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Some economics of immigration from an LDC to a DC

Stressing the case of a Nordic Welfare State

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Abstract: The economic consequences of immigration from a less developed country (LDC) to a developed country (DC) are potentially very advantageous for both the immigrant and the recipient country. Cultural differences and the institutions of the DC can cause both a shortfall in and a redistribution of the potential advantage through two mechanisms: The selection of immigrants and the incentives for labor market participation. These effects are examined in three stylized cases: A Dubai-like guest worker society, An US-like immigrant society, and a Nordic-like tax-based welfare state. The Dubai-like case is closest to the potential, while the Nordic-like evolved welfare case deviates the most. Major institutional changes will be required for the latter to better realize the immigration benefit potential.

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Millions of people move every year from the poor LDCs to the rich DCs. This flow is driven by two traditional gaps that have caused migration through the ages: the *income gap* and the *civil rights gap*. Failed states and civil conflicts have driven many to seek refuge in the DCs, but there is also a very strong economic motivation fuelled by the income disparities between the LDCs and the DCs. As is well known from the theory of international trade there are sizable potential gains to be had from immigration. While they are relatively easy to pin down for the immigrant, the benefits for the receiving country seem more diffuse and limited, and many DCs have responded to the immigrant flow by setting up barricades.

This paper examines some aspects of the interaction between the LDC immigrant and the host DC. It attempts to quantify the potential economic gains from immigration for both parties and finds these to be sizable. However, the realization of the gains and their distribution between immigrant and host country appear to vary among the DCs. The contention of this paper is that institutional differences and their associated incentive structures largely account for the different realizations.

The institutional setup influences the immigrant type both directly in the host country's selection and in the self-selection of immigrants. Some DCs obtain immigrants that are more readily absorbed in their labor markets than do others, and gain accordingly. The rate of absorption is a function of several factors including how well the immigrants match the needs of the host country's firms, taking account of their skills, work attitudes and other culture-related factors, and also the nature of the selection process. The eagerness with which the immigrant seeks work is obviously central, but this can be adversely impacted by the availability of generous social subsidies and/or the perception of closed doors. The keenness with which firms acquire and train workers, a function of their competitiveness and the nature of labor market regulations that they operate under, is also critical.

The above-mentioned operative factors are complex in their operation. To obtain a handle on them, a framework is presented here that encapsulates their effects into two curves: the labor market *absorption* curve and an *income subsidy* curve, which covers the subsidy received by the immigrant until he is fully absorbed in the labor market. Using this framework we consider three stylized policy packages taken to be the extreme cases that span the existing possibilities: (a) A Dubai-type case where the immigrant can be a guest worker only, and enters on a contract securing full labor market absorption. (b) A US-type case of an immigrant

society, and (c) a Nordic-type tax financed welfare state. By far the most problematic case is the Nordic welfare state, where the benefit to the DC could even be negative.[3)]

Section I sets up the analytical framework while section II examines the potential gains from immigration, and section III presents a standard or reference case. Sections IV to VI look at the 3 country cases. Section VII considers the non-economic variables, and section VIII draws some conclusions. The appendix contains a set of simulations.

I. Analytical framework

The terminology distinguishes between natives and immigrants, or insiders and outsiders. The analysis begins at time $t = 0$, when the immigrant is accepted legally in the DC.[4)] The analysis employs three assumptions to facilitate the presentation:

(A1) It uses a simple overlapping generation framework, where the immigrant establishes a dynastic family and lives forever through succeeding generations. Consequently we do not distinguish between first, second and third generation immigrants.

(A2) It disregards economic fluctuations and assumes that each country grows at a steady state rate, generating an equilibrium rate of unemployment.

(A3) It assumes that in the absence of immigration the inter-temporal budget is inter-generationally neutral, i.e., the average native receives exactly the same in public consumption and transfers as he pays in taxes, except his share of the excess transfer to immigrants.

(A4) All factors of production are paid their marginal product.

I.1 Absorption, $\lambda(t,\rho,\kappa)$, excess transfer, ρ, and the wage, w

The analysis uses three key variables, which are functions of t and other variables. They are also the subject of much research, so we know something about the way these functions look. However, the paper will neither review the empirical literature nor estimate the functions. Instead it asks: Given that they look as assumed, what are the consequences for the welfare of the immigrant and the natives?

The absorption function, $\lambda = \lambda(t...)$, gives the relative employment of the stylized immigrant taken to reflect an average: Some immigrants may be absorbed right away, while

3. The Nordic case is further discussed in Chand and Paldam (2004), especially as regards policy choices.
4. The first immigrant in a family is often male, so the male gender is used throughout. The decision of the immigrant to leave his (former) country and all intermediate stages between a full entry and no entry are disregarded.

others take much longer than the norm. It is less than that of the native in two ways: (a) The labor market participation rate is lower, notably for women, and (b) the unemployment rate is higher. We assume that $\lambda = \lambda(t...)$ starts at 0 for $t = 0$ and then grows to 1 for $t = T$, whereupon the immigrant is fully absorbed in the labor market. Different cultural groups respond differently, and the complex matter of cultural integration, κ, is discussed in the next section. In addition we take λ to be a function of the institutional package in the DC.

Table 1. Variables and curves analyzed

Curve	definition (all variables consider one immigrant)	depends upon
t, T	time from entry $t = 0$. The immigrant is absorbed at $t = T$	decision is made at $t = 0$
W	wage in DC: $w = \alpha e^{at}$. For $t = 0$, $w = \alpha$	grow at constant real rate a
w_l	wage in LDC: $w_L = \beta e^{bt}$. For $t = 0$, $w = \beta$	grow at constant real rate b
$\lambda(t,\rho,\kappa)$	absorption curve, labor income of immigrant is λw	t, ρ, culture and labor market
$\rho(t,...)$	excess social subsidy to immigrant for $t < x$. Subsidy is ρw	t and institutions of DC
NPV	net present values for immigrant NPV_I and natives NPV_{DC}	calculated at time $t = 0$
NPV^*	potential net present values, if no absorption problems	$\lambda = 1$ and $\rho = 0$ for all t
z	surplus to natives of immigrant product. Fraction of product	typical value $z \approx 0.25$
x	time of social break even, excess subsidy zero	intersection of λ and ρ curves
L	loss of DC production due to slow absorption	λ-curve
R	excess transfer to immigrant, between $t = 0$ and T	λ-curve and ρ-curve
ϑ	shortfall (ratio) of NPV due to slow absorption	$\vartheta = (NPV^* - NPV)/NPV^*$

Note: Excess is above the normal amount received by the native. Surplus is gain of the natives. While the labor market absorption takes place at T, the social sector absorption already occurs at x. We use US $ as the unit of account, when the calculations were made the rate was app 1$ = 0.8 Euro.

We represent the relevant package of institutions of DC by ρ, the social policy. It gives the excess social transfer provided to the immigrant, while $\lambda < 1$, i.e., before he is fully absorbed.[5)] ρ has two parts: ρ_1 is the minimum received by everybody in need, including a newly accepted immigrant. If the transfer has an insurance element, ρ grows to ρ_2, as t grows.

The labor income of the native is $w_t = \alpha e^{at}$. It is α at $t = 0$, and grows at a constant rate a. For short we call the income in the DC "wage". Both λ and ρ are taken to be fractions of w. The total "income" of the immigrant is thus $(\lambda + \rho)w$, while the native gets w. We take the wage structure to be constant. Also in the discussion that follows we consider primarily income from employment and not from self-owned enterprises.

5. It is thus assumed that the immigrant receives the standard social benefits and pays the corresponding taxes once $\lambda = 1$.

I.2 Culture: The concept of integration

The immigrant arrives as an outsider with a different culture, language, often a different religion and frequently looking different. We shall encapsulate these differences in the concept of *cultural distance*, $\kappa(t,i)$, starting at $t = 0$. The immigrant has to break into the society of the natives to be absorbed. This complex process demands integration and a mutual learning and adjustment process on the part of both immigrants and natives. We assume that $\kappa(t,i)$ falls monotonically for all i's as t increases, but the fall may stop at $\underline{\kappa}(i)$, when the immigrant is so integrated that he resists further integration.[6)]

$\lambda = \lambda(t,\kappa...)$ is a complex function of κ. At present we take $\partial\lambda/\partial\kappa$ to be negative, so that the immigrant becomes more integrated as cultural distance diminishes. Some integration is surely needed before an immigrant can be fully absorbed. $\lambda = 1$ requires that $\kappa < \varepsilon$, where ε is the level of tolerance of the natives. It is interesting to contemplate if immigrant groups exist, where $\underline{\kappa} > \varepsilon$, making full absorption impossible, or if $\underline{\kappa}$ and ε must inevitably adjust in the long run to solve all problems of absorption.

Selection of the immigrant type determines initial cultural distance. The rapidity with which this is diminished will influence the speed of absorption. The DC may follow a policy that shortens the process, or pursue policies – for other reasons – prolonging the process, as we shall see.

I.3 Utility: Net present values of income flows and the micro-macro puzzle

Two agents are considered: The immigrant (micro) and the DC country (macro). The old country of the immigrant is LDC. The decision of the immigrant to leave LDC and the economic consequences for LDC are not analyzed at present.

The utility gain of each of the two agents has economic and non-economic parts. The economic part is taken to be a positive monotonic function of the net present values of the changes in the income flows calculated at the time of immigration $t = 0$.

For the immigrant the change in utility is $U = U(NVP_I, S, D)$, where NPV_I is the net present value of the changes in his income, as analyzed below. The other variables S and D are the possible increase in personal security in moving to DC, while D is the non-economic loss he experiences before he is absorbed. We assume that $S > D$, so that S and D increase the utility of the immigrant. S and D are discussed in section VII.

6. Epstein and Gang (2004) describe a process where the cultural integration is cyclical.

For DC the utility is $U = U(NPV_{DC}, Q)$, where NPV_{DC} is the net present value of two flows: (a) The surplus produced by the immigrant in excess of his salary. It is taken to be proportional to his salary λw by a factor z, discussed in section II.2, and (b) the excess social expenditures paid to the immigrant untill he is absorbed. The non-economic variable Q accounts for the increase in social tensions caused by the immigration. This is taken net of any positive utility assigned to multiculturalism, and it is assumed negative. Q reduces the utility of the DC, as discussed in section VII.

Notice that while the benefits to the individual immigrant are personalized, they are not for the DC native. If $U = U(NPV_{DC}, ...)$ is divided between all natives in DC, it is negligible for any one native. This creates a typical macro-micro puzzle, which may also be termed a generalized versus personalized benefits puzzle. A native may want to forbid immigration, but still be in favor of allowing specific persons to enter, e.g., to work in his business or if a touching story is told in the media.

II. The potential gain of the two parties

The highest gain to both sides occurs when the immigrant fills a vacant job commensurate with his qualifications and aspirations at arrival at t = 0, and from that day has $\lambda = 1$. That is, in terms of employment he becomes just like a native. We use US $ as the unit of account, when the calculations were made the rate was app 1$ = 0.8 Euro.

*II.1 The potential gain to the immigrant, NPV_I**

The immigrant shifts from the LDC-wage to the DC-wage. His gain from the decision is therefore the net present value of the DC-wage minus the LDC-wage. Using the two formulas for the wages from table 1 and the standard expression for a perpetual annuity, given that r > a, b, we get:

(1) $$NPV_I^* = NPV(w - w_L) = \int_0^\infty (w - w_L)e^{-rt}dt = \alpha\int_0^\infty e^{-(r-a)t}dt - \beta\int_0^\infty e^{-(r-b)t}dt =$$

$$\frac{\alpha}{r-a} - \frac{\beta}{r-b} \approx \frac{\alpha-\beta}{r-a} = \alpha\frac{1-\beta/\alpha}{r-a}.$$ The last two expressions hold if $a \approx b$.

From this expression it is easy to reach some orders of magnitudes. The typical ratio between GDP per capita in PPP terms of the two countries suggests that β is in the range of 15% ± 10% of α. The real rate of interest may be used as an approximation to the rate of discount. We use r = 5%, which is probably on the high end of the scale, and $a \approx b$ of around 2%. With

these values $NPV_I^* \approx \alpha(1–0.15)/0.03 = 28\alpha$. Even for a low α such as \$25'000, NPV_I^* exceeds \$ $^2/_3$ mill. NPV_I^* falls to half if r is high at, say 8%. NPV_I^* rises if r falls toward a. A rough estimate would therefore be:

(2) $$NPV_I^* = \$\ \frac{2}{3} \pm \frac{1}{3}\ \ mills$$

The large size of NPV_I^* is the economic incentive that drives the supply of immigrants.

However, to gain that benefit the immigrant faces 3 problems:

(p1) He may fail to get through the barriers to entry, see section VII.

(p2) He may have to pay commissions to agents to get through the barriers, see section VII.

(p3) During the absorption period some of NPV_I^* is lost, see section III.

Nevertheless, given the large estimated size of the potential NPV_I^*, many are likely to think it is worth trying to emigrate.

II.2 The potential gain for the host country, NPV_{DC}^* and the world

The potential gain for the DC is the net value of the surplus production of the immigrant – the overheads he produces. It is taken to be proportional to λw, by the factor z. The simplest interpretation of z is that it is the share of capital, so that $z \approx 0.25$.[7)]

As $\lambda = 1$, there are no excess social expenditures incurred over and above those normal for natives. The potential value is thus:

(3) $$NPV_{DC}^* = NPV(zw) = z\frac{\alpha}{r-a} = z(NPV_I^* + NPV(w_L)) \approx z\frac{\alpha}{\alpha-\beta} NPV_I^*$$, derived as eq. (1)

For the values of the variables used this is about \$ 0.3 NPV_I^*, which is still considerable. This is the economic gap on the demand side that is also important for the flow.

(4) $$NPV^* = NPV_I^* + NPV_{DC}^* \approx \$\ 1\ \text{mill}$$

The large potential gains for both parts have led many observers to think that the labor flows are beneficial for the world. Many stories can be told where this has actually been the case.[8)]

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7. The paper assumes that the capital stock is owned by the natives. However, in many parts of the world immigrants have often proved to be more entrepreneurial in setting up businesses and acquiring capital.
8. Finland converged to the West after it left the Russian Empire in 1918 to about 1970. During that period about 1 million Finns went to work in Sweden, which benefited the development of both countries. Much the same story can be told of Portugal and France, etc.

II.3 Realizing the potential: Three archetypal societies

The potential gains are only reached in exceptional cases, see section III. It normally takes some time ($t = 0, \ldots, T$) for the immigrant to be absorbed in the labor market. During the interval he earns λw, where $\lambda < 1$. Hence, there is a loss in terms of the potential, L, to the immigrant or zL to the natives. In that period, he may also receive social transfers, R, according to the ρ-curve. R partly compensates the immigrant, but it is a cost to the natives. The NPV-calculations thus change:

(5) $NPV_I = NPV_I^* - (L - R)$, where L and R are given in eqs. (8) and (9)

(6) $NPV_{DC} = NPV_{DC}^* - (zL + R)$

(7) $NPV^* - NPV = (L - R) + (zL + R) = (1 + z)L$, so that $\vartheta = (1 + z)L/NPV^*$

From (7) follows that when the immigrant has a period of labor market participation below that of the natives it generates a loss as compared to the full potential. Equations (5) and (6) show that R affects the distribution of the shortfall between the immigrant and the natives: It reduces the shortfall of the immigrant and increases that of the natives; it does not affect its size once L is given.

Many institutions of DC are relevant for the shape of the λ-curve. Some are labor market rules, regulations and customs, systems for receiving and training immigrants, and last – but not least – social policies, formulated as a ρ-curve. Here each DC presents a "package" of institutions. We have chosen three such packages to span the possibility space. In addition the adaptability of the immigrant counts, as well as his response to the incentives provided. As suggested by the title, we are most concerned with the Nordic-like case, which is by far the most problematic.

III. The standard case

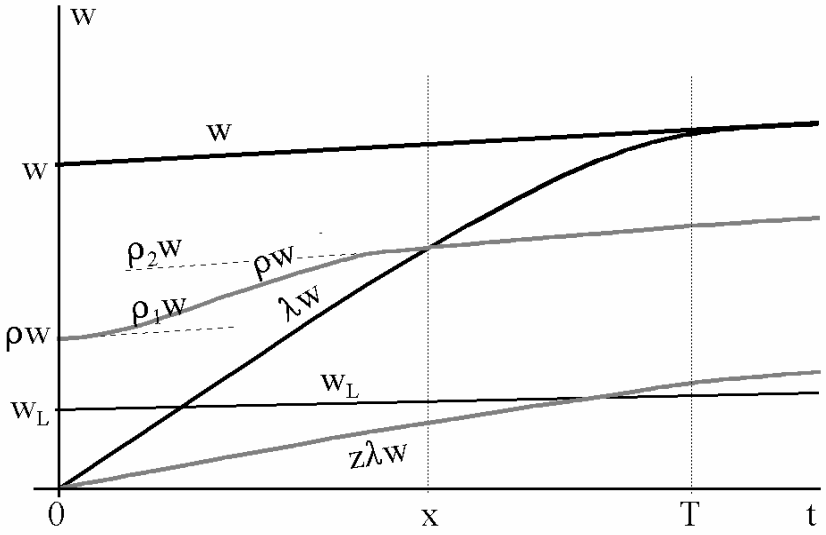
This subsection first introduces the basic logic of the 4 curves of table 1. The next two subsections look at the *NPV*-calculations of the immigrants and the natives. This is followed by an assessment of factors that influence the *NPV*s of the decision.

III.1 A slow absorption λ, and a social policy ρ

The basic curves are likely to have the forms drawn in figure 1a. The DC wage, w, is 5-10 times higher than the LDC wage, w_L. It takes time, T, to absorb the immigrant in the labor

market. We assume that he starts without a job at $t = 0$, so the absorption curve, λ, starts at 0 and reaches w at T. At present the λ-curve is assumed to be near-linear in accordance with the empirics in the Nordic case. Chand and Paldam (2004) consider other shapes.

Figure 1a. Standard case: Basic curves



When the wage of the immigrant is below a certain threshold, x, he is entitled to a social subsidy. The subsidy, ρ, is likely to have two parts: A subsistence payment at the rate ρ_1, and an insurance part that has to be saved up, so ρ rises from ρ_1 to the maximum ρ_2, which is a certain fraction of w. Hence, ρ depends upon t as drawn. The social policies of the individual DC determine the exact form of the ρ-curve.[9)] At the break-even point, x, the immigrant ceases to be a net recipient of subsidies. To simplify, assume that the subsidy received is a simple monotonic function of the difference between the wage, w, and the income earned, λw.

From casual observation and many studies from different countries we know that T is often large. It depends upon the institutions in the DC and the difference between the culture, education, etc. of the immigrants and the natives. It may even be that several generations are needed.[10)]

9. The Appendix uses $\rho_1 = 0.25, 0.4, 0.8$ and $\rho_2 = 0.6, 0.7, 0.8$ and a period of 15, 10, 0 years to get from the low to the high value.

10. The Appendix uses $T = 20$, 40 and 60 years. For the Nordic case several estimates, see e.g. Blume and Verner (2003), suggest that $T = 60$ may be low, although is should be noted that this is an extrapolation since none of the Nordic countries have had LDC immigration that long. Corresponding calculations for Sweden in Hansen and Lofstrom (2003) show a similar pattern.

Table 2. The decrease in the two NPVs in % of NPV_I*

Absorption T (years)	(1) Loss triangle L For $r - a = 0.03$	(2) Transfer $R = {}^1/_3\ L$ ΔNPV_I	(3) ΔNPV_{DC}	(4) Transfer $R = {}^2/_3\ L$ ΔNPV_I	(5) ΔNPV_{DC}
20	26.4%	17.6%	15.4%	8.8%	24.2%
40	43.5%	29.0%	25.4%	14.5%	39.9%
60	55.5%	37.0%	32.4%	18.5%	50.9%

Note: $\Delta NPV_I = (L - R) / NPV_I$ * and $\Delta NPV_{DC} = (0.25L + R) / NPV_I$ * see eqs. (5) and (6).

The slowness of absorption gives rise to two deviations from the ideal "potential" case: A production loss L and a social redistribution R. The production loss L is the triangle between the w-line and the λ-curve – shown on figure 1b as the checkered area. The NPV is:

$$(8) \qquad L = \int_0^T (1-\lambda) w e^{-rt} dt = \int_0^T w e^{-rt} dt - \int_0^T \lambda w e^{-rt} dt \approx \frac{q}{2} \frac{\alpha}{r-a} = \frac{q}{2} NPV_I ,$$

where q is the fraction of $NPV(w)$ between 0 and T. The derivation is shown in the Appendix. Table 2 shows some calculations of L in column (1).

The redistribution R from the natives to the immigrant is the area between the ρ-curve and the λ-curve from $t = 0$ to x. It is shown in figures 1b and c. The NPV is:

$$(9) \qquad R = \int_0^x (\rho - \lambda) w e^{-rt} dt = \alpha \int_0^x (\rho - \lambda) e^{-(r-a)t} dt \approx vL$$

As R compensates a part of L only, v must be a positive fraction, $0 < v < 1$. If the curves look as drawn in figure 1c, $v \approx {}^1/_3$, but we shall meet cases with larger v's below. Table 2 shows how the two NPVs change for three different duration λ-curves, and for $v = {}^1/_3$ and ${}^2/_3$. We shall refer to these calculations as we go along.

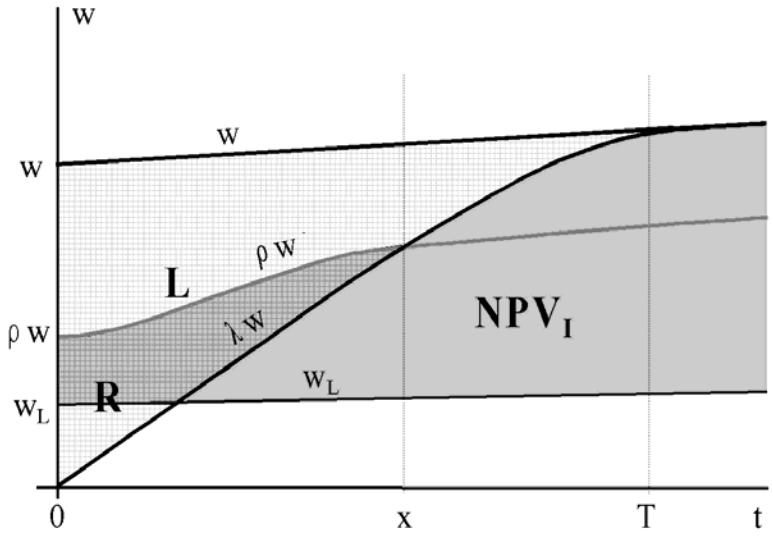
III.2 The NPV_I-calculation of the immigrant

The immigrant's income gain from being accepted in DC is drawn as the dark-shaded NPV_I in figure 1b – note that some NPV_I is checkered. The potential NPV_I* is the area between the w-curve and the w_L-curve. The gray area of NPV_I is somewhat smaller, due to the loss triangle caused by the slowness of absorption. The exact formula is:

$$(10) \qquad NPV_I = \int_0^\infty (w - w_L) e^{-rt} dt - L + R = NPV_I^* - L + R \text{, as in (5).}$$

The orders of magnitudes for the reduction in NPV_I relative to NPV_I* are shown in columns (2) and (4) of table 2. If R is only ${}^1/_3$ of the loss triangle, L, up to 40% of the potential may be lost for the immigrant, but with a more generous social compensation the loss falls.

Figure 1b. Standard case: NPV_I of immigrant

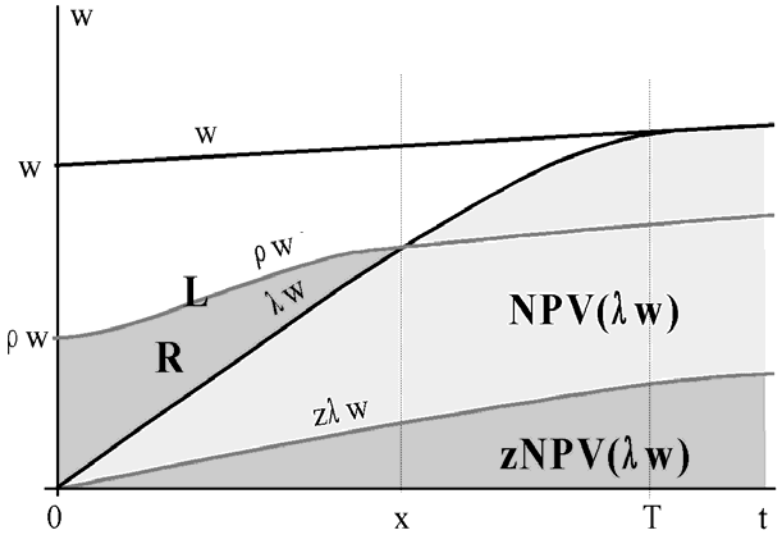


III.3 The calculation of the NPV_{DC} of the natives

The corresponding calculation for the natives in the DC is shown on figure 1c. The net surplus to the natives is assumed proportional to *w*, by the factor *z*, assumed to be 0.25.

(11) $NPV_{DC} = z(NPV(w) - L) - R = NPV_{DC}{}^{*} - zL - R$, as in (6).

Figure 1c. Standard case: NPV_{DC} of natives



In section II.2 we found that NPV_{DC}* was about 0.3 NPV_I*, and from columns (3) and (5) in table 2 we find that we have to deduct between 0.15 and 0.5 times NPV_I*. Hence, with a fast absorption and stingy social benefits NPV_{DC} is still positive, but with slow absorption and generous social support NPV_{DC} becomes negative. In addition, most DC pay reception and training costs to facilitate the absorption of the immigrant. They easily reach 0.05 NPV_I*.

III.4 Three factors affecting the λ-curve: Selection incentive and regulatory effects

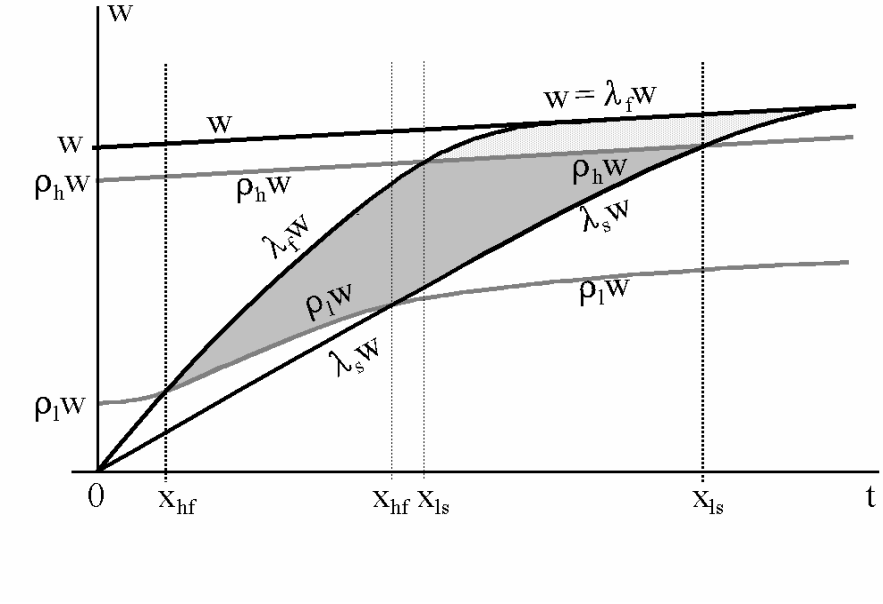
Below, the λ-curve is taken to be roughly linear from 0 to T, but to have a slope that differs greatly between DCs. Three related factors affect their slopes:

(a) The *selection/self-selection* of the immigrants. Immigrants, depending on their type, will try harder to get into some countries than others, and countries also try to sort the immigrants they let in.

(b) The *incentives* generated by package of institutions "offered" by the DC. Social policies are the key to the package, and they are therefore summarized in the ρ-curve.

(c) Labor market and business practices of the DC. Numerous studies have shown that firms in countries with deregulated labor markets and an aggressive profit making culture tend to be more open in their hiring practices.

Figure 1d. Incentives to immigrants: Alternative cases:
Absorption: λ_f is *fast* and λ_s is *slow*. Social security: ρ_h is *high* and ρ_l is *low*.



To analyze (a) consider two types of immigrants: Type A has a high labor market value, and hence a fast absorption. Type B has a low labor market value and a slow absorption. A-type immigrants will surely try to enter the countries where it is easiest to find work, and they will be less interested in the level of social support, while B-type immigrants will have the reverse preference. Hence, countries with long absorption times and generous support systems, but with a more distorted labor market and a negative attitude to hiring highly skilled foreign workers – as with the Nordic welfare states – generate adverse selection of immigrants. Also, some countries try hard to get the most economically valuable immigrants, while other countries – as the Nordic countries try to choose the immigrants, who have suffered most.

The ρ-curve is determined by the organization of social security among the natives and the tradition for immigration into the country. The principle of nondiscrimination means that the rules for the natives apply to the immigrants as well. Figure 1d shows two ρ-curves and two λ-curves. ρ_h is high, with no insurance part of the social payment, so the curve is parallel with and close to the w-line. ρ_l is low, with only a low basic social minimum payment, and the rest of social security is insurance based. The immigrant starts with no contribution to the insurance fund, and it only increases as time passes. The two λ-curves are also extreme: λ_f is fast, so that immigrants are quickly absorbed. λ_s is slow, so that immigrants are slowly absorbed. The four curves suggest three points.

(i) The differences between the curves have dramatic consequences for the intersection point x, and the three areas discussed in the two preceding sections. In particular the amount of social support received by the immigrant differs by about 20 times between the case where the curves are (ρ_l, λ_f) and (ρ_h, λ_s). This will have large consequences for NPV_{DC}.

(ii) Incentives are different both for the immigrant worker and for the employer. The λ-curve is likely to be strongly influenced by the efforts and incentives of both parties. With high unemployment among natives, employers will be more reluctant to take on the possibly added costs of hiring a non-native, while the greater the social benefits the less hungry is the worker for employment. The λ_f-curve drawn here is a high effort curve, and the λ_s-curve a low effort curve. The two areas marked with gray show the differing incentives to making an effort. If the ρ-curve is the high alternative, then the immigrant's loss if he makes a small effort is the light gray area. However, if the ρ-curve is the low alternative, then the loss is the sum of the gray and the light gray areas – it is 5-6 times as much. Consequently, the logic of the curves is that if the ρ-curve moves upward, the economic pressures on the immigrant to find work decrease, and the λ-curve moves down, and vice versa. While there is no doubt that the

two curves move in the opposite directions, the sizes of the movements of the λ-curve are an empirical question.

(iii) Consider NPV_1 in the (ρ_l, λ_f)-case and the (ρ_h, λ_s)-case. They are different as well, but less so. If incentive effects on λ are large, and they are combined with well motivated employers, the seemingly brutal social policies may not cause large welfare losses. However, if incentive effects are small as illustrated by comparing the (ρ_h, λ_s)-case and the (ρ_l, λ_s)-case, welfare losses are large for high discount rates.

The incentive effect and the adverse selection effect are difficult to distinguish in practice, and they reinforce each other.

IV. A society of guest workers: A Dubai-like country

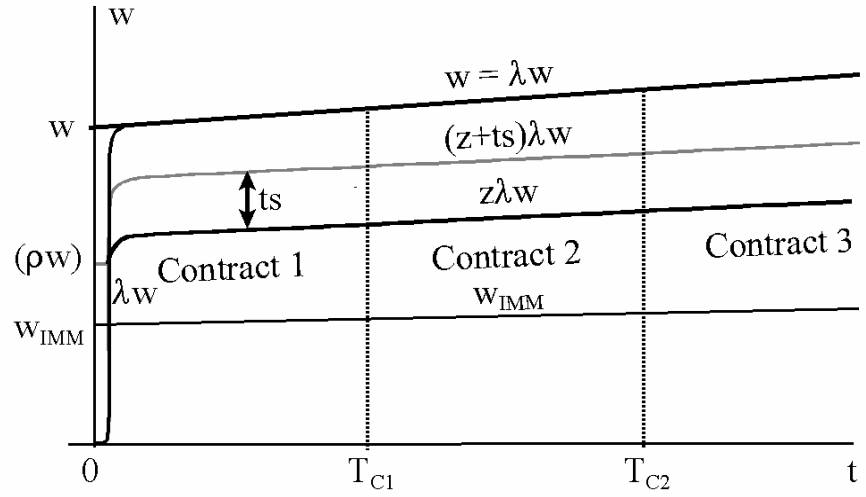
It is difficult to find an ideal case of a rich country with a set of institutions allowing both sides to harvest all potential gains. The case closest to this "ideal" we have found is Dubai, although many of the Gulf states may also qualify.[11)] Foreigners are invited in – by native sponsors for a fee – as guest workers on a contract, which may be renewed if both parties agree. This appears to be widely done in Dubai, even though formal immigration is not allowed, and permanent residency is infrequently granted and then only for recognized services to the state. In Dubai the whole economy is based on the work of contract workers, as the society has 200,000 natives and roughly 800,000 guest workers.[12)] In addition, immigrants pay taxes and sponsor fees that are a net gain to the natives.

IV.1 The basic curves in the Dubai-like country

The guest worker has a contract from 0 to T_{C1}, subject to renewal. He works immediately after a brief introductory training period. Thus λ rises steeply after that period, and then it becomes parallel to the w-line at the distance ts, which is the net tax expenditures and sponsor fees. The contract also contains all social security provided.

11. Singapore, on a much smaller scale, could also be regarded as one.
12. The society appears to work rather well at present. However, it is dubious if the present set-up is sustainable in the long run. Insofar as a proportionately huge foreign worker presence becomes a permanent feature of the economy, the workers could demand a more permanent relationship with associated civil rights.

Figure 2a. Dubai-like case: Basic curves



The $z\lambda$-curve used in calculating the gain to the natives is now easy to draw by shifting the λ-curve down as shown on figure 2a. However, the two figures 2b and 2c have to account for *ts* in a different way – it is a loss for the guest worker and a gain for the natives.

Dubai is a service economy in an oil-rich environment with a high capital to labor ratio,[13)] and immigrants are thus necessary to operate that capital. We assume that *z* is much higher than in the case of figure 1, and the natives also receive *ts*. However, the contract worker is likely to have greater remittances than an immigrant in the standard case. He not only remits to his family, but to himself, as it is likely that he has taken the contract precisely in order to make money for later use. Therefore we still assume that $z + ts < 1$. Finally the w_{IMM} is drawn higher than the w_L of the previous figures. Dubai makes contracts with people from many countries and tailors the contracts to the market.

IV.2 The two NPV calculations for the Dubai-like country

The gain for the guest worker is easy to calculate as done in figure 2b. It is the area between the two wages for the duration of the contract, except for the small initial training period and *ts* – the net tax loss and the sponsor fee. Figure 2c calculates the gain of the natives. In this case it is as large as (or even larger than) the one for the guest worker. It is the area below the $(z+ts)\lambda$-curve minus a small correction for the training period.

13. Dubai has much less oil per capita than its neighbors. Guest workers are allowed to bring family, but have to pay for their upkeep including schools for the kids, health insurance etc. Consequently only the better paid workers are able to do so.

Figure 2b. Dubai-like case: NPV_I of guest worker

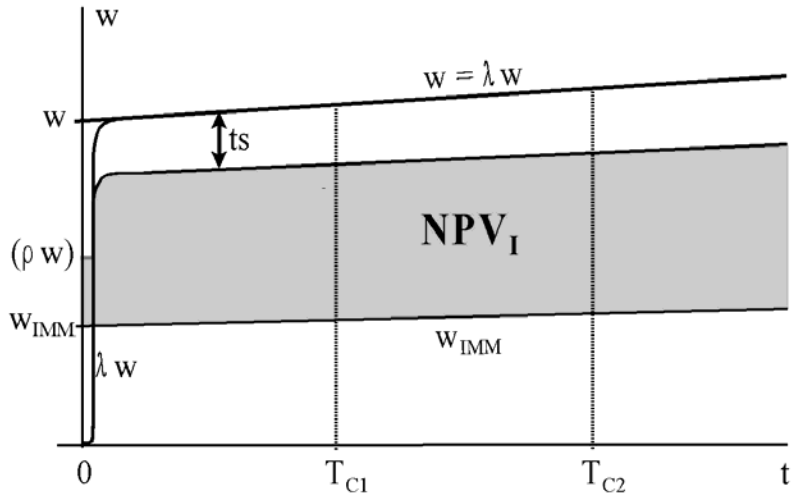
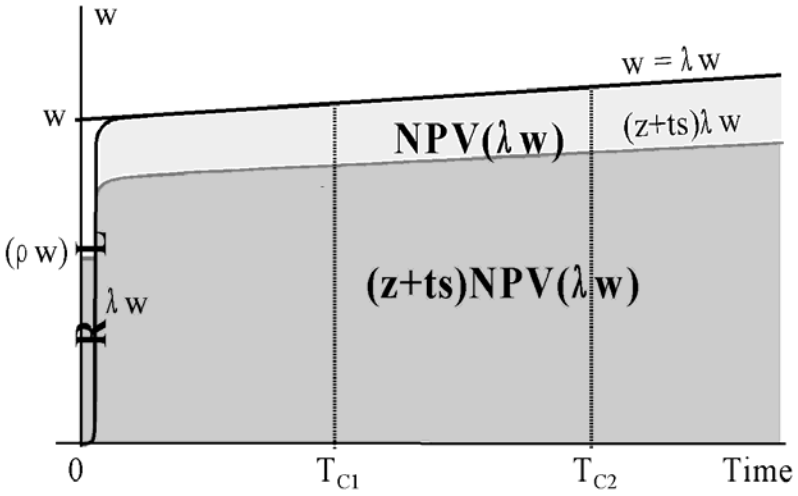


Figure 2c. Dubai-like case: NPV_{Du} of natives



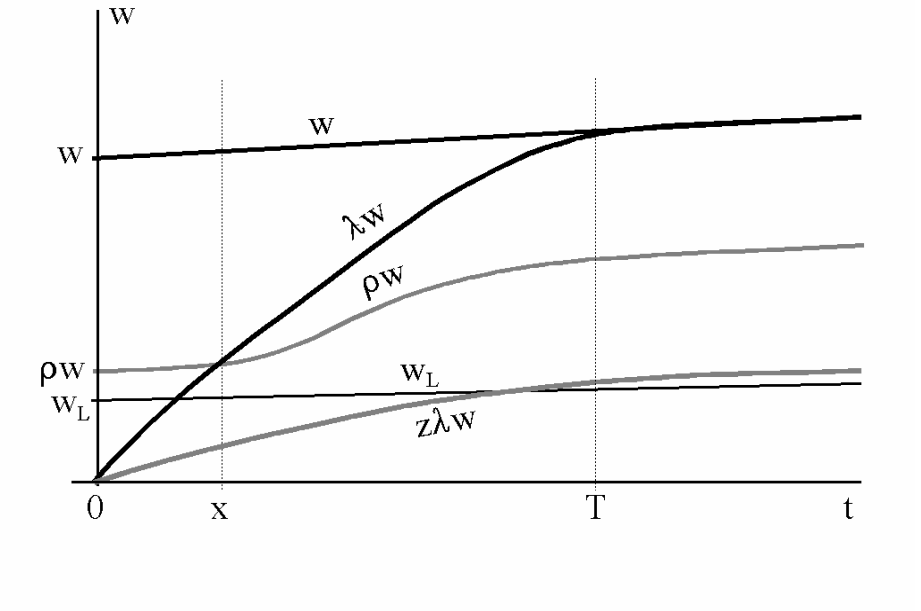
In the Dubai-like case, contracts are market based and only made if mutually beneficial. It should be mentioned that the third part – the LDC from where the guest worker/immigrant comes – prefer that their surplus labor are temporary guest workers to permanent immigrants for two reasons: (a) It does not entail a permanent loss of human capital, and (b) it is the arrangement where remittances are maximized.

V. A society of immigrants: A US-like country

The main characteristic of the US-like country is that social security is based on an insurance principle and has a small basic payment only. Hence, immigrants have a strong incentive to find a job as quickly as possible, and it appears that the λ-curve rises relatively steeply. Immigrants with a foreign PhD often start out driving a taxi or washing dishes in a restaurant to get a foothold in the labor market. Some do not succeed, but others do, and the second generation tends to be rather absorbed.[14)]

Figure 3a shows the 4 curves in the US-like case. The main difference is that the ρ starts low, but as time passes and the immigrant accumulates an insurance capital, ρ goes up. Also, the figure shows that thanks to the low ρ-curve from the outset, the incentive to find work is high, and the λ-curve rises relatively fast.

Figure 3a. US-like case: Basic curves



We shall not present what would have been figures 3b and c, as they look like figures 1b and c, though the loss L and the transfer R are both relatively small. Consequently, in the US-like case immigration is an economic advantage for the natives. The US is a country of immigration, which accounts for the way the curves look.

14. A large literature deals with immigration into the US, see Borjas (1999, 2000).

VI. A tax-based welfare state: A Nordic-like country

In a welfare state of the Nordic type, ρ is high and paid out of the general tax revenue, with hardly any insurance element included. Once the immigrant is accepted, he is, in principle, eligible for social benefits on a par with the natives. The benefits are made to equalize incomes, so they are highest at the low end of the income scale, where the immigrants are likely to be for some time.

The selection process for immigrants to the Nordic countries is adverse for two reasons: (1) Immigrants are – in principle – only accepted for humanitarian reasons. It has even been said that the selection is now heavily biased towards those who have been heavily traumatized by torture and war. This is surely highly commendable from a humanitarian perspective, but it makes for slow labor market absorption in the absence of special actions, and for a high fiscal cost.

(2) The labor markets in the Nordic-like cases use the local language, which can only be acquired through a large investment on the part of the immigrant. Considerable time may thus have to elapse before the immigrant can get a job. During that time the immigrant is a client of the social system. The best educated immigrants will know English or French, but no Nordic language. Hence, they will try much harder to get into a country where they speak the language and are easy to absorb into the labor market and can get to work quickly.[15)]

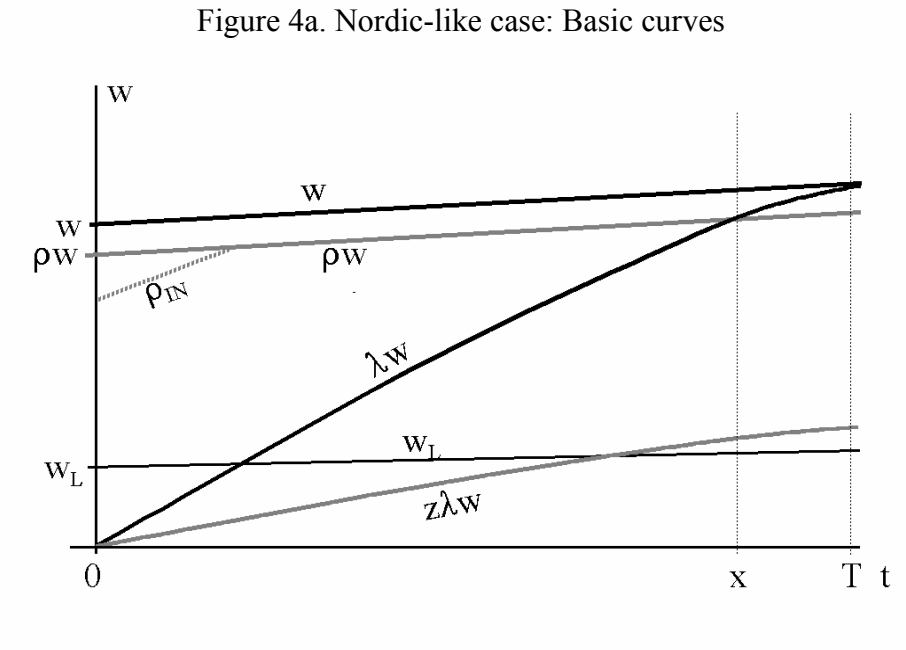
VI.1 The basic curves in the Nordic-like country

Figure 4a shows the basic curves in the Nordic-like case. The curves have the worst possible shapes as regards the interests of the natives: The ρ-curve is unusually high, and the λ-curve is unusually low. As a result the loss triangle, L, is unusually large, and the share of the loss compensated, v, is large too, so that the transfer, R, becomes very large as well.[16)]

The ρ-curve is close to the w_N-curve for immigrants. Many calculations show that their income increases little – sometimes not at all – if they get a job of the type available to them.

15. Larger firms in the Nordic countries use English on a daily basis above a certain level, but it is a problem – especially for a family – to live in a Nordic country in the longer run without knowing the language, and for low skill jobs a rather high proficiency in the language is essential.
16. In the Appendix the reader should look for the $T = 40$ and 60 case and the bottom line in the two sections where ρ is constant at 0.8.

Figure 4a. Nordic-like case: Basic curves



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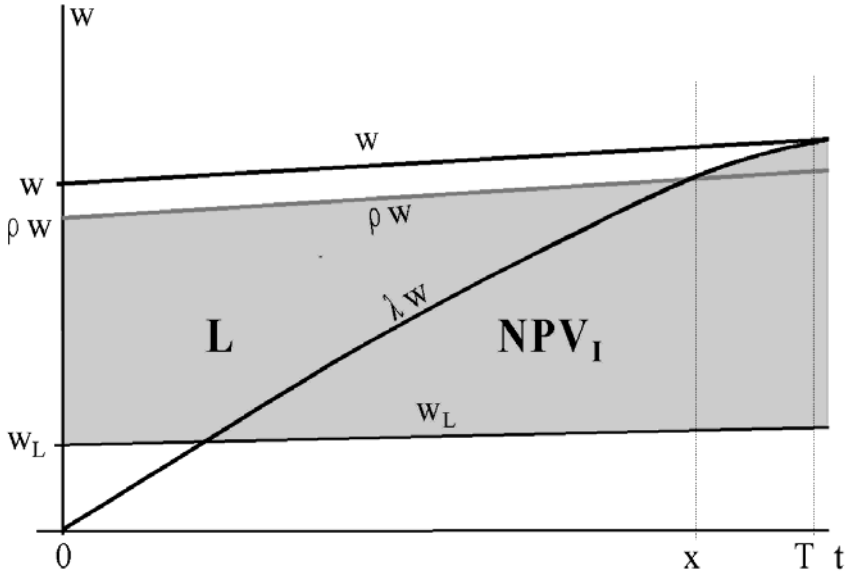
The high ρ-curve is due to a high general level of support for the needy, both in general and with respect to special expenditures such as rent, kindergarten, etc. It is well known that immigrant groups quickly develop a solid knowledge of their entitlements, even when the social support legislation is complex. To partly offset the high path of the ρ-curve, some Nordic states have experimented with a special reduction in the subsidy for a new immigrant, s_{IN}. This is for a few years only and will be disregarded below.

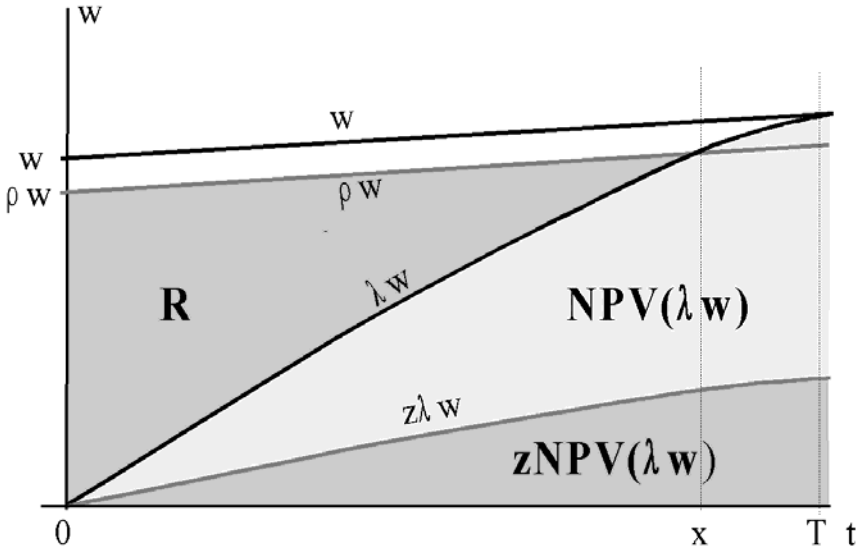
Figure 4b. Nordic-like case: NPV_I of immigrant



VI.2 The two NPV-calculations for the Nordic-like country

Figure 4b shows an outcome that is better for the immigrant than in the standard case (figure 1b) and the US case as NPV_I is approximately 85% of NPV_I*.

Figure 4c. Nordic-like case: NPV_N of natives



NPV_{DC} now looks as in figure 4c. Both L and R are much larger than in the standard case, so it is obviously very difficult to reach positive values of NPV_{DC}. From all estimates we know that T = 60 years is on the low side, and as shown in the appendix, NPV_{DC} is always negative even for T = 40. With a high T the Appendix shows that NPV_N becomes about –0.25 NPV_I*. Finally, reception and training costs should be included. The amount is also unusually high as it includes language courses and the costs incurred by the state between the arrival of the prospective immigrant to the country and his actual admission. A ballpark estimate would be at least 0.05 NPV_I*, increasing the total costs to –0.3 NPV_I*.

We thus conclude: Immigration is expensive for the natives in the Nordic-like case.[17)]

17. Several studies of the macro-orders of magnitudes of these aspects have been made. See e.g. Wadensjö and Orrje (1999) and Pedersen (2002) for Denmark, Storsletten (2003) for Sweden and Roodenburg, Euwalds and Rele (2003) for the Netherlands. They appear to be consistent with our assessments.

VII. The non-economic variables: Additional costs and benefits

The introduction stated that the flows of people from poor to rich countries were directed by two gaps: The income gap and the civil rights gap. It further claimed that the two gaps generate flows in the same direction that are difficult to distinguish.

So far we have considered the economic gap. We now turn to the non-economic factors, and show that the civil rights gap can be seen as a set of extra costs and benefits that should be added to the *NPVs*.

VII.1 Non-economic costs and benefits for the immigrant: S, D from I.3

The assessment of the effect of the non-economic variables affecting the immigrant is concentrated in two variables: S is the benefit for the immigrant of improved civil rights and political liberties, while D is the costs of being – for a (long) period – an outsider.

The standard measures for civil rights and political liberties are the two Gastil Indices from Freedom House.[18)] On the scale from 1 (all rights) to 7 (no rights) the average distance between the Western DCs and the LDCs is about 3 point. If the distance is weighted with the largest exporters and importers of immigrants, the gap grows to about 4. The typical immigrant hence has human rights in addition to economic reasons for trying to get into a DC.

In principle the welfare gain of the permanent civil rights improvement can be calculated much as the gain in income, that is as the *NPV* of the improvement in civil rights, from $t = 0$ onwards. In money terms this is S.

However, the period from the immigrant leaves his country till he is absorbed in DC involves some mental hardship. We include only the loss from $t = 0$. The hardship is due to living in a country where he is an outsider. The shape of this loss is thus very much like one of the loss, L. The *NPV* of the "mental" loss, in money terms, is termed D.

If the immigrant lived in fear of his life and freedom then surely $S > D$. Even if he was not actively repressed, we still think that $S - D > 0$. The administrative mechanisms sorting immigrants attempt to bias the selection toward immigrants who have been suppressed, and where consequently $S - D$ is large. The difference $S - D$ is, in principle, a non-economic benefit that should be imputed and added to NPV_I. The non-economic factors thus increase the gain of the immigrant:

18. Paldam (2004) is a study of these indices. They are strongly correlated and show that the three big "enemies" of democratic rights and civil liberties are Communism, Islam and poverty, where the latter explanation is the strongest.

(12) $NPVT_I = NPV_I + S - D > NPV_I$, where $NPVT_I$ is the total gain of the immigrant.

VII.2 Non-economic costs for the natives: Q from I.3

The assessment of the effect of the non-economic variables affecting the natives appears to be dominated by one variable: Q, the increase in social tensions. This effect will be subdivided in two items, (q1) and (q2), which are both "externalities" seen from the point of view of the immigrant and his employer, but as we consider all natives (and all other immigrants), all "externalities" are internalized. The point is that the DC has groups of non-absorbed immigrants already and some social tensions between natives and immigrants.

(q1) An increase in the size of the immigrant group will marginally increase these tensions.

(q2) Also, the larger the immigrant groups, the easier it is to live separately from the natives,[19] making absorption more difficult. It lowers the λ-curve of everybody else.[20]

These effects are both costs. They may be imputed by the standard methods of cost benefit analysis, and be cumulated into a net present value Q that should be deducted form NPV_{DC}.

(13) $NPVT_{DC} = NPV_{DC} + Q < NPV_{DC}$, where $NPVT_{DC}$ is the total gain of the natives.

In many cases NPV_{DC} is small, and if Q is large $NPVT_{DC}$ may be negative. However, Q is high only if DC already has a (large) group of unabsorbed immigrants. If the immigrants already in DC are well absorbed they may, in fact, help make absorption of new immigrants easier. These considerations may be used for developing a theory allowing us to calculate optimal rates of immigration.

VII.3 Two consequences: Administrative controls and the market for agents

In money terms immigration thus involves large amounts, and the amount is asymmetric: For the immigrant the amounts are substantial: $NPVT_I$ in the Nordic countries may be as much as 1 million US $. For the natives in the Nordic type countries $NPVT_{DC}$ is either small or in some cases negative. This is both because adverse selection occurs and many incentives are wrong.

19. This is a part of the dynamics of "ghettos" where nothing goes on in the language of the natives, making it impossible for the women to acquire that language, especially for the Muslim groups, who consider it important to shield women from the permissive secularized society of the natives.

20. The two mechanisms also increase the problem of "second-generation" immigrants, who feel that they belong neither here nor there, and who are therefore more prone to crime or seek group identification in extreme politico/religious groups, thereby slowing down absorption even in the third generation.

While it could be argued that the resulting costs are the price that the Nordic type countries must have decided to pay when they adopted their much publicized idealistic policy of helping refugees, there is an issue as to whether the costs were adequately anticipated.

This has created a situation where the potential number of immigrants is huge, and led to a "panzer versus guns" process,[21] where most DCs keep raising administrative barriers to stop the flow, and the pressure generates a growing market for agents getting people through.

The administrative barriers are both international and national. They apply two criteria: humanitarian and economic. The decision is reached through a legal process based on the *legend* provided by the immigrant. The legends can only be checked by the DC bureaucrats to a limited degree. To control the legend they have to be able to investigate in the country the DC potentially accuses of persecuting innocent asylum seekers. It is obvious that in such cases decisions are based on a light burden of evidence, and consequently, it must have a large arbitrary element.

The agent market is partly legal and partly illegal. Legal agents are lawyers, NGOs, journalists and politicians in the DCs helping immigrants for economic, humanitarian and political reasons. Some politicians and journalists specialize in running individual cases, etc.

Illegal agents perform two services: (i) They organize secret transport so that the immigrant turns up in the chosen DC without a legal exit from a country to which he can be sent back. (ii) They provide legends that tally to the rules of admission in the chosen DC. Most LDC-immigrants come from countries with high levels of corruption (see Paldam, 2002), with "bazaars" where many documents can be purchased.

In many DCs laws increasingly criminalize and punish transport agents as "human traffickers" – the term sound ominous, but it is difficult to convince most LDCs that this is a particularly immoral activity.[22] Nevertheless, these agents are becoming more ruthless and well organized.

It appears that the illegal agents often collect fees in the order of $ 5'000 to 10'000 from an immigrant – immigration is not for the poor in the LDCs. In addition, the legal process from when the immigrant enters the country until the decision is made, is likely to take half a year, over which period the immigrant loses, say, $\frac{1}{2}w_L$.

The implication is that the immigrant may have invested a considerable sum in the attempt to obtain entry. Frequently, his family – that is, his extended family, see next section –

21. The reader may remember that the technological history of war can be told as a competition between defensive "panzer" and aggressive "guns", where sometimes one was ahead and sometimes the other.
22. The agents do not commit serious crimes in the LDC, and it appears that many countries do not consider "secret" transit to be a crime. The criminal part is thus only the end part in the DC.

has invested in him, so that the family can get a foothold in the DC. This investment is wasted if the application is rejected. Nonetheless, thanks to the large interests, the agents, the family networks etc., some immigrants always manage to seep through the barriers.

The bureaucratization process, especially in the Nordic type economies, is also inflicting an economic cost in hampering their ability to participate fully in the internationalization of business. The barriers discourage highly skilled personnel from the emerging countries from relocating to them, with the consequence that business is increasingly being moved away to several of these countries.

VIII. Conclusion: Unpalatable choices

The introduction claimed that millions of people move from the LDCs to the DCs.

The analysis showed that while each immigrant getting through the barrier gets a very large premium – in NPV money terms maybe as much as a million US $ – most DCs get much less and in some cases may even incur a loss. In particular this applies to the Nordic type (tax based) welfare system, and to those DCs characterized by high unemployment rates (over 10 percent) that already have large groups of unabsorbed immigrants.

The asymmetry of the advantage of the two parts has created the present panzer-gun-dynamics, where on the one side the DCs construct more and more impenetrable "panzer" in the form of barriers against the immigrants, while on the "gun-side" the market for agents "shooting" people through the barriers is gradually increasing in size, sophistication and ruthlessness. The simultaneous growth of the two sides appears to be a costly process that has led to all the welfare losses associated with dynamics of the growth of such illiberal practices.

The immediate reaction of the economist should obviously be that everything that can be done to decrease the economic advantage of the immigrant and increase the economic advantage of the natives will help reduce the pressures. However, it is morally and politically a difficult way to go.

Policies that decrease the economic advantage of immigrants have to be drastic to matter, and they would inevitably have the character of discrimination. Moreover, they would not sit well with an idealistic policy of refugee assistance. The problem for the Nordic type economies is that a system meant for refugees is proving very attractive for non-refugees. Perhaps a system could be made whereby immigrants had to pay a special tax – for a period – to earn the right to participate in the DC that has been built by the natives.

Policies increasing the economic advantage of the natives are potentially of two kinds: Reducing payments from natives to immigrants, and policies increasing the speed of absorption. The latter can be done in three ways: By using the selection process, by pursuing positive discrimination for immigrants, and by freeing labor markets and promoting more flexible business practices.

Much more research and analysis is needed to develop policies that will effectively harness the potential benefit of the immigrant to the native population especially in the context of rapid ageing and their heavy social costs.

References:

Blume, K. and M. Verner (2003). Welfare dependency among Danish Immigrants. Working Paper AKF, Seminar on Welfare Research, Nyborg Strand, December.

Borjas, G.J. (1999). *Heaven's Door. Immigration Policy and the American Economy*. Princeton UP., Princeton, NJ.

Borjas, G.J., ed. (2000*). Issues in the Economics of Immigration*. National Bureau of Economic Research Conference Report, University of Chicago Press.

Chand, S. K. and M. Paldam (2004). Immigration policy and the Nordic welfare state. Conference paper.

Epstein, G. and I.N Gang (2004). Ethnic networks and international trade. This volume.

Hansen, J. and M. Lofstrom (2003). Immigrant Assimilation and welfare participation. *Journal of Human Resources* 38: 74-98.

Hatton, T.J. and J.G. Williamson (2004). Refugees, asylum seekers and policies in Europe. This volume.

Paldam, M., G.T. Svendsen (2001). Missing Social Capital and the Transition in Eastern Europe. *Journal for Institutional Innovation, Development and Transition* 5: 21-33.

Paldam, M. (2002). The cross-country pattern of corruption: Economics, culture and the seesaw dynamics. *European Journal of Political Economy* 18 (2): 215-20.

Paldam, M. (2004). The big pattern of democracy. A study of the Gastil Index. Working paper available form the author. (Second version with V. Borooah under preparation).

Pedersen, L.H. (2002). Befolkningsudvikling, integration og økonomisk politik. Dream Model Group: Copenhagen. Downloaded from <http://www.dreammodel.dk>.

Roodenburg, H., R Euwals, and H.t. Rele (2003). Immigration and the Dutch Economy. CPB Netherlands Bureau for Economic Policy Analysis: Den Haag. Downloaded from <http://www.cpb.nl>.

Sinn, H.-W. (2003). EU Enlargement, Migration and the New Constitution. CES-ifo Conference paper.

Storsletten, K. (2003). Fiscal implications of immigration – a net present value calculation. *Scandinavian Journal of Economics* 105: 487-506.

Wadensjö, E., Orrie, H., 2002. Immigration and the public sector in Denmark. Aarhus University Press: Aarhus.

Appendix table: Simulations of NPVs

Social policy			T	NPV_I in % of NPV_I*					NPV_{DC} in % of NPV_I*				
Min ρ	Period	Max ρ		2%	3%	4%	5%	6%	2%	3%	4%	5%	6%
0.25	15	0.60		85.0	79.1	73.8	69.3	65.3	19.1	16.7	14.5	12.5	10.7
0.40	10	0.70	20	88.5	84.0	80.1	76.6	73.6	15.6	11.7	8.3	5.2	2.4
0.80	None	0.80		94.1	91.9	90.1	88.5	87.2	10.0	3.8	–1.7	–6.7	–11.2
0.25	15	0.60		76.6	69.1	63.2	58.6	54.9	10.4	5.2	1.1	–2.3	–5.1
0.40	10	0.70	40	82.3	76.8	72.5	69.1	66.4	4.6	–2.4	–8.1	–12.8	–16.6
0.80	None	0.80		89.8	87.0	85.0	83.6	82.5	–2.9	–12.6	–20.7	–27.3	–32.7
0.25	15	0.60		70.8	63.2	57.8	53.9	53.9	2.7	–3.9	–8.8	–12.5	–12.5
0.40	10	0.70	60	77.9	72.4	68.6	65.8	63.7	–4.4	–13.0	–19.5	–24.4	–28.0
0.80	None	0.80		86.9	84.1	82.5	81.5	80.9	–13.4	–24.8	–33.5	–40.1	–45.2

Assumptions: see also table 1:

The "interest" rates 2%, … , 6% are (r – a), the rate of discount minus the growth rate of the real wage. With these "interest" rates the NPV_I* becomes 50, 33.3, 25, 20 and 16.7 times the DC wage rate w respectively. The λ-curve is linear, between $t = 0$ and $t = T$, where it becomes w and remains so. Social security (in % of w) starts at Min ρ, and grows linearly during "period" to Max ρ. No reception and training costs are included.

The results to keep in mind are: (1) NPV_I is always positive and somewhere between 50% and 80% of the potential NPV_I*. (2) NPV_{DC} is small and easily becomes negative. The gray part of the table shows the negative section.

Derivation of L, equation (8).

$$Let\ \lambda = \frac{t}{T}.\ L = \int_0^T (1-\lambda) w e^{-rt} dt$$

$$L = \frac{1}{2} q NPVI^* \quad where\ q = \left(\frac{\alpha}{\alpha - \beta} \left(1 - \frac{1}{e^{(r-a)T}} \right) \right)$$

Derivation of R, equation (9)

$$R = \alpha \int_0^x (\rho - \lambda) e^{-(a-r)t} dtb = (\rho - \lambda) \left(\frac{\alpha}{\alpha - \beta} \left(1 - \frac{1}{e^{(r-a)x}} \right) \right) NPVI^* \approx vL$$