

The Skill Composition of Migration and the generosity of the Welfare State

by

Alon Cohen^{L1}, Assaf Razin^{L2} and Efraim Sadka^{L3}

February 2009

Abstract

INSERT E

Address

- 1/ Tel-Aviv University. E-mail: alonc@post.tau.ac.il
- 2/ Cornell University and Tel-Aviv University. E-mail
Address: ~~razin~~ razin@post.tau.ac.il
- 3/ Tel-Aviv University. E-Mail Address: sadka@post.tau.ac.il

Key words: Migration, Skill Composition, Welfare State

JEE Classification: F20, F22, H50

1

~~Implications of~~ the Skill Composition of Migration ^{and} for the Generosity of the Welfare State

Alon Cohen, Assaf Razin and Efraim Sadka

February 2009

~~Abstract~~

INSERT E

To be written

1 Introduction

INSERT D

In Cohen and Razin (2008) voters make decisions on migration policy. Specifically, they choose which skill-type of migrants to admit in the policy-controlled migration regime. That is, they choose the skill composition of migrants. We then ask how the generosity of the welfare state, taking as an exogenous variable, affect their decisions. We find that in free migration regimes, there is a clear negative effect of welfare-state benefits on the skill composition of immigrants in the host country, whereas within policy-controlled migration regime, this effect is set off by the migration screening policy of the host country. In this chapter, we adopt, in essence, the inverse approach. Specifically, we let the voters choose the generosity of the welfare state and investigate how the skill composition of migration, taking as an exogenous variable, affect their decisions.¹

¹ A similar approach is taken by Razin, Sadka, and Swagel (2002), but they restrict their attention to the volume of migration rather than the skill composition. They

INSERT D

(1a)

(2)

(11)

4 Introduction

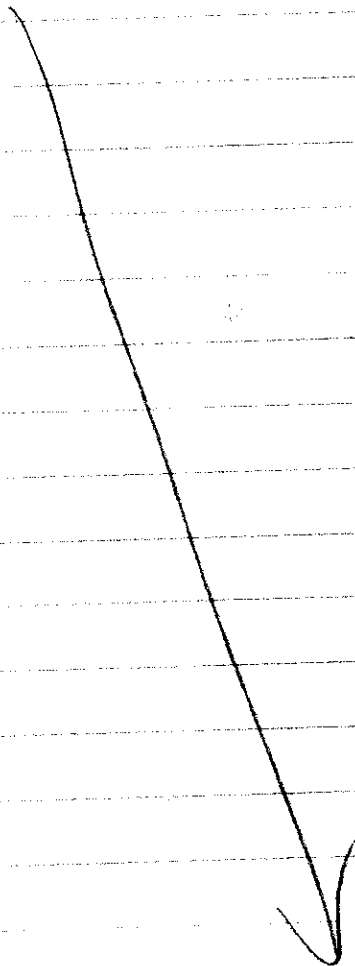
Skilled migrants ~~are~~ typically contribute to the welfare state

(in tax payments) more than they receive

from it. The opposite is true in the case of

unskilled migrants who ~~are~~ typically impose

a net fiscal burden on the welfare state.



Europe, both "old" and "new", faces also a severe aging problem. This shakes the financial soundness of the welfare state, especially its old-age security and medical health components, because there are fewer workers asked to support increasing numbers of retirees (that is, the dependency ratio rises).¹ As put metaphorically by the Economist (March 15th, 2003, 80): "the fiscal burden on the diminishing number of worker-bees will rise as more people turn into pensioner drones." Note that migration of young workers (as distinct from retirees), even when driven in by the generosity of the welfare state, slows down the trend of increasing dependency ratio. However, intuition suggests that even though low-skill migration improves the dependency ratio, it nevertheless burdens the welfare state.² This is because low-skill migrants are typically net beneficiaries of a generous welfare state. Indeed, in 1997 the U.S. National Research Council sponsored a study on the overall fiscal impact of immigration into the U.S.; see Smith and Edmonston (1997).³ The study looks carefully at all layers of government (federal, state, and local), all programs (benefits), and all types of taxes. For each cohort, defined by age of arrival to the U.S., the benefits (cash or in-kind) received by migrants over their own lifetimes and the lifetimes of their first-generation descendants were projected. These benefits include Medicare, Medicaid, Supplementary Security Income (SSI), Aid for Families with Dependent Children (AFDC), food stamps, Old Age, Survivors, and Disability Insurance (OASDI), etc. Similarly, taxes paid directly by migrants and the incidence on migrants of other taxes (such as corporate taxes) were also projected for the lifetimes of the migrants and their first-generation descendants. Accordingly, the net fiscal burden was projected and discounted to the present. In this way, the net fiscal burden for each age cohort of migrants was calculated in present value terms. Within each age cohort, these calculations were disaggregated according to three educational levels: Less than high school education, high school education, and more than high school education. The findings suggest that migrants with less than high school education are typically a

¹ In Razin and Sadka (forthcoming) we provide a political economy analysis of the effect of this aging on the welfare state.

² Simon (1984) is one of the first studies that brought out this argument.

³ Responding to concerns in the U.S. (with foreign-born population of roughly 11.5 percent) about the effect of immigration on the economic prospects of native-born, Congress in 1990 appointed a bipartisan Commission on Immigration Reform to review the nation's policies and laws and to recommend changes. In turn, in 1995 the commission asked the National Research Council to convene a panel of experts to assess the demographic, economic, and fiscal consequences of immigration.

net fiscal burden that can reach as high as approximately US-\$100,000 in present value, when the migrants' age on arrival is between 20–30 years.⁴

Similarly, a comprehensive study by the Ifo Institute estimated the flows of state benefits to the stock of immigrants in Germany in 1997. Account was taken of taxes, contributions, pensions, welfare benefits as well as all indirect benefits from so-called public goods; see Sinn et al (2001).⁵ The findings suggest, for instance, that a migrant family with three children that came to Germany in 1997 and stays there for ten years, receives a net benefit totalling about EUR 120,000.

Indeed, typically the net fiscal effect of the unskilled migrating generation is usually negative. However, in evaluating benefits of low-skill migration to the current (as well as the future) native-born population, it is important to assess the very long-term effect of this migration on the fiscal system. One has to take into account the infinite horizon of the economy, as distinct from the finite lives of its individuals. When the migrants' descendants gradually integrate into the economy, the current native-born population (both workers and retirees), as well as all future generation, may well gain from low-skill migration.⁶

2 The infinite-horizon argument

We present, briefly, the gist of the infinite-horizon argument, as developed in Razin and Sadka (1999). Consider an overlapping-generations model, where each generation lives for two periods.⁷ In each period a new generation with a continuum of individuals is born. Each individual possesses a one unit of labor-schooling time endowment in the first period, when young. There is a pay-as-you-go (PAYG) pension system, which employs payroll taxes (at a flat rate t) on the working young in order to finance a uniform benefit (b) to the aged.

⁴ See also Auerbach and Oreopoulos (1999) for a further analysis of these findings. Storesletten (2000) calibrated a general-equilibrium, overlapping generations model to capture the effects of inflows of working-age immigrants to the U.S. on the fiscal system, taking into account changes in factor prices.

⁵ The findings are also summarized in Table 1 of Sinn (forthcoming). Obviously, pure public goods, such as defense, are not included in the calculations, because immigrants consumption of these goods does not reduce the consumption of native born.

⁶ This point was independently shown in Razin and Sadka (1999) and Sinn (2001).

⁷ We sketch here only the backbone of the analytical framework behind the infinite-horizon argument. A detailed derivation of equations (1)–(4) is contained in Razin and Sadka (1999).

On the other hand, a young migrants, aged approximately 20 years on arrival, with more than high-school education, is expected to make a positive net fiscal contribution of approximately \$300,000 in present values.

(1d) ~~(1d)~~

The aforementioned findings suggest that a host country is likely to boost its welfare system when ~~receive~~ absorbing high-skill migration, and curtail it when absorbing low-skill migration.¹¹ This is indeed the hypothesis that is studied in this paper. We first develop a parsimonious model of ^{high-}skill and ~~low-skill~~ ~~and~~ in which the extent of the welfare state is determined by majority voting. We then study how the skill composition of a given migration volume affects the politico-economic equilibrium level of the welfare state. Indeed, the parsimonious model confirms this hypothesis.

¹¹ For a recent comprehensive survey of ~~the~~ ^{the} economic consequences of migration see ~~for instance~~, Hanson. (2008)

1e

on the effect of ~~the~~ migration on the generosity of the welfare state. (S) (TS)
We then turn to study some evidence. In

doing so we have to deal with some ^{serious} endogeneity problems. Note that ^{the skill composition of} migrants may indeed affect the generosity of welfare state, as our model suggests, but this generosity itself may affect the skill composition of migration, as in Cohen and Razin (2008). To overcome

this endogeneity problem, we adopt a twofold identification strategy. First, we employ two commonly used in gravity models and source instruments - whether or not the host-source

country pair share a common language and the ~~as is~~ high-skilled distance between them - as proxies for the

and low-skill migration. Second, ~~we select~~ ^{choose} a sample of ^{EU} countries within which there is free

~~migration~~ ^{in this case} ~~to~~ OLS estimates for the effect of the

as shown in Cohen and Razin (2008), demonstrated

(1f) (2)

generosity of the welfare state on skilled migration
is biased upward and the corresponding estimate
in a regime of free migration.
for unskilled migration is biased downward. The
opposite holds true in the case where the skill
composition of migrants is controlled by the
host country. Therefore, we chose a sample
consisting only of one regime, - the free
migration.

The organization of the paper is as
follows. The next section describes the
analytical framework. Section 3 provides the
evidence. Section 4 concludes.

INSERT E

~~In this paper we address~~
 skilled migrants typically contribute to the welfare state more than they draw in benefits from it. The opposite holds for unskilled migrants. This suggests that a host country is likely to boost (or prospectively curtail) its welfare system when absorbing high-skill (respectively low-skill) migration. In this paper we ^{first} examine this hypothesis ⁱⁿ a politico-economic setup, and ~~provides~~ ~~evidence~~ We then confront the predictions of the theory with evidence. In doing so, we reckon with the ^{an} endogeneity ~~issue~~ problem that arises because ^{the skill composition of} ~~migration itself~~ ^{is itself} affected by the generosity of the welfare state,

(2)

Recall that migration has strong fiscal implications for the welfare state. It brings into the welfare state both net fiscal contributors (skilled migrants) and net fiscal consumers (unskilled migrants). As a result, migration can affect the appetite of the native-born towards redistribution. Arguably, as the skill composition of immigrants decreases, the fiscal leakage to the new comers increases (at the expense of the domestics). This induces a reduction of the welfare-state benefits (see Razin, Sadka and Swagel (2002)). This hypothesis embodies an assumption that all immigrants are as eligible to welfare-state benefits as the domestic citizens. However, it is not necessarily the case in countries wherein immigration is restricted. One way to regulate and restrict migration is by denying access to the welfare benefits of the host country. EU countries specifically favor their domestic and EU-originated migrants over non-EU-originated migrants - within the labor markets (Brucker et al. (2002). Possibly, denying welfare eligibility is also a possibility to control migration (see Sinn (2004)) . In this case, a low composition of skills among immigrants, who may not be eligible to all welfare benefits, impose a much less burden upon the fiscal system of the host country. Hence the leakage is smaller, thus the expected reduction of the tax-welfare program is smaller.

2 Analytical Theory Framework

extent of redistribution is determined in a politico-economic equilibrium. ¹

We employ the ~~policy-controlled migration version of the parsimonious~~ ^a ~~of the welfare state, where migration is exogenous, whereas the~~ model of Cohen and Razin (2008). In particular, we consider the vol-

ume of migration (μ) and its skill composition (σ) as the exogenous variables, and we let the native-born voters choose the tax rate (τ); and, also do not separate their analysis between country-pairs which enable free migration and those who do not. Additionally, the econometric strategy in this work is different, and is based on instrumental variable estimation.

1) This model was first employed in Cohen and Razin (2008).

in the vicinity of the level of σ respectively,
 4/ More precisely, we show that this results hold at the levels
 of σ that each skill type would have chosen, if given
 this option. per-capita spending
the demogrant

(3)

consequently, the generosity of the welfare state (b). We then ask how
 an exogenous change in the skill composition of the migrants (σ) affect
 the chosen parameters of the welfare state (τ and b). INSERT A

For this purpose, we recall that the indirect utility of a native-born
 individual of skill level $i = s, u$ is given by equation (2.11):

$$V_i(\tau, \sigma) = b(\tau, \sigma) + \frac{1}{1+\epsilon} [(1-\tau)w_i(\sigma)]^{1+\epsilon} \quad (11)$$

where μ is suppressed.

Note that w_i does not depend on τ due to the Cobb-Douglas specification
 of the production function; see from equation (4.9).

An individual of a skill type i opts for a tax rate (τ_i) which maximizes her utility.
 is given implicitly by the first order condition This tax rate

$$\frac{\partial V_i}{\partial \tau} = \frac{\partial b}{\partial \tau} - \tau w_i [(1-\tau)w_i]^\epsilon = 0 \quad (12)$$

for each $i = s, u$. Note also that the second-order condition is $\frac{\partial^2 V_i}{\partial \tau^2} \leq 0$.

Because $w_s > w_u$, it follows from equation (3.1) that $\frac{\partial V_u}{\partial \tau} > 0$ when

$\frac{\partial V_s}{\partial \tau} = 0$. Thus, as expected, an unskilled opts for a more generous

welfare state (a higher tax rate, τ) than the skilled voter. This implies that the

outcome of the voting is determined by the median voter,

The effect of a change in the skill composition of migrants on the

generosity of the welfare state preferred by the individual of skill level

$i = s, u$ is found upon the total differentiation of equation (12) with

respect to σ : whether skilled or unskilled.

$$\frac{\partial^2 V_i}{\partial \sigma \partial \tau} + \frac{\partial^2 V_i}{\partial \tau^2} \frac{d\tau}{d\sigma} = 0. \quad (13)$$

Because of the second-order condition, $\frac{\partial^2 V_i}{\partial \tau^2} \leq 0$, it follows that

$$\text{sign} \left(\frac{d\tau}{d\sigma} \right) = \text{sign} \left(\frac{\partial^2 V_i}{\partial \sigma \partial \tau} \right) \quad (14)$$

for $i = s, u$. In the appendix to Chapter 2, we show that In the appendix we show

Similarly, one can show that $\frac{\partial^2 V_u}{\partial \sigma \partial \tau} > 0$. Therefore, we can conclude that

$$\frac{d\tau}{d\sigma} \geq 0 \text{ for both } i = s, u. \quad (15)$$

2/ This ^{setup} model differs from the one employed in Razin, Sadka and Swagel
 (2002) in two main features: First, it considers both skilled and unskilled

INSERT A - 1

(4)

8 CHAPTER 2 IMPLICATIONS OF THE GENEROSITY OF THE WELFARE

2.2 Parsimonious Model of Migration

P Assume a Cobb-Douglas production function, with two labor inputs, skilled and unskilled³:

$$Y = AL_s^\alpha L_u^{1-\alpha}, \quad 0 < \alpha < 1 \quad (2.1)$$

where, Y is the GDP, A denotes a Hicks-neutral productivity parameter, and L_i denotes the input of labor of skill level i , where $i = s, u$ for skilled and unskilled, respectively.

The competitive wages of skilled and unskilled labor are, respectively, *given by their* *marginal products*:

$$w_s = \alpha Y / L_s \quad (2.2)$$

$$w_u = (1 - \alpha) Y / L_u.$$

Aggregate labor supply *ies of* for skilled and unskilled workers, respectively, *are* given by:

$$L_s = (s + \sigma\mu) l_s \quad (2.3)$$

$$L_u = (1 - s + (1 - \sigma)\mu) l_u.$$

There is a continuum of workers, where the number of native born is normalized to 1; s denotes the share of native born skilled in the total native born labor supply; σ denotes the share of skilled migrants in the total number of migrants; μ denotes the total number of migrants; and l_i is the labor supply of an individual with skill level $i \in \{s, u\}$

Total population (native born and migrants) is as follows

$$N = 1 + \mu. \quad (2.4)$$

We specify a simple welfare-state system which levies a proportional labor income tax at the rate τ , with the revenues *are spent* *on* redistributed equally to all residents (native born and migrants alike) as a demogrant, *per capita*. *The demogrant captures not only a cash transfer but also outlays on public services such as education, health, and other provisions, that benefit all workers, regardless of their contribution to the tax revenues.*

The government budget constraint is therefore

$$Nb = \tau Y. \quad (2.5)$$

³The parsimonious model is developed with the cross-section data in mind. The migration variable is the stock of migrants; not flows (as relevant for dynamic analysis).

INSERT A - 2

denotes the utility generated by the per-capita public spending. 5

2.3 POLICY-CONTROLLED MIGRATION

of an individual of u

The utility function for skill-type $i \in \{s, u\}$ is

$$u_i = c_i - \frac{\varepsilon}{1+\varepsilon} l_i^{\frac{1+\varepsilon}{\varepsilon}} + g(b), \quad (2.6)$$

where c_i denotes consumption of an individual with skill level i , and $\varepsilon > 0$, and $g(b)$ is the budget constraint of an individual with skill level i is

$$c_i = (1 - \tau) l_i w_i. \quad (2.7)$$

Individual utility-maximization yields the following labor supply equation

$$l_i = ((1 - \tau) w_i)^{\varepsilon}. \quad (2.8)$$

It is then straightforward to calculate the equilibrium wages for the skilled and unskilled workers, which are given, respectively, by

$$\begin{aligned} w_s &= A (\alpha \delta^{\varepsilon} \theta^{1-\alpha})^{\frac{1}{1+\varepsilon}} \\ w_u &= A ((1 - \alpha) \delta^{\varepsilon} \theta^{-\alpha})^{\frac{1}{1+\varepsilon}}, \quad (2.9) \\ \text{where } \delta &\equiv \alpha^{\alpha} (1 - \alpha)^{1-\alpha} \\ \text{and } \theta &\equiv \frac{1 - s + (1 - \sigma) \mu}{s + \sigma \mu} \end{aligned}$$

We further assume that $g'(0) \rightarrow \infty$ so (an indifference condition), so that all (skilled and unskilled) would like the government to levy some taxes in order to provide some positive level of b .

In order to ensure that the skilled wage always exceeds the unskilled wage, ($w_s > w_u$), we assume that

$$\frac{\alpha(1 - s)}{(1 - \alpha)(s + \mu)} > 1. \quad (2.10)$$

We now use this model to analyze the policy controlled regime. the political-economic choice of the welfare state variables τ and b . This choice is done by majority voting, given that there is

2.3 Policy-controlled Migration

Assume that the host country faces a perfectly elastic supply of migrants of each one of the two skill types, so that host-country migration policy is the sole determinant of migration flows. The policy is determined by the median voter in the host country. We assume that the policy decisions on the tax rate, τ , and the total volume of migration, μ , are exogenous. We do this in order to focus the analysis on a single endogenous policy variable, which is

essentially independent choice
only one endogenous variable in this voting (note that once one the two variable - τ , b - is chosen, the other is determined by the budget constraint), it turns out that the outcome of the voting is determined by the choice of the

This result follows because skilled migrants are ^{equal} net contributors, that is their tax payments exceed ~~over the benefits~~ what the welfare state spend on them.

6

That is, the two types of voters (skilled and unskilled) opt for more generous welfare state, reflected in ^{and b} higher τ , when the skill composition of migration shifts more towards the skilled migrants (higher σ). Host countries with relatively more skilled migrants choose to have a more generous welfare system. The testable hypothesis is confronted with data in the next section. *it is derived in this section*

*** Assaf/Elraim: if you want to extend this work so as to examine the effect of σ on τ - separated into free- and policy controlled migration regimes, where in the latter, eligibility for benefits is restricted, the theory section should be revised accordingly. If you are not interested in such extension (which requires additional work on the empirical section and data collection), then we should not make such distinction the introduction***

3 Empirical Evidence

This section provides some empirical evidence to the ^{hypothesis} ~~notion~~ that the ^{a higher} ~~proportion of skilled~~ skill composition of migrants has a positive effect on the welfare-state generosity of the host country, ^{when} ~~where~~ ^{their} generosity is determined in majority voting (regardless of whether the median voter is skilled or unskilled).

3.1 Econometric Model

Assume that welfare-state ^{per-capita spendings} ~~benefits~~ in country i are determined according to the following equation:

$$b_i = \alpha_0 + \alpha_s m_{s,i} + \alpha_u m_{u,i} + X_i \beta + \epsilon_i \quad (16) \quad (5)$$

where b is a ^{the} ~~measure of~~ welfare state ^{per-capita spendings} ~~benefits~~, m_s and m_u denote the stocks of skilled and unskilled migrants, respectively; X is a vector of ^{other} ~~control variables~~ and ϵ is ^{an} ~~the~~ error term. The ^{correspo} ~~respective~~ coefficients of these variables are depicted by α_s , α_u , and β . *for skill level $e = s, u$*

INSERT B

Further assume that bilateral migration stocks, between any source-

We therefore introduce ^{two} ~~an~~ instrumental variables. We

for the two types of migrant ^{skill}

Note that there is an endogeneity problem

concerning the equation (16). It is difficult

to identify the ^{direction of} causality between spendings (b_i) and ~~the~~ migrations of the two types.

Indeed the m's affect b as specified in this equation. But, on the other hand,

the generosity of the welfare state also affects the level of migrations of the two types. Specifically, as demonstrated in

Cohen and Rajin (2008), the generosity

of the welfare state has a negative effect on the migration of skilled individuals ^(who are net fiscal contributors), but a

positive effects on the migration of unskilled individuals ^(who are net fiscal beneficiaries),

when migration is free. as in

the case of EU countries.

see appendix in which case the effects of migration on welfare state generosity are analyzed

Welfare state generosity

The opposite is true when the welfare state can control the volume and skill composition of migration as between EU and non-EU countries. Then the welfare state can control the volume and skill composition of migration as between EU and non-EU countries.

8

host country pair (i, j) , are determined in accordance with the following equation:

$$m_{e,i,j} = a_0 + a_1 Comlang_{i,j} + a_2 Dist_{i,j} + X_{i,j}^m b + \overset{m}{\epsilon}_{i,j} \quad (17)$$

$e = \{s, u\}$

where $Comlang$ depicts a dummy variable, with the value 1 if the source and host countries share a common language, and 0 otherwise, $Dist$ captures the geographical (great circle) distance between the source-host pair, $X_{i,j}^m$ is the vector of ^{other} control variables (note that it may be pairwise specific) and ϵ is the error term.

~~Our identification is based on that equation (6) includes variables that are excluded from equation (5). Namely, we argue that the distance and common language between a host country and either source country, is not correlated with the error term of equation (5). On the other hand, it is well established that both those variables indeed affect migration. This is our identifying assumption (a similar approach was taken by Frankel and Romer (1999), analyzing the effect of trade on growth).~~

Estimating equations (17) yields the fitted values for the bilateral skill-dependent ~~the~~ migration stocks. We sum these fitted values across source countries:

$$\hat{m}_{e,i} = \sum_{j \neq i} \hat{m}_{e,i,j} \quad (18)$$

where the hat symbol denotes the fitted value estimation.

Therefore, our estimated equation is:

$$b_i = \alpha_0 + \alpha_s \hat{m}_{s,i} + \alpha_u \hat{m}_{u,i} + X_i^b \beta + \epsilon_i \quad (19)$$

Given our identifying assumption, the coefficient of our variables of interests are unbiased

3.2 Data

European countries, 14 EU members

Our country sample includes 16 OECD members, ~~European countries,~~ within which ~~free migration is allowed:~~ (Austria, Belgium, Denmark, France, Germany, Italy, ^{the} Netherlands, ~~Norway~~, Sweden, ~~Switzerland~~, Finland, Greece, Ireland, Portugal, Spain and the U.K.)

(~~See Cohen and Razin (2008) for detailed description of the free labor mobility treaties among the EU countries.~~ *Naturally, there is free migration labor mobility among the EU countries.* and the two other non-EU countries enjoy bilateral agreements with the EU, ensuring free labor mobility. *Notway*

The dependent variable, b , is social expenditure, in cash or in kind, per capita, at constant (2000) prices, PPP converted into ^{USD} ~~US\$~~, averaged between 2000 and 2005 (source: OECD.stat). Social expenditure encompass all kinds of social public expenditures, in cash or in kind, including, for instance, old age transfers, incapacity related benefits, health care, unemployment compensations and other social expenditures. The stocks of ~~m~~ migrants in either country, originated in all of the remaining countries, by education attainment, is our variables of interest. ~~m~~ migrants are at working age (25+), defined as foreign born, subdivided into ~~three~~ ^{two} classes of schooling years: low (0-¹²~~8~~), ~~medium (9-12)~~ and high (13+). We also use lagged stocks of ~~m~~ migrants (1990) (source: Docquier and Marfouk (2006)).

The averaging is done in order to filter out business-cycle variations.

We control for the domestic labor force for each skill level in each country in 2000 (source: Docquier and Marfouk (2006)). ~~This control variable captures the relative power of the different interests groups, as manifested in the political economy equilibrium. It also neutralizes the effect of host countries on the stock of their ~~m~~ migrants.~~ Additionally, we include GDP per capita, PPP adjusted to ^{USD} ~~US\$~~ in constant prices (2000), averaged between 2000 and 2004 (source: Penn World Tables 6.2). Normally, as a country's production is higher, its ability to dispense welfare-state benefits is higher. Given that the GDP per capita is also

Also, this control variable is essential in light of the fact that we employ the number of migrants rather than the proportions of migrants, as dependent variables. It also

and the effect of migration on wages.

^{potentially}
~~a proxy for income, it should also be~~ correlated with migration stocks,
 thus its inclusion is necessary. We also control for old age (65+) share in
 the population, averaged between 2000 and 2007 (source: U.S. Census
 Bureau, International). Pension benefits captures a vast portion of the
 welfare-state, ^{benefit} thus, this variable should be highly positively correlated

^{spendings} with the dependent variable, and therefore should be included ~~that~~
 as a control variable. Given the small number (16)
 3.3 Results of observations in the main equation (19), we must focus on the variables (namely,
 equation (19)), ^{are described} we must focus on the variables of interest
 The results of the regression, confined to 16 OECD European countries
 among which migration is free, is given in Table 1.

	OLS	2SLS
	benefits	benefits
High skilled migrants (1990) [^]	-17.532 (8.348)*	
Low skilled migrants (1990) [^]	1.866 (0.245)***	
Fitted-high skilled migration (1990) [^]		49.423 (14.206)***
Fitted-low skilled migration (1990) [^]		-6.678 (2.324)**
GDP per capita (2000-2004) [^]	368.130 (58.054)***	446.791 (100.640)***
Old age share (2000-2007)	521.675 (137.087)***	776.090 (140.853)***
High-skilled domestic (2000) [^]	0.045 (0.109)	-0.471 (0.157)**
Low-skilled domestic [^]	-0.053 (0.015)***	0.047 (0.033)
Observations	16	16
R-squared	0.884	0.835
[^] in thousands		
Robust standard errors in parentheses		
* significant at 10%; ** significant at 5%; *** significant at 1%		

($m_{s,i}$ and $m_{u,i}$)
 and employ only the
 few most important exogenous control
 variables.

Table 1: The effect of Skill Composition of ^M migrants on Welfare-State
^{spendings} Benefits in Free Migration Regimes

Consider first

Observe the first column. ^M migrants with high (low) education level
 have a negative (positive) effect on the welfare-state ^{spendings} benefits in the host

countries. This result could be due to reverse causality (despite the lagging of ~~the~~ migration stocks): higher ^{spendings} benefits reduce the skill composition of ~~the~~ migration in free migration regimes (Cohen and Razin (2008)).

The second column ^{employs} uses the fitted ~~the~~ migration stocks from the first stage regression. The result is exactly opposite: high (low) skilled ~~low~~

migrants have a positive (negative) effect ^{on} of the level of welfare state ~~spendings~~ ^{is in line with the conclusions of our parsimonious} benefits. This can indicate the fiscal leakage and fiscal relief effects in ~~models~~ ^{model}. ~~A host country favors high-skill migrants who are~~ the politico-economic equilibrium. Namely, as the skill composition of ~~not~~ ^{not} adopts a more generous welfare system when high-skill ~~migrants~~ ^{migrants} increases, so is the welfare generosity of the host country. ~~migrants (who are net fiscal contributors) enter the country.~~ The opposite applies in the case of low-skill migration:

References:

Cohen ~~and~~ Alon and Assaf Razin (2008), "The Skill Composition of Immigrants and the Generosity of the Welfare State: Free versus Policy-Controlled Migration," NBER Working Paper No. 14459, October.

Frankel, Jeffery ^{A.} and David Romer (1999), "Does Trade Cause Growth?", American Economic Review, June, 379 - 399

89 (2),

^{the} A host country is reluctant to increase its welfare generosity when ^{such} these migrants who are net fiscal beneficiaries arrive.

4. Conclusion

13

39

~~INSERT~~

~~In this paper we address~~

skilled migrants typically contribute to the

welfare state more than they draw in benefits

from it. The opposite holds for unskilled migrants. This suggests that a host country

is likely to boost (or respectively curtail) its

welfare system when absorbing high-skill (or respectively

low-skill) migration. In this paper we examined

this hypothesis. ^{We first constructed a parsimonious} ~~a~~ politico-economic setup.

model. We ~~also~~ showed that indeed ~~skill mix~~ ^{and provides evi} We then confronted this predicting from EU countries.

of the theory with evidence. In doing so, we

reckon with the ^{an} endogeneity ~~issue~~ problem that arises

because ~~migration itself~~ ^{the skill composition of} is itself affected by the generosity

of the welfare state. ~~We showed that if one ignores~~ ^{this endo} We indeed ~~find~~ ^{find} that the evidence

~~We stated that~~ a higher proportion of skilled migration for a given volume of migration encourages a host country to adopt for a more generous welfare-state system.

¶ 4. ~~conclusion~~

supports the prediction of the theory. Furthermore, if one ignores their endogeneity problem (and employs OLS estimation) the estimates of the effects of the skilled and unskilled migration on the generosity of the welfare state are severely biased, as ^{so} much ^{so} as to reverse the ~~orig~~ directions of these effects.

We conjecture that ~~essentially also~~

~~Our theoretical model~~ predicts ~~that there is~~ in the same parsimonious model a ~~so-called~~ brain drain from the source country will push it towards ~~adopt~~ curtailing the extent of its welfare system. A useful direction for future research is to confront this hypothesis with evidence.

References

15

- ✓ [10] Docquier, Frederic and Abdeslam Marfouk (2006), "International Migration by Educational Attainment (1990-2000)", in Ozden, Caglar and Maurice Schiff (eds.), *International Migration, Remittances and the Brain Drain*, McMillan and Pargrave: New York.
- [11] Docquier, Frederic, Oliver Lohest and Abdeslam Marfouk (2006), "What Determines Migrants' Destination Choice?", working paper.
- [12] Dolmas, J., Huffman G.W., 2004. On the political economy of immigration and income redistribution. *International Economic Review* 45, 1129-1168.
- [13] Enchautegui, Maria E. (1997), "Welfare Payments and Other Determinants of Female Migration", *Journal of Labor Economics*, 15, 529.
- [14] Facchini, Giovanni, Assaf Razin and Gerald Willmann (2004), "Welfare Leakage and Immigration Policy", *CESifo Economic Studies*, 50(4), 627.
- [15] Gelbach, Jonah B. (2000), "The Life cycle Welfare Migration Hypothesis: Evidence from the 1980 and 1990 Censuses", working paper.
- [16] Gramlich, Edward M. and Deborah S. Lareh (1984), "Migration and Income Redistribution Responsibilities", *Journal of Human Resources*, 19(4), 489.
- [17] Hassler, J., Rodriguez Mora, J. V., Storesletten, K., Zilibotti, F., 2003. The survival of the welfare state, *American Economic Review* 93, 87-112, 2003.

- ✓ [27] Razin, Assaf, Efraim Sadka and Phillip Swagel (2002), "Tax Burden and Migration: A Political Theory and Evidence", *Journal of Public Economics*, 85, 167.
- ~~[28] Sala-i-Martin (1999)~~
- ~~[29] Southwick, Lawrence Jr. (1981), "Public Welfare Programs and Recipient Migration", *Growth and Change*, 42(4), 22.~~
- ✓ [30] Storesletten, K. (2000) "Sustaining fiscal policy through immigration", *The Journal of Political Economy*, 108, 300-24.
- ~~[31] Walker, James. 1994. "Migration Among Low income Households: Helping the Witch Doctors Reach Consensus." Unpublished Paper.~~

A Proof

We first show that $\frac{\partial b(\sigma; \tau)}{\partial \sigma} > 0$:

$$\frac{\partial b(\sigma; \tau)}{\partial \sigma} = \frac{A\mu\tau(1-\tau)^\varepsilon}{1+\mu} \left\{ \alpha w_s^\varepsilon \left[\frac{(1+\alpha)\theta^\varepsilon}{\alpha} \right]^{\frac{1-\alpha}{1+\varepsilon}} \left[1 - \frac{\varepsilon(1-\alpha)(1+\mu)}{(1+\varepsilon)(1-s+(1-\sigma)\mu)} \right] \right. \\ \left. - (1-\alpha) w_u^\varepsilon \left[\frac{(1-\alpha)\theta^\varepsilon}{\alpha} \right]^{\frac{1-\alpha}{1+\varepsilon}} \left[1 - \frac{\varepsilon\alpha(1+\mu)}{(1+\varepsilon)(s+\sigma\mu)} \right] \right\} > 0 \quad (20)$$

- [18] Lee, R., Miller, T., 2000. Immigration, social security, and broader fiscal impacts. *The American Economic Review* 90, 350-354.
- [19] Levine, Phillip B. and David J. Zimmerman (1999), "An Empirical Analysis of the Welfare Magnet Debate Using the NLSY", *Journal of Population Economics*, 12(3), 391.
- [20] McKinnish, Terra (2005), "Importing the Poor: Welfare Magnetism and Cross-Border Welfare Migration" *Journal of Human Resources*, 40(1), 57.
- [21] McKinnish, Terra (2007), "Welfare-Induced Migration at State Borders: New Evidence from Micro-Data" *Journal of Public Economics*, 91, 437.
- [22] Meyer, Bruce D. (2000), "Do the Poor Move to Receive Higher Welfare Benefits?", unpublished paper.
- [23] Ortega, F., 2005. Immigration quotas and skill upgrading. *Journal of Public Economics* 89, 1841-1863.
- [24] Peridy, Nicolas (2006), "The European Union and Its New Neighbors: An Estimation of Migration Potentials", *Economic Bulletin*, 6(2), 1.
- [25] Razin, Assaf and Efraim Sadka (2000). Unskilled migration: a burden or a boon for the welfare state. *Scandinavian Journal of Economics* 102, ~~463-479.~~
- ✓ [26] Razin, Assaf and Efraim Sadka (2004), "Welfare Migration: Is the Net Fiscal Burden a Good Measure of Its Economic Impact on the Welfare of the Native-Born Population?" CESifo Economic Studies, 50(4), 709-716.

References

- ✓ Auerbach, A. and P. Oreopoulos (1999), "Analyzing the Fiscal Impact of U.S. Immigration", *American Economic Review, Papers and Proceedings* 89(May), 176-180.
- ~~Razin, A. and E. Sadka (1993), *The Economy of Modern Israel: Malaise and Promise*, University of Chicago Press, Chicago.~~
- ~~Razin, A. and E. Sadka (1995), "Resisting Migration: Wage Rigidity and Income Distribution", *American Economic Review, Papers and Proceedings* 85(May), 312-316.~~
- ~~Razin, A. and E. Sadka (1999), "Migration and Pension with International Capital Mobility", *Journal of Public Economics* 74, 141-150.~~
- ~~Razin, A. and E. Sadka (2000), "Unskilled Migration: A Burden or a Boon for the Welfare State", *Scandinavian Journal of Economics* 1(May), 463-479.~~
- ~~Razin, A. and E. Sadka (2001), *Labor, Capital, and Finance: International Flows*, Cambridge University Press, Cambridge.~~
- ~~Razin, A. and E. Sadka, with the collaboration of C.W. Nam (forthcoming), *The Decline of the Welfare State: Demography and Globalization*, CESifo Monograph Series, MIT Press, Boston.~~
- ~~Simon, J.L. (1984), "Immigrants, Taxes, and Welfare in the United States", *Population and Development Review* 10(March), 55-69.~~
- ~~Sinn, H.-W. (forthcoming), "EU Enlargement, Migration and the New Constitution", *CESifo Economic Studies* 50, 685-707.~~
- ~~Sinn, H.-W. (2001), "The value of Children and Immigrants in a Pay-As-You-Go Pension System: A Proposal for A Transition to a Funded System", *ifo Studien* 47, 77-94.~~
- ~~Sinn, H.-W., G. Flaig, M. Werding, S. Munz, N. Dull and H. Hofmann (2001), *EU Enlargement and Labour Mobility: Consequences for Labour Markets and Redistribution by the State in Germany*, CESifo Research Report No. 2, Ifo Institute for Economic Research, München.~~

flexible, the pressure may drive wages down; see Storesletten (2000) and Razin and Sadka (2000). However, the decline in wages may well be just a short-term phenomena, as it triggers accumulation of new capital; through both domestic savings and international capital inflows. Indeed, the massive immigration into Israel from the former Soviet Union, following the collapse of communism, was met by a fairly flexible labor market; and a massive influx of capital; see Razin and Sadka (1993) for an early account.

CESifo Economic Studies, Vol. 50, 4/2004

715

- ✓ Smith, James P. and Barry Edmonston, editors (1997), The New American: Economic, Demographic and Fiscal Effects of Immigration, National Academy Press, Washington, D.C.
- ✓ Hanson, Gordon H. (2008), "The Economic Consequences of the International Migration of Labor," NBER Working Paper 14490, November

- ✓ Storesletten, K. (2000), "Sustaining Fiscal Policy Through Immigration",
Journal of Political Economy 108(2), 300–323.

20

13

countries. This result could be due to reverse causality (despite the lagging of ~~immigration~~ ^{spendings} stocks): higher benefits reduce the skill composition of ~~immigration~~ ^{employers} in free migration regimes (Cohen and Razin (2008)).

The second column ~~uses~~ ^{employs} the fitted ~~immigration~~ ^{immigration} stocks from the first stage regression. The result is exactly opposite: high (low) skilled ~~immigrants~~ ^{immigrants} have a positive (negative) effect ~~of~~ ^{on} the level of welfare state

~~benefits~~ ^{spendings}. This ~~can indicate the fiscal leakage and fiscal relief effects in~~ ^{is in line with the conclusions of our parsimonious} model: ~~the host country favors high skill migrants who are~~

~~not a~~ ^{the} ~~adopts a more generous welfare system when high skilled~~ ^{the politico-economic equilibrium. Namely, as the skill composition of} ~~immigrants increases, so is the welfare generosity of the host country.~~

~~migrants (who are net fiscal contributors) enter the country;~~

~~References (cont.)~~

✓ Cohen ~~and~~ Alon and Assaf Razin (2008), "The Skill Composition of Immigrants and the Generosity of the Welfare State: Free versus Policy-Controlled Migration," NBER Working Paper No. 14459, October.

✓ Frankel, Jeffery ^{A.} and David Romer (1999), "Does Trade Cause Growth?", American Economic Review, June, 379 - 399
89 (2),

Appendix

differentiating equation (12) with respect to

σ , we get: (A.1)

$$\frac{\partial v_i^2}{\partial \sigma \partial \sigma} = g'' \frac{\partial b}{\partial \sigma} \frac{\partial b}{\partial \sigma} + g' \frac{\partial^2 b}{\partial \sigma \partial \sigma} + \frac{\partial}{\partial \sigma} \left[(1-\tau)(1-\tau)w_i \right]^2 \frac{\partial w_i}{\partial \sigma}$$

In Eichen and Razin (2008) it is shown that g is linear (more precisely, when $g''=0$ and $g'=1$), then the expression in equation (A.1) is positive in the vicinity

of $\partial v_i / \partial \sigma = 0$; that is at the level of σ

most preferred by an individual of skill level

$i = s, u$. In fact, the reason ^{why} we made g

nonlinear with $g' \rightarrow \infty$ as $b \rightarrow 0$ is to ~~tax~~

ensure that all skill types would prefer a

positive level of government spending (an Inada

condition). But it ~~was~~ ^{quite} perfectly plausible to make g approximately linear beyond a very small

level of b and v is ^{that b} perfectly substitutable to private consumption ~~the~~ (that is, $g'' = 0$

and $g' = 1/\alpha$ in this case, indeed $\partial v_i^2 / \partial \alpha^2$