However, unless tax responses are too strong, it should still be possible to find constellations for which all natives gain from low skilled immigration.

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	$\tau = 0.1$ $d(0) = 1$	$\tau = 0.1$ $d(0) = 0.8$	$\tau = 0.2$ $d(0) = 1$	$\tau = 0.04$ $d(0) = 0.65$	
σ	Lowest γ required for positive effect				$\tilde{\gamma}$
0.1	*1.920*	*2.125*	*2.164*	*2.163*	*2.176*
0.2	*1.142*	*1.263*	*1.286*	*1.286*	*1.294*
0.3	0.882	0.976	0.939	0.993	1
0.4	0.758	0.852	0.801	0.847	0.852
0.5	0.674	0.746	0.718	0.760	0.764
0.6	0.623	0.689	0.663	0.701	0.705
0.7	0.585	0.648	0.623	0.659	0.663
0.8	0.558	0.617	0.593	0.628	0.632
0.9	0.536	0.593	0.570	0.604	0.607
1	0.519	0.574	0.552	0.584	0.588
$\underline{\sigma}$: Lowest σ required for positive effect for $\gamma = 1$					
/	0.244	0.288	0.297	0.296	/

Table 1. Minimum income preferences and bargaining power required for positive effects on low skilled natives