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into a welfare state

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and a comparison to an immigration state and a guest worker state

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Abstract: The NPV of the income flows associated with an LDC outward migration are calculated for both the immigrant from the LDC and for the host country DC in three different stylized cases: A guest worker society of the Dubai type, an immigrant society of the US type, and a tax-based welfare state with institutions of the Danish type. In the Dubai type case it appears that mutually beneficial decisions can be made, and the same applies to a degree in the US type case. However, in the Danish type evolved welfare case, immigration is only an advantage for the immigrant, especially one with less marketable skills, while it is a disadvantage for the natives. This poses an additional threat to the continuation of the traditional type of welfare state.

Keywords: Immigration, welfare state
Jel: F22, J41, J70, O15

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The background for the analysis is the stress that is increasingly experienced by the North European welfare states, of which we use Denmark as the example. These states are universally recognized as having had considerable success in their striving toward the twin ideals of equality and solidarity, and at the same time being rather efficient and productive. So it is no wonder that the welfare states are supported by very large majorities of their respective populations.[3] We are dealing with sets of institutions that will be very difficult to change.

However, the stress is growing: One factor is the gradual slowing of growth. The second is the large shift toward an aging population that has started. The third is the fact that these states have got into increasing problems with one main aspect of globalization: Immigration from the LDC-world. During the last 30 years much labor has flowed from poor to rich countries. Not all reasons for the flows are economic, but we think that economics is the key to the rise in the flow. Consequently, the focus is on the economic aspects, and humanitarian ones are only discussed peripherally – in section VI – insofar as they are economically relevant.

Obviously it is the very success of the North European welfare states that has made them magnets of attraction for the LDC-labor flows. We argue that the very institutions of the welfare states convert the immigrants into welfare recipients that add an immigrant burden to the age burden. In order not to have to change the institutions, the welfare states are increasingly raising dikes to stem the flow. Dikes consist of complex rules and cumbersome and slow bureaucracies for handling "foreigners".

This is turning the Nordic Welfare states into bigot anti-foreigner states, reducing their possibilities for reaping the full advantages of globalization. Already cases have appeared where international firms – that need an international staff – have decided to move elsewhere where institutions are more oriented to the market.

The paper presents a theory of immigration and shows how it can be applied to different sets of institutions before we use it to analyze the case of the Nordic Welfare state. The paper is theoretical, but we have made simulations using the most likely parameters to assess the orders of magnitudes. A set of such simulations are given in the appendix.

Section I sets up the frame of reference used, while section II presents the basic theory. Section III applies the theory to a Dubai-like country where a foreigner can become a guest worker only. Section IV looks at an US-like country that is a society of immigrants with corresponding institutions. Section V turns to our main case which is a Danish-like welfare state with institutions made when immigration was insignificant. The last two sections deal briefly with the remaining costs and benefits concentrating on the Danish-like case, and the conclusion considers the possible ways to overcome the problems in that case.

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3.   In Denmark no political party with more than 1% of the vote are for major reforms of the welfare state. The anti-tax party (the Progress Party) of the 1970s has been replaced with a populist party that has the conservation of the welfare state as a key policy. The present center-right prime minister has made firm promises to the voters that his government will not change *any* of the institution of the welfare state.

I. Framework of the analysis: Net present values of income flows

The analysis is based on a highly stylized micro analysis of the economics of one male[4] immigrant from an LDC to a rich DC. The key *decision* is taken to be the one whereby the LDC immigrant is allowed legally into the DC.[5] The terminology distinguishes *natives* and *immigrants*, who are also termed *insiders* and *outsiders*. The level of generality of the analysis does not distinguish between immigrant groups, except in a couple of notes. The analysis uses the overlapping generation framework where immigrant lives forever – hence first, second and third generation immigrants are all the same. Also, it assumes that pensions and, e.g. unemployment relief at the standard level are included in the annual wage flows. When immigrants work their own businesses, their earnings are imputed in λw_{DC}.

Table 1. Variables and curves analyzed

Curve	Definition (all variables consider one immigrant)	Depends upon
w_{DC}	wage in DC: $w_{DC,t} = \alpha e^{at}$, which starts at α for $t = 0$	grow at constant real rate a
w_{LDC}	wage in LDC: $w_{LDC,t} = \beta e^{bt}$, which starts at β for $t = 0$	grow at constant real rate b
ρ	level of social subsidy received when not working	t and institutions of DC
λ	absorption curve, income earned on market: $\lambda < w_{DC}$, for $t < T$	t, ρ and other institutions of DC
NPV	net present values for immigrant, NPV_I, and natives, NPV_{DC}	calculated at time $t = 0$
NPV*	potential gain of immigrant, NPW_I*, and natives, NPV_{DC}*	case of $\lambda = w_{DC}$ for all t
t	time from legal entry	decision is made at $t = 0$
T	absorption time, $\lambda(T) > w_{DC} - \epsilon$, where ϵ is small	λ
z	the ratio of net gain to natives of the production of immigrant	main case $0 < z < \frac{1}{2}$, but other cases
x	time of break even, net subsidy zero	intersection of ρ and λ curves

I.1 The large potential gains of the two parts: NPV_I* and NPV_{DC}*

We consider the *net present value*, *NPV*, of the *income flows* caused by the decision from two perspectives: that of the immigrant, NPV_I, and that of the natives, NPV_{DC}. All NPV-calculations are made at $t = 0$, the decision time. The analysis discusses the 4 curves and 6 variables listed in table 1. The absorption curve, λ, measures the income from the labor market participation of the immigrant. When he has the standard participation rate at the going wage rate, w_{DC}, we say that he is fully absorbed. This happens at $t = T$.

If things go well, the immigrant shifts (at $t = 0$) from the LDC-wage to the DC-wage, at the level his training permits. His potential gain from the decision is therefore the net present

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4. Female immigrants have lower λ-curves, i.e. the absorption in the labor market takes longer.
5. The analysis does not consider the prior decision of the immigrant to leave his (former) country. Furthermore we disregard all intermediate stages between a full entry and no entry.

value of the DC-wage minus the one of the LDC-wage. Using the two formulas for the wages from table 1 we get:[6]

(1) $NPV_I^* = NPV(w_{DC}) - NPV(w_{LDC}) = \int_o^\infty w_{DC}\, e^{-rt}\, dt - \int_o^\infty w_{LDC}\, e^{-rt}\, dt =$

$\alpha \int_o^\infty e^{-(r-a)t}\, dt - \beta \int_o^\infty e^{-(r-b)t}\, dt = \frac{\alpha}{r-a} - \frac{\beta}{r-b} \approx \frac{\alpha-\beta}{r-a} = \alpha\, \frac{1-\alpha/\beta}{r-a}$, if $a \approx b$

From this simple expression it is easy to reach some orders of magnitudes. β is in the range of 15% ± 10% of α.[7] The real rate of interest may be used as an approximation to the rate of discount. Hence $r = 5\%$ is probably in the high end of the scale, and a and b are typically both around 2%. These values produce a rough estimate of $NPV_I^* \approx \alpha\, \frac{1-0.15}{0.03}$. Even for a low α such as \$25'000, NPV_I^* becomes $^2/_3$ million \$. If r is high, say, 8%, NPV_I^* falls to half. If r falls toward a, NPV_I^* rises, so we have found that

(2) $NPV_I^* = \$\ ^2/_3 \pm\ ^1/_3$ mills

It is the large size of NPV_I^* that drives the flows of immigrants. It is important to recognize that with such large the incentives are strong for the flows to continue. The immigrant knows that he faces 3 problems:

(p1)   He may fail to get through the barriers to entry, see section VI.
(p2)   He may have to pay commissions to agents to get through the barriers, see section VI.
(p3)   He may not acquire all of NPV_I^* if he gets in, see section II.

Nevertheless, the size of the potential NPV_I^* is so large that many think it is worth the try.

        The potential gain for the DC is the net value of the *surplus production* of the immigrant, as discussed in section II.3 below. It is assumed to be z times the NPV of the wage of the immigrant, where $z \approx 0.25$.[8] The potential value is thus:

(3) $NPV_{DC}^* = NPV(z\, w_{DC}) = z\, \frac{\alpha}{r-a} = z(NPV_I^* + NPV(w_{LDC})) \approx z(1 + \beta/\alpha)\, NPV_I^*$

For the said value of z, α and β this is about 30% of NPV_I^*. It is smaller than NPV_I^*, but still a considerable amount. With such large potential gains for both parts it is no wonder that many observers think that the labor flows are highly beneficial for the world[9] – and many stories can be told where this has actually been the case.[10]

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6.   The results follow immediately from the expression for a perpetual annuity.

7.   The gaps in wages correspond roughly to the GDP per capita numbers measured in PPP-terms.

8.   This order of magnitude corresponds to the share of capital in standard estimates of production functions.

9.   There might also be a loss in the LDC of the immigrant. However, it is likely that the LDC has some hidden unemployment within the relevant skill levels, so that only a small production loss occurs.

10.   A typical case is the catch-up of Finland from it left the Russian Empire in 1918 to about 1970. During the 1950s and 1960s about 1 million Finns went to work in Sweden. This flow greatly helped the development of both countries, even when it did, for some time, generate some social tensions.

I.2   Realizing the potential: Three archetypal societies

The potential gains are only reached in exceptional cases – see section III. The immigrant needs time, *T*, to be absorbed in the labor market. During that period he does not receive w_{DC}, but only λw_{DC}, where λ is a function of time and the institutions of the DC. That reduces the gain of the immigrant. In that period, the immigrant receives a social subsidy as per the rules of the DC that partly compensates for the reduction in the gain. While the NPV of that subsidy should be added to NPV_I, it is, of course, a cost for the natives, which should be deducted from NPV_{DC}. This can all be analyzed using a set of relations presented in section II.

Many institutions of DC are relevant for the forms of the λ-curve. Some are labor market rules, regulations and customs. Others are the existing reception systems and training facilities, and last – but not least – the social system of the DC.

Each DC presents a "package" of institutions to consider. We have chosen three such packages to span the possibility space. As suggested by the title we are most concerned with the Danish-like case, which is by far the most problematic. The alternative cases, although of interest in themselves, are examined for the light they can shed on resolving the Danish type-case.

II.   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 with an assessment of factors that influence the NPV's of the decision.[11]

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

The four lines are likely to have the form drawn in figure 1a. The DC wage, w_{DC}, is 5-10 times higher than the LDC wage, w_{LDC}. However, it takes some time, T_{DC}, for the immigrant to be absorbed in the labor market at which point he makes the DC-wage. We assume that he starts without a job at t = 0, so the absorption curve, λ_{DC}, starts at 0 and reaches w_{DC} at T_{DC}. When his income falls below a certain threshold, he is entitled to social support, ρ.

The subsidy, ρ_{DC}, is likely to have two parts: A subsistence payment at the rate, ρ_{DC1}. An insurance part that has to be saved up, so ρ_{DC} rises from ρ_{DC1} till the maximum, ρ_{DC2}, that is a certain fraction of w_{DC}. Hence ρ_{DC} depends upon t as drawn.[12] The exact form of the ρ-curve depends on the social policies of the individual DC. At the break even point, x_{DC}, the immigrant ceases to be a net recipient of subsidies. To simplify assume that the subsidy received is the difference between the subsidy and income made, λ_{DC}.

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11.   The literature has been surveyed by e.g. Borjas (1994) and Hatton and Williamson (2002).

12.   The Appendix uses ρ_{DC1} = 0.25, 0.4, 0.8 and ρ_{DC2} = 0.6, 0.7, 0.8 and a period of 15, 10, 0 years to get from the low to the high value.

Figure 1a. Standard case: Basic curves
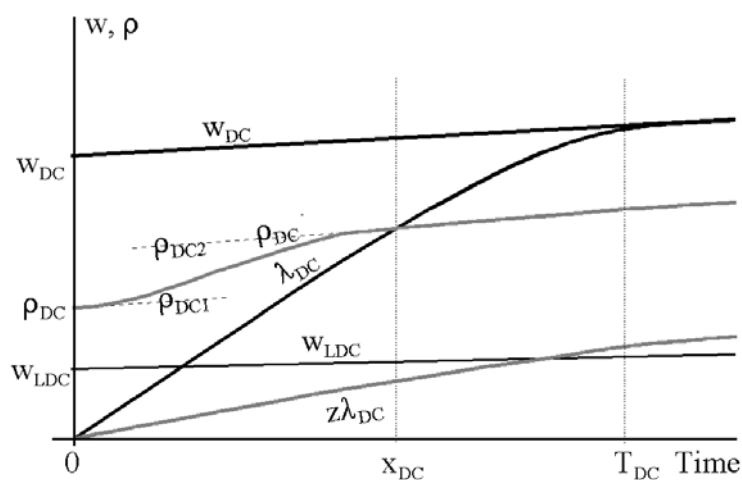
From casual observation and many studies from different countries it is clear that T_{DC} is often large. It depends upon the institutions in the DC and the difference between the culture, education, etc. of the immigrants and the natives. Often several generations are needed, and in some cases a full absorption has not happened in 100 years. We should hence have numbers like $T = 40 \pm 20$ years in mind[13] – where the high numbers occur in cases where the social system and other institutions in the DC are such as in the Danish-like case of section V.

Figure 1b. Standard case: NPV_I of immigrant
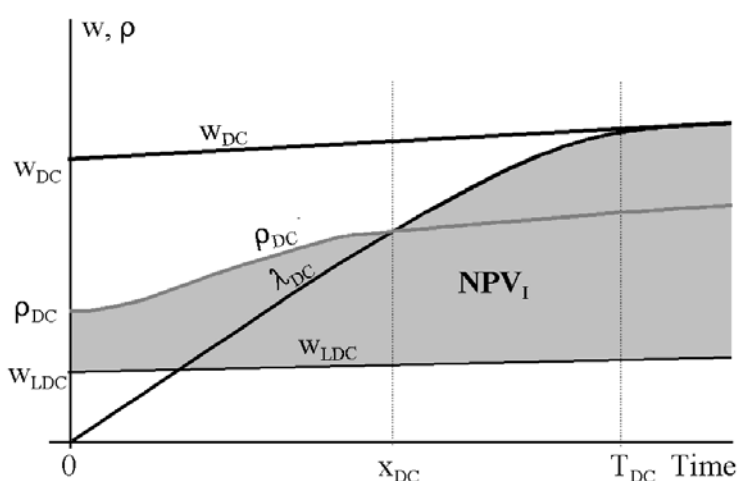
II.2   The NPV_I-calculation of the immigrant
The immigrant's income gain from being accepted in DC is drawn as NPV_I in figure 1b. The

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13.   The Appendix uses T = 20, 40 and 60 years. For the Danish case several estimates, see e.g. Blume & Verner (2003), suggest that T = 60 is low, but new policy initiatives are under way reducing T. Corresponding calculations for Sweden in Hansen and Lofstrom (2003) show a similar pattern.

potential NPV_I^* is the area between the w_{DC}-curve and the w_{LDC}-curve. The gray area of NPV_I is somewhat smaller, due to the loss caused by the slowness of absorption. Graphically the loss is the "white" area between the w_{DC}-curve and the gray area. The exact formula is:

$$(4) \qquad NPV_I = \int_o^x (\rho_{DC} - w_{LDC})e^{-rt}\, dt + \int_x^{T_{Dc}} (\lambda_{DC} - w_{LDC})e^{-rt}\, dt + \int_{T_{Dc}}^\infty (w_{DC} - w_{LDC})e^{-rt}\, dt$$

By assuming some functional forms for the curves (4) can be solved.

It is easy to make a rough assessment of the orders of magnitudes – see Appendix. We assume that r = 5% and a = 2%. About 35 ± 10% of NPV_I^* is lost between 0 and T_{DC} if the curves look roughly as drawn, so that about 65% remains. From T_{DC} the area is the same as in the potential case. For the given values of r and a, as much as 40 ± 15% of NPV_I^* occurs after 30 ± 15 years. Hence, even if 35% of NPV_I is lost before T_{DC} the immigrant still gains about (60 · 0.65 + 40)% ≈ 75% of NPV_I^*. If r is 8%, the immigrant gain is still above 50% of NPV_I^*.

II.3 *The calculation of the NPV_{DC} of the natives*

The corresponding calculation by the natives in the DC is shown on figure 1c. As mentioned in section I.2 we assume that the production of the immigrant is equal to or a bit larger than his wage income (ie, he also produces overheads for his employer).

Figure 1c. Standard case: NPV_{DC} of natives
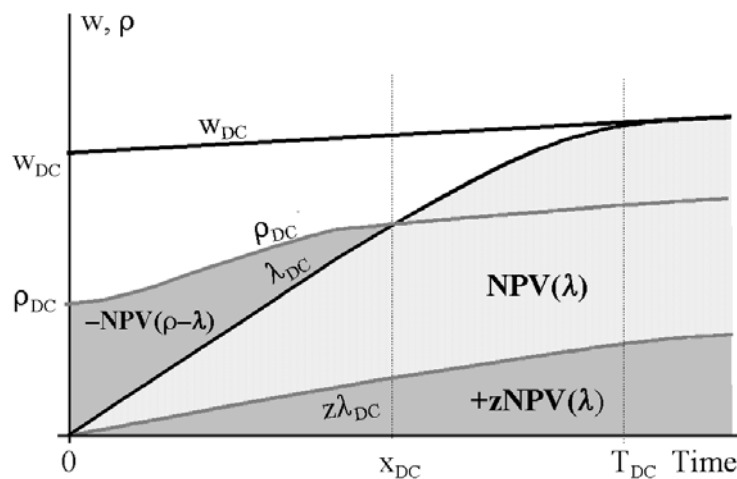
The production of the immigrant is therefore a bit larger than the (light gray and gray) area between the λ-curve and the time-axis. The net surplus to the natives is roughly proportional to w_{DC}, by the factor z. It has 3 components: (a) His wage minus the fraction he consumes and remits, (b) plus the net overhead for the firm, and (c) the taxes he pays less the public services he receives. Finally – depending upon the economic situation – there may be a multiplier effect. Under full employment this effect is zero. We have assessed z to be 0.25 ± 0.1%. This is the positive part of the NPV_{DC}, shown as the gray area marked by $zNPV(\lambda)$ on figure 1c.

With the crude numbers used till now $NPV(w_{DC})$ is $(\alpha + \beta)/\alpha = 1.2$ times NPV_I^*. About 60% of this amount falls before T_{DC}, and as λ is assumed to be somewhat convex, we assess that about half of $NPV(w_{DC})$ before T_{DC} is lost. Consequently, a rough guess is that:

(5) $zNPV(\lambda) \approx 0.25 \, (0.5 \cdot 0.6 + 0.4) \, 1.2 \, NPV_I^* \approx 0.2 \, NPV_I^*$

The social support the immigrant receives before x_{DC} is a cost for the natives. It is drawn as the other gray area marked by $NPV(\rho - \lambda)$. In the previous section the area between the gray area and the w_{DC}-curve was assessed to be 30-40% of the 60% of NPV_I^*, which is 15 - 20% of NPV_I^*. If we set $NPV(\rho - \lambda)$ to be between half and one third of that, we have reached a rough assessment: $NPV(\rho - \lambda) = 0.1 \, NPV_I^*$. Hence, if the curves look like they are drawn, we have:

(6) $NPV_{DC} \approx 0.2 \, NPV_I^* - 0.1 \, NPV_I^* - RC \approx 0.1 \, NPV_I^*$

RC is the reception and training costs financed by the DC to integrate the immigrant. They easily reach $0.05 \, NPV_I^*$. The assessment (5) is crude indeed, but it illustrates two points: (a) The gain to the natives is much smaller that the one to the immigrant. (b) The Appendix shows that gain is mostly positive, but it is so small that it might turn round and become negative with just a few minor changes in the parameters.[14] Hence, it switches signs if r = 8%. Analytically the result is:

(7) $NPV_{DC} = z \int_o^\infty \lambda_{DC} \, e^{-rt} \, dt - \int_0^x (\rho_{DC} - \lambda_{DC}) e^{-rt} \, dt$

Once again we may insert some functional forms in the relation and solve. However, it is more interesting to look at cases where we know more about the form of the curves. Before we turn to the three cases, we will consider the relation between the curves.

II.4   The ρ-curve and the λ-curve: Form and interaction

The DC has two families of policy variables: One is the social policies determining the shape and position of the ρ-curve. The second is the set of labor market policies that influences the λ-curve directly, and hereby T_{DC}. 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 makes the rules for the natives the ones for the immigrants as well.

Figure 1d shows two ρ-curves and two λ-curves; the ones discussed in sections IV and V. The two ρ-curves are somewhat extreme: ρ_h is *high*, with no insurance part of the social payment, so the curve is parallel with and close to the w_{DC}-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 absorbed quickly in the labor market. λ_s is *slow*, so that immigrants are slowly absorbed. The four curves suggest three points.

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14.   In the range of the most likely parameters NPV_{DC} is positive for low ρ_{DC}'s and low rates of discount, but it is difficult to reach $NPV_{DC} > 0.1 \, NPV_I^*$.

Figure 1d. Standard case: NPV_{DC} of natives
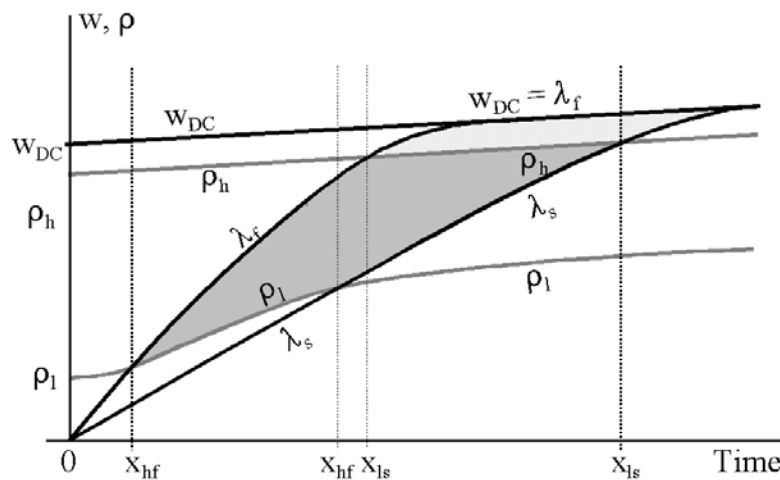
Firstly, the differences between the curves have dramatic consequences for the intersection point x and the three areas discussed in the two preceding sections. In particular the amount of social support received by the immigrant differs, by about 20 times between the case where the curves are (ρ_l, λ_f) and (ρ_h, λ_s). This must have large consequences for NPV_{DC}.

Secondly, incentives are different. Imagine that the λ-curve is strongly influenced by effort. The λ_f-curve is then a high effort curve and the λ_s-curve a low effort curve. The two areas marked with gray show the incentive for making an effort. If the ρ-curve is the high alternative, then the loss of the immigrant if he makes a low 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 hence 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 is an empirical question. It is here important to note that effort is not the only factor involved in the absorption of immigrants, as discussed in the next section and in section VI.6.

Thirdly, consider NPV_I 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, the seemingly brutal social policies may not cause big welfare losses, see Appendix. 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.

II.5   Competition for low end jobs: Two possible outcomes

It appears that most of the immigrants are in the low-skill group that competes with the unskilled natives for jobs at the minimum wage. A minimum wage typically creates excess unemployment at that rate and slightly above. Immigration thus increases the competition for relatively scarce jobs. Natives and immigrants each have an advantage in this competition:

(NA) Natives are *insiders* known by employers and recommended by each other. Immigrants are *outsiders*, often with communication problems, who want to "break into" the labor market. Hence, insiders have an advantage even if employers do not discriminate. In addition some discrimination always exists.

(IA) Immigrants may be *keener to work* – accepting worse conditions in all non-wage aspects of the job – for three reasons: (1) They come from worse conditions. (2) A self selection mechanism may work, so that immigrants are more enterprising than the population at large. This may be precisely why they have managed to get in. (3) Incentives to work will be higher than the ones of natives if the social benefits received have an insurance element so that new immigrants receive less in social benefits than natives.

Two outcomes may result: (i) In NA dominates, unemployment will be concentrated among immigrants. (ii) If IA dominates, immigrants replace natives, so that unemployment is concentrated among natives.[15] The two outcomes may lead to two types of social tensions: Outcome (i) means that immigrants are cut off from society, and they may develop anti-native attitudes. Outcome (ii) may cause anti-immigrant attitudes to spread among low end natives. Both types of tensions interact dynamically with the outcome to make it more extreme.

III.   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 parts to harvest *all* potential gains. The case closest to this ideal we have found is a Dubai-like country. However, in this case immigration is forbidden. Foreigners are invited in as guest workers on a contract, which may be renewed if both parties agree. In Dubai the whole economy is based on the work of contract workers – also they pay taxes and a variety of fees while the natives are exempt.

III.1   The basic curves in the Dubai-like country
The guest-worker has a contract from 0 to T_{C1}, and maybe others after that. He works immediately after a small introductory course. Thus, λ_{Du}, rises steeply after a short period of training, and after that it follows the w_{Du}-line. The contract also contains all social security provided.

The $z\lambda_{Du}$ curve used in calculating the gain to the natives is now easy to draw simply by shifting the λ_{Du}-curve down. Dubai is a service economy in an oil-rich environment with a high capital to labor ratio,[16] and immigrants are thus necessary to operate that capital, and to pay the taxes. Thus we assume that z is much higher than in the case of figure 1. 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

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15.   The solution (i) describes the Danish outcome, while (ii) has more resemblance to the German outcome.
16.   Dubai has less oil per capita than its neighbors.

to make money for some later use. Therefore we still assume that $z < 1$.[17] Finally the w_{IMM} is drawn higher than the w_{LDC} of the previous figures. Dubai makes contracts with people from many countries, and tailors the contracts to the market.

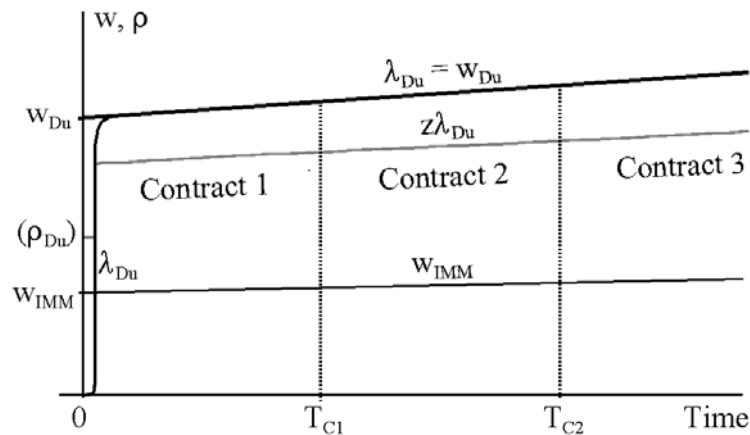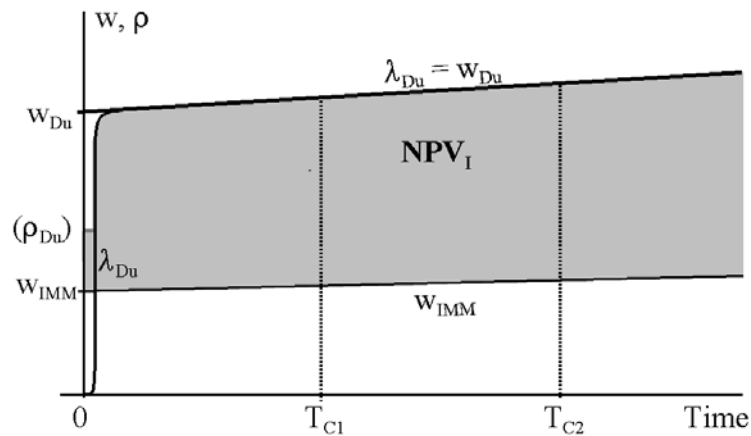Figure 2a. Dubai-like case: Basic curves

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

III.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.

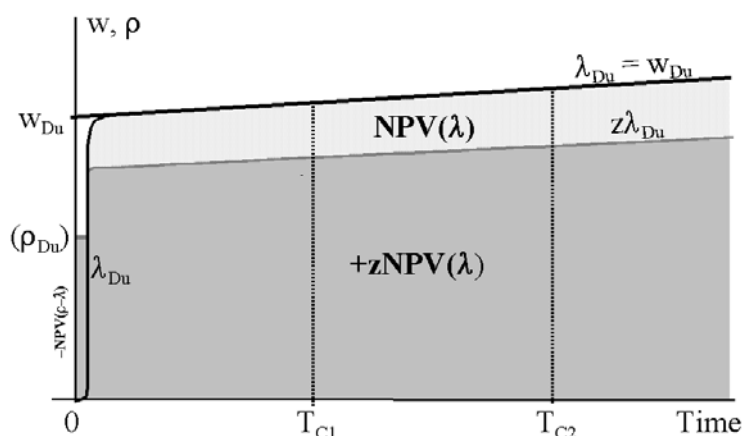Figure 2c. Dubai-like case: NPV_{Du} of natives

Figure 2c calculates the gain of the natives. In this case it as large as the one of the guest worker. It is the area below the $z\lambda_{Du}$-curve minus a small correction for the training period. In the Dubai-like case contracts are market based and only made if mutually beneficial. Note also that contracts are given on economic merit, not for humanitarian reasons. Guest workers are allowed to bring family, but have to pay everything, schools for the kids, health insurance etc.

## IV.   A society of immigrants: An US-like country

The (ρ_I, λ_f)-pair of curves is much like the ones in the US. 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 to find a job as fast as possible. Immigrants with a Ph D often start 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 integrated.[18]

IV.1   The basic curves in the US-like country
Figure 3a shows the 4 curves in the US-like case. The main difference is that the ρ_{US} 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_{US}-curve in the beginning the incentive to get work is high and the λ_{US}-curve rises relatively fast.
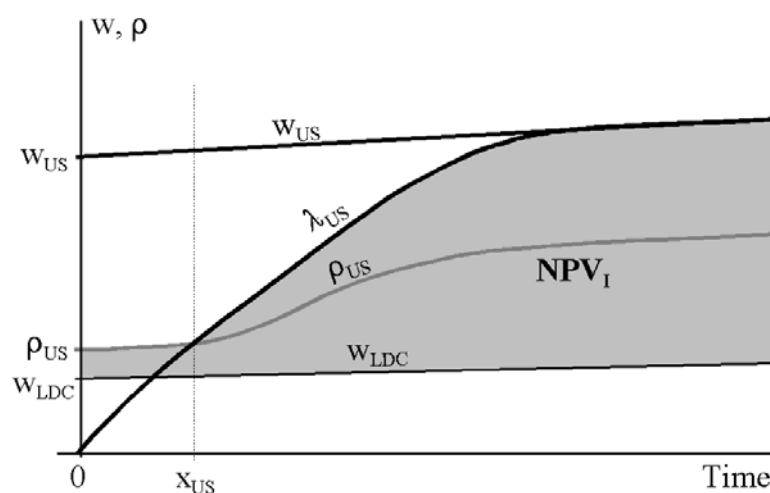
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18.   A large literature deals with immigration into the US, see Borjas (2000) for a recent conference covering
         the whole spectrum.

Figure 3a. US-like case: Basic curves
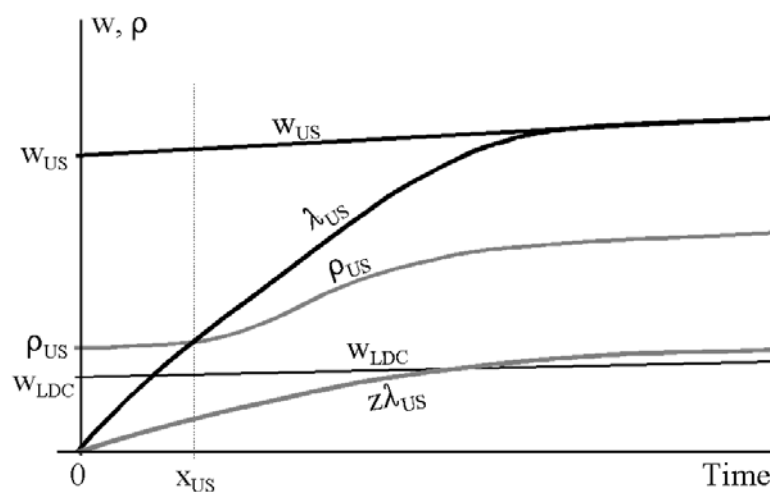
IV.2 The two NPV-calculations for the US-like country
The curves in figure 3a allow us to calculate the two gains. This is done in figures 3b and c.

Figure 3b. US-like case: NPV_I of immigrant

The income of the immigrant till x is lower, but x is reached rather quickly and the λ_{US}-curve is higher, so there is a liquidity problem, but not necessarily an income problem – the NPV_I-areas are similar in figures 1b and 3b. We conclude that NPV_I is about 75% of the potential in the US-like case. Seen from the point of view of the natives the cost is relatively small and the net gain is relatively large. Hence, we conclude that NPV_{US} is almost $0.15\ NPV_I^*$.

Figure 3c. US-like case: NPV_{US} of natives
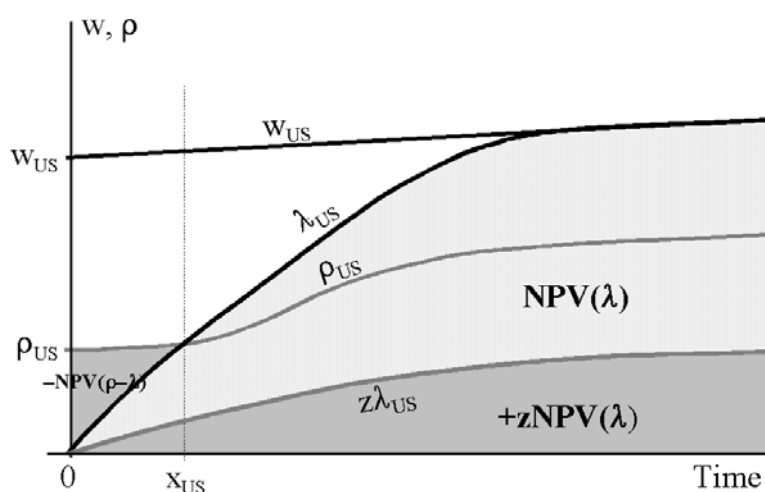
Consequently, in the US-like case immigration is an economic advantage for the natives. The US is a country of immigration, which accounts for the way the curves look.

V.   A tax-based welfare state: A Danish-like country

In a welfare state of the Nordic type, ρ is high and payed out of the general tax revenue, with only a small insurance element included. Once the immigrant is accepted, he is, in principle, eligible to 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. Finally, the labor markets in the Danish-like cases uses local languages, which can only be acquired through a considerable investment. So some time passes before the immigrant has any chance of getting a job. During that time the immigrant is a client of the social system.

V.1   The basic curves in the Danish-like country
Figure 4a shows the basic curves in the Danish-like case. The curves have the worst possible shapes: The ρ_{DK}-curve is unusually high, and the λ_{DK}-curve is unusually low.[19]

The ρ_{DK}-curve is close to the w_{DK} curve for immigrants. Many calculations show that the their income increases little – sometimes not at all – if they get a job of the type they can get. As the immigrant may work a bit in the gray sector, helping an uncle in his shop from time to time, they can have the same income without having a formal job. It is also a fact that the λ_{DK}-curve pursues a low path, as expected, see also VI.6.

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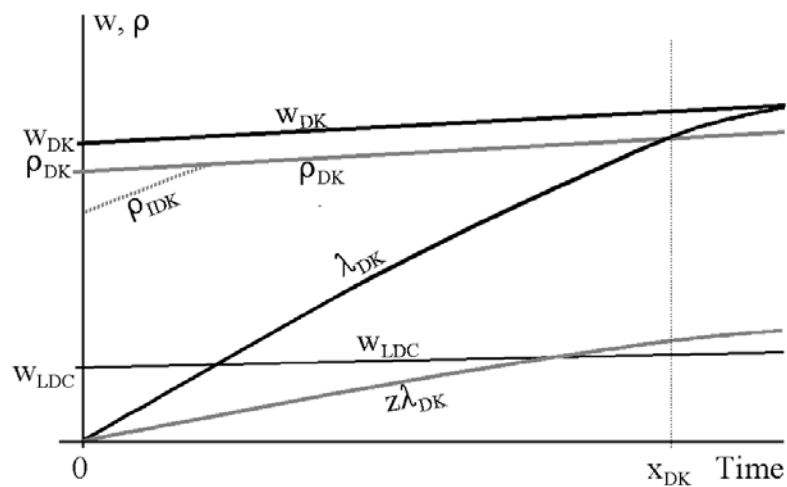
The high ρ-curve is due to a high general level of support for the needy, both in general and with respect to special expenditures such as rent, kindergarten, etc. It is well known that immigrant groups quickly develop a solid knowledge of their entitlements, even when the social support legislation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

V.2   The two NPV-calculations for the Danish-like country
Figure 4b shows an outcome that is better for the immigrant than in the standard case (figure 1b) and the US case (figure 3b) as it is app. 85% of NPV_I^*.
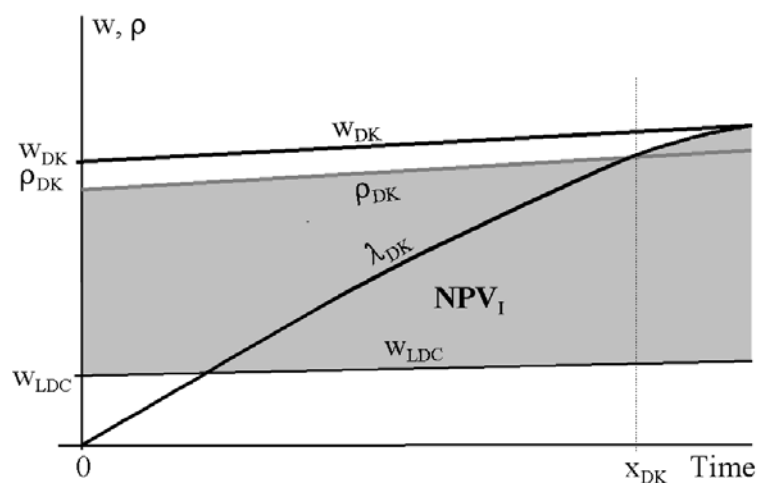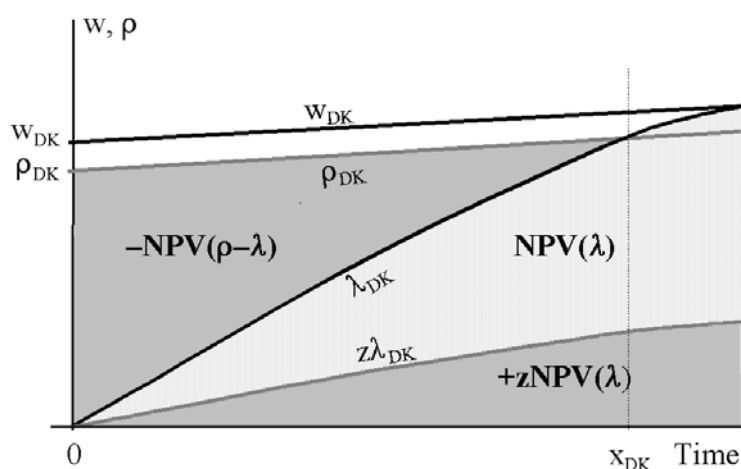
Figure 4b. Danish-like case: NPV_I of immigrant

Figure 4c. Danish-like case: NPV_{DK} of natives

The picture of the NPV_{DC} now looks as in figure 4c. The positive area $zNPV(\lambda)$ in the standard case is 0.2 NPV_I^*. Perhaps $zNPV(\lambda)$ even falls to 0.15 NPV_I^* in the Danish-like case. However, the big change is in the negative area $NPV(\rho - \lambda)$ which in the standard case is 0.1 NPV_I^*. In the Danish-like case it is 2 to 3 times bigger, approaching, say, 0.25 NPV_I^*. The net result is thus: $NPV_{DK} = (0.15 - 0.25) NPV_I^* = -0.10 NPV_I^*$ or twice as much in the realistic case where T_{DK} = 60. It appears that most of the uncertain factors work to make NPV_{DK} more negative. This especially applies to r, if r is 8% the negative value of NPV_{DK} grow 2-3 times. With both a high T and a high r the Appendix show that NPV_{DK} may become –0.3 to –0.4 of NPV_I^*.

Finally the RC-amount of reception and training including language courses etc. should be added. The amount is potentially high if it includes the amount spent between the arrival of the prospective immigrant to the country and his actual admission. A ball park estimate of these would be around 0.05 NPV_I^*, increasing the total costs to at least –0.15 NPV_I^* and probably as much as –0.25 NPV_I^* .

We thus conclude: Immigration is expensive for the natives in the Danish-like case.[20] No mutually advantageous deal can be made.[21] We are dealing with *a highly asymmetric situation* where one part has a high interest in getting an advantage from the other. This is different from the Dubai case and even the US-case.

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20.   Several studies of the macro-orders of magnitudes of these aspects have been made. See e.g. Wadensjö and
        Orrje (1999) and Pedersen (1999) for Denmark, Storsletten (2003) for Norway and Roodenburg, Euwalds
        and Rele (2003) for the Netherlands. They appear to be consistent with our assessments.
21.   It should be added that the cost of an additional immigrant is borne by all natives, so the concrete interest
        of each individual in the acceptance decision is small.

VI.   Developing the Danish-like case

The present section discusses some of the neglected issues: (1) The non-economic factors. (2) The nature of the acceptance decision and the market for agents. (3) The self selection of immigrants. (4) The family-multiplier of immigration. (5) The civil liberty problem. Finally (6) briefly discusses the complex problems of *solidarity* and the *receptivity* of societies to immigration.

VI.1   The non-economic costs and benefits

Figures 4b and c show a situation where NPV_I is large and positive, and the interest of the natives, NPV_{DK}, is negative. Nearly all the non-income costs and benefits reinforce this pattern by increasing NPV_I and decreasing NPV_{DK}.

The immigrant will often have *human rights* reasons in addition to the economic ones in trying to get into a DC. He may belong to a group that does not live in peace and security in his home country. This might in principle be treated as a shadow cost lowering w_{LDC}, and thus increasing the NPV_I.

The DC has large groups of non-absorbed immigrants already, and the relations between immigrants and natives are often problematic. An increase in the size of the immigrant group will marginally increase the problems. Also, the larger the immigrant group the easier – and more tempting – it is to live a life that is separate from the one of the natives, making integration more difficult. This also creates 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 to join extreme politico/religious groups, slowing down absorption even in the third generation.[22]

Therefore, in addition to the costs already caught by the lowering of λ, there is (C1) the externality of marginally lowering the λ's of other immigrants, and (C2) the cost of the increased social tensions, which should, in principle be imputed by the standard methods of cost benefit analysis. Both (C1) and (C2) may be treated as costs to be added to the costs already included. They thus both decrease NPC_{DC}, making it more negative.

VI.2   From economics to law: Building a dike and creating a market for agents

In the Danish-like case the immigration acceptance is therefore treated as a *non-economic decision*. It is taken by a bureaucracy according to a set of *legal rules*. Basically immigrants are accepted on three types of criteria:

(a)   As *refugees* from *bad* regimes.
(b)   As *close family* members of immigrants already accepted.
(c)   As *long term residents*, who have worked on a temporary work-permit.

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22.   This is a problem also in the US-like case, but not in the Dubai-like case.

The 3 rules are all worked out in many legal details, but they also are susceptible to political pressures and media campaigns based on emotional individual stories, and much debated in the parliament and the media. Frequently decisions are remade after a media campaign. The criteria are designed to exclude economic immigrants, but everybody knows that the distinction between economic and humanitarian immigrants is an illusion in many cases.

The large amount of money involved and the barriers to entry have generated a market for agents. Legal agents are lawyers and NGOs helping immigrants for economic and humanitarian reasons. Illegal agents perform two services: (i) They organize the *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. Here it is worth pointing out that most LDC-immigrants come from countries with high levels of corruption (see Paldam, 2001), with "bazaars" where many documents can be purchased.[23] In many DCs laws are increasingly tightened increasing the punishment of such "smugglers of humans". As a result they are becoming more and more ruthless and well organized.

It appears that the agents are likely to collect fees in the order of $ 10'000 from a typical immigrant. In addition the legal process from when the immigrant enters the country, till when the decision is made, is likely to take half a year, in which period the immigrant loses $\frac{1}{2}w_{LDC}$.

The decision is thus a legal process where the immigrants are provided with lawyers and NGOs providing media and political access. 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 has declared bad and potentially accuses of prosecution of an innocent asylum seeker. 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.

It means that the immigrant may have invested a considerable sum in the attempt to obtain entry. It is likely that his family – that is, his extended family, see section VI.4 – has invested in him, so that *the family* can get a foothold in the DC. This investment is wasted if the application is rejected.

VI.3   Self selection of immigrants and the seeping-through-the-dike process
Given the existence of DCs of the 3 types one may ask which immigrants will be more interested in trying to get into an US-like society, a Dubai-like society and a Danish-like society.[24] The answer is self-evident. Those with a high market value are most attracted to an US or Dubai like society, and those with a low market value are more attracted to a Danish-like society.

One part of the self-selection is that those with a higher level of education are likely to

23.   Furthermore, the relations between authorities and people are different in DCs and most LDCs, where people have learned to distrust authorities (see Paldam & Svendsen, 2001) – they may even come from minorities that for centuries have learned that authorities are their enemies. Hence, many immigrants are unlikely to speak truthfully to DC authorities.

24.   Our predictions are confirmed for the US states in Borjas (1999).

know some English, so that it is easy to be integrated in the US-like society, while those who speak only their own language may prefer going to a country where the social support level is high during the period when they have to learn the local language. In addition immigrants want to go to countries where there is a society of their kind already, and where there is a support group that can teach them how to deal with the authorities, and all other problems.

This all creates a situation where there is a strong pressure of highly motivated applicants to get in, and where a stream is constantly seeping through. At the same time the authorities and the politicians are trying to stem the holes in the dike. However, when the economic interest is strong enough and the DC is over-bureaucratized some manage.

VI.4   The family multiplier: The extended family and the family obligation

Till now, we have considered the situation of one male immigrant. However, the story does not end here. Most immigrants come from countries that have not passed through the demographic transition, and where it is so difficult to collect taxes that social security is very modest.

Hence, families are *extended* and social security and care are a *family-obligation*. This causes a way of life and a set of attitudes which differs from the one of the natives. For once the solidarity within the extended family come to dominate all attitudes toward the nation, the system, etc.[25] The family member, who immigrates, still carries the obligation, and it is further cemented by the investment the family may have made in the immigrant by financing the fees to the agents who have helped him to get in.

Imagine that the immigrant belongs to a family of N members where a mutual support obligation exists. The burden is, e.g. $ x per family members as long as they stay in the old country, or $ x(N-1) if only one family member enters. If two enter, the burden falls for two reasons: (N-1) is reduced by 1 and they are now 2 to carry the burden.

One way to get an extra family member in is by marriage, and it is hence a strong obligation that immigrants marry a cousin from the old country as soon as he reaches the necessary age. Also, it is perhaps possible to get the parents of the immigrant in, and then they can get their other children and their spouses and the parents of the spouses, ... The more members of the family that manage to get in the smaller are the financial burdens and the easier it is to keep traditions for one more generation.

It thus appears that each immigrant accepted will generate an additional immigration of μ (like 3-5) people in the future. The total cost is thus not NPV_{DK}, but μNPV_{DK}.

VI.5   The costs of stopping the seepage: Infringing on the civil liberties of natives

In order to reduce the seepage and especially to reduce the family multiplier a whole set of laws

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25.   Some of the reasons for the tensions between the groups is precisely that the DC-societies have passed the demographic transition and have core families, where both spouses work and the care for old and young are done by institutions. Many immigrants do not want to be so integrated that this process affects their families, too. To this come secularization, etc. that many immigrants abhor.

and administrative rules are now being made. Among other rules are some defining the family as only a DC type core family, which is deemed sufficiently close to allow immigration. Obviously this creates further tensions between the groups.

The many rules and regulations necessary to control immigration are infringing upon the civil rights of the natives. All of a sudden a whole set of rules have been introduced controlling the rights of ethnic natives to marry foreigners, and the right of people to cross borders in general. At the borders cars with people that look "different" are stopped, etc.

This all creates unpleasant images of a police state based on racist criteria, which most ethnic natives resist – even those of the majority, who think it is necessary. In other words it creates trade offs between civil liberties on the one side, and economic costs and ethnic tensions on the other side. Difficult and very politicized choices have to be made.

Also, the immigration bureaucracy becomes a powerful body administrating complex and politicized laws, which demands the collection of large amounts of unavailable evidence. This leads to decisions, which are always cruel and often arbitrary. Hopeful immigrants are subjected to unbearable long waiting periods, while authorities seek information controlling legends and lawyers haggle over clearly inadequate evidence and hearsay.

VI.6   Solidarity and the receptivity of countries[26]

Finally it should be mentioned that a set of attitudes and values stand between the immigrant and his new country, and depresses the λ-curve. Immigrants are outsiders trying to break into the society of insiders. Some groups react to this challenge by making an extra effort while others react by disdain and by turning inward to their own values maybe for reasons discussed in II.5.

The welfare state builds on *solidarity* and shared values, which in the final analysis are based upon some sort of expected reciprocity among insiders. People know that society will support them in case of need, and hence they are also willing to support others. This is buttressed through a system of tax payments on a life-time basis. The welfare system is thus a mutual support system within a group that extends to all insiders. Subgroups of natives do exist, who for several generations need more support than others, but they are not so distinct that solidarity fails. Solidarity comes under pressures when conspicuous groups of immigrants are seen as sending strong signals that they do not want to belong. It is not ethnicity per se, religion or culture or language per se, or ... , but the totality of these differences that has turned into a problem in all welfare states of the Danish type.[27]

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26.   This subsection is peripheral to the model presented. The issues are discussed in more depth in Coleman & Wadensjö (1999), giving the historical perspective and Nannestad (1999) analyzing recent data.

27.   In some parts of Denmark one frequently see families with women dressed in full Chador, walking with a bunch of children, with whom they speak in their language. It makes Danes ask themselves questions as: In what way does such families want to become part of Danish society? Will they bring up their children to become integrated? What is the nature of the solidarity by which the average Danes should subsidize the way they live? How much reciprocity can they expect from that family?

The other side of this issue is the *receptivity* of the welfare state to immigrants. Many immigrants express that they experience a society that is closed to them – i.e. they are not taken as "normal folks". They meet a social system that provides money and some social control, but real jobs are hard to get, as the labor-market prefers insiders. It is safer and much nicer to stay within the group, and reject decadent native society.[28]

So one gets into a vicious circle, where the market prefers insiders forcing the immigrants to remain outsiders, and hereby turning them even more into their own society, making them remain outsiders. One may even argue that the big social payments to the immigrants serves to give natives an excuse for the discrimination in the labor market. But this, of course, is a source of inefficiency. Immigrants represent potential assets that should be effectively utilized. By restructuring the incentive systems that influence both immigrant effect and demand for their services, the λ curve would more closely approach that in the US and Dubai type societies.

VII.   Can economically efficient and ethically viable solutions be found?

The analysis started by showing that the potential gain – measured as net present value – of getting accepted into a DC for an LDC immigrant is in the order of magnitudes of $ $^2/_3$ mill. It was also demonstrated that there is a potential gain for the DC in the order of one third of that. Some countries have institutions that allow both parts to reap the full benefits of the immigration. The tax-based welfare system of the Danish type does provide the immigrant with almost all of the potential gain, but it turns the potential gain for the DC into a loss. Hence, it is a package of institutions that are inconsistent with immigration (see also Nannestad, 2003).

The asymmetry of the economic results of immigration has at least five effects: (1) It generates big flows of hopeful immigrants. (2) It causes increasingly desperate DCs building dikes trying to stop the inflow, (3) it causes a thriving market for agents helping people to get through. It has proved difficult to stop people trying by all means – fair and foul – to seep through the dikes. (4) This has led to an increase in bureaucratization and the imposition of restrictions that cut across the civil rights of native and immigrants. (5) The more restrictive environment hampers the recruitment of foreign workers whose skills are needed by Danish based firms. Right now all political efforts in the Danish-like cases seem to be concentrated on heightening and tightening the dikes. It should not be the only policy.

A Danish type society would be better served by adopting immigration practices from the other two types discussed. But it's highly evolved welfare state, which is lacking in the other cases, is a barrier. The evolved welfare state is a public good that the citizens built up through a widespread consensus involving high taxes. Globalization has exposed this system to

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28.   UN (1999) statistics demonstrate that traditional Muslim society has the lowest crime rates known, while
        the NW-European welfare states are second. It is hence noteworthy that second generation immigrants from
        the Middle East has developed higher crime rates than the natives.

immigrants, who have not participated in the creation and renewal of the public good. The good is made available to immigrants on a non-excludable basis, in accordance with an entrenched principal of non discrimination. But as more people access it without paying for it, the good loses its non-rivalrous character, and less of it is available for the natives, unless they come up with higher taxes.

With respect to able-bodied immigrants, a category that should include all economic immigrants a case could therefore be made that their access to the public good be limited until such time as they are able to pay their (imputed) share for its renewal. A qualifying period of x years could be introduced involving specially designated tax payments to the social security system before entitlement commences. This would help defuse understandable resentment on the part of natives over immigrant free riders. Such a policy would reduce the subsidy incentive for the immigrant to come to a Danish type economy, while preserving the rights of natives.

At the same time much more should be done to improve the absorption curve, for example, reducing rigid labor market practices and overcoming the hold exerted by insiders. Transaction costs should be reduced so as to attract more-skilled immigrants. A move away from bureaucratic centralization could be made through adopting the sponsor practices of the US and Dubai, where private firms or individuals demonstrate a need for the immigrant and agree to pay the costs of entry, etc. Such decentralization reduces recourse to bureaucratic solutions and introduces an element of market determination. Insofar as the economic immigrant is linked to an expected labor shortage, the net benefits for the economy are likely to be high. It would also give the immigrant greater incentives to join the active work force.

In sum, the Danish type economy would be much better served if it were to restructure its highly evolved welfare system in a manner that delivers its intended benefits in a just and fair way. This will enable such an economy to adopt an alternative policy for economic immigrants as in the two alternative type economies. An equitable treatment for existing immigrants and their access to the welfare system will need to be found, while applying new norms to prospective immigrants. Closing borders is not an option.

References:

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

Borjas, G.J. 1994. The economics of immigration. *Journal of Economic Literature* 32: 1667-1717.

Borjas, G.J., 1999. Immigration and Welfare Magnets. *Journal of Labor Economics* 17: 607-637.

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

Coleman, D., Wadensjö, E., 1999. *Immigration to Denmark. International and National Perspectives*. Aarhus University Press: Aarhus.

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

Hatton, T.J., Williamson, J.G., 2002. What fundamentals drive world migration? NBER working paper 9159. Revised from <http://cepr.anu.edu.au/Staff/hatton/contact_th.htm>

Nannestad, P., 1999. *Solidaritetens pris. Holdningen til indvandrere og flygtninge i Danmark 1987-93*. Aarhus University Press.

Nannestad, P., 2003 Immigration as a challenge to the Danish welfare state? Manuscript. Dept. Of Political Science: University of Aarhus.

Paldam, M., Svendsen G.T., 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.

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

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

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

UN, 1999. Office for Drug Control and Crime Prevention. *Global Report on Crime and Justice*. NY.

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

Appendix table: Simulations of NPV's

	Social policy parameters			Rate of discount minus wage growth (r – a)				
	Min ρ	Period	Max ρ	2%	3%	4%	5%	6%
NPV$_I$*				50	33.3	25	20	16.7
				Simulations for T = 20				
NPV$_I$	0.25	15	0.60	85.0	79.1	73.8	69.3	65.3
NPV$_{DC}$				19.1	16.7	14.5	12.5	10.7
NPV$_I$	0.40	10	0.70	88.5	84.0	80.1	76.6	73.6
NPV$_{DC}$				15.6	11.7	8.3	5.2	2.4
NPV$_I$	0.80	None	0.80	94.1	91.9	90.1	88.5	87.2
NPV$_{DC}$				10.0	3.8	–1.7	–6.7	–11.2
				Simulations for T = 40				
NPV$_I$	0.25	15	0.60	76.6	69.1	63.2	58.6	54.9
NPV$_{DC}$				10.4	5.2	1.1	–2.3	–5.1
NPV$_I$	0.40	10	0.70	82.3	76.8	72.5	69.1	66.4
NPV$_{DC}$				4.6	–2.4	–8.1	–12.8	–16.6
NPV$_I$	0.80	None	0.80	89.8	87.0	85.0	83.6	82.5
NPV$_{DC}$				–2.9	–12.6	–20.7	–27.3	–32.7
				Simulations for T = 60				
NPV$_I$	0.25	15	0.60	70.8	63.2	57.8	53.9	53.9
NPV$_{DC}$				2.7	-3.9	-8.8	-12.5	-12.5
NPV$_I$	0.40	10	0.70	77.9	72.4	68.6	65.8	63.7
NPV$_{DC}$				-4.4	-13.0	-19.5	-24.4	-28.0
NPV$_I$	0.80	None	0.80	86.9	84.1	82.5	81.5	80.9
NPV$_{DC}$				-13.4	-24.8	-33.5	-40.1	-45.2

Assumptions, see also table 1 of paper:

The λ-curve is linear, between zero (for t = 0) and t = T, where it becomes w$_{DC}$ and remains so.

Social security (in % of w$_{DC}$) starts at Min ρ, and grow linearly during "period" to Max ρ.

NPV$_I$* is a number of times of α = w$_{DC}$(t = 0).

NPV$_I$ and NPV$_{DC}$ are both measured in % of NPV$_I$*.

No reception and training costs are included.

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