Razîn, Assaf; Sadka, Efraim

Working Paper

Welfare migration: is the net fiscal burden a good measure of its economic impact on the welfare of the native-born population?

CESifo Working Paper, No. 1273

Provided in Cooperation with:
Ifo Institute – Leibniz Institute for Economic Research at the University of Munich

Suggested Citation: Razîn, Assaf; Sadka, Efraim (2004): Welfare migration: is the net fiscal burden a good measure of its economic impact on the welfare of the native-born population?, CESifo Working Paper, No. 1273

This Version is available at:
http://hdl.handle.net/10419/18911

Terms of use:
Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.
WELFARE MIGRATION: IS THE NET FISCAL BURDEN A GOOD MEASURE OF ITS ECONOMIC IMPACT ON THE WELFARE OF THE NATIVE-BORN POPULATION?

ASSAF RAZIN
EFRAIM SADKA

CESifo Working Paper No. 1273
Category 1: Public Finance
September 2004

Comment on Munich Economic Summit, June 2004

An electronic version of the paper may be downloaded
• from the SSRN website:  http://SSRN.com/abstract=601582
• from the CESifo website:  www.CESifo.de
WELFARE MIGRATION: IS THE NET FISCAL BURDEN A GOOD MEASURE OF ITS ECONOMIC IMPACT ON THE WELFARE OF THE NATIVE-BORN POPULATION?

Abstract

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. But, even though low-skill migration improves the dependency ratio, it nevertheless burdens the welfare state. Recent studies by Smith and Edmonston (1977), and Sinn et al (2003) comprehensively estimate the fiscal burden that low-skill migration imposes on the fiscal system. However, an important message of this paper is that in an infinite-horizon set-up, one cannot fully grasp the implications of migration for the welfare state just by looking at the net fiscal burden that migrants impose on the fiscal system. In an infinite-horizon, overlapping generations economy, this net burden could change to net gain to the native-born population.

JEL classification: H0.

Keywords: migration, welfare state, fiscal burden.

Assaf Razin
Tel Aviv University
Economics Department
69978 Tel Aviv
Israel
razin@post.tau.ac.il

Efraim Sadka
Tel Aviv University
The Eitan Berglas School of Economics
Naftali Building
69978 Tel-Aviv
Israel
sadka@post.tau.ac.il
2 Introduction

Following its recent and forthcoming enlargements, the European Union is likely to face a rise in welfare migration. Hans-Werner Sinn (Financial Times, July 12th, 2004) puts this issue succinctly:

“There will be more migration in Europe, but it will be ‘bad’ migration as well as ‘good’. ‘Good’ migration is driven by wage and productivity difference. ‘Bad’ migration is driven by the generosity of the welfare state."

Indeed, we demonstrated elsewhere that the generosity of the welfare state, as by itself, drives out high-skill migration and drives in low-skill migration (see Razin and Sadka (2001, forthcoming)).

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 re-
tirees (that is, the dependency ratio rises). As put metaphorically by the Economist (March 15th, 2003, p.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 descendents 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 descendents. 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

---

\(^1\) 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.
education are typically a net fiscal burden that can reach as high as approximately $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 for ten years, receives a net benefit totalling about 120,000 euros.

Indeed, 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’ descendents 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.

### 3 The Infinite-Horizon Argument

Consider an overlapping-generations model, where each generation lives for two periods.6 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.

---

4See 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.

5The 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 the services of these goods do not reduce consumption of native born.

6We sketch here only the backbones of the analytical framework behind the infinite-horizon argument. A detailed derivation of equations (1)-(4) is contained in Razin and Sadka (1999).
There are two levels of labor productivity: an unskilled worker with low productivity and a skilled worker with high productivity. A skilled worker provides an effective labor supply of one unit, per units of time at work; while an unskilled worker provides only $q<1$ units of effective labor supply, per units of time at work. The wage per effective units of labor is denoted by $w$.

Born unskilled, each individual can nevertheless acquire skills, and become a skilled worker, by investing $e$ units of time in schooling, in the first period. The remainder of her time, $1-e$, is spent at work as a skilled worker. The individual-specific parameter $e$ reflects the innate ability of an individual in acquiring a work skill. The lower is $e$, that is the less time she needs to acquire the skill, the more able is the individual. The parameter $e$ ranges between 0 and 1, with a cumulative distribution function, $G(e)$, describing the heterogeneity of the population concerning the cost-of-acquiring-skill parameter $e$.

In the first period of her life the individual brings $1+n$ children, decides whether to acquire skill, works, consumes, and saves for retirement in the second period. In the second period she only consumes her retirement saving and pension.

One can show that all individuals with cost-of-education parameter below $e^* = 1-q$ will acquire skill, whereas all the rest will remain unskilled.

Suppose that at some period (say, period zero), a one-shot wave of $m$ unskilled, working age, migrants are allowed in. They grow up at the same rate ($n$) as the native-born population, and the ability index of the offspring, who have access to the same education system as the native born is distributed similarly according to the same cumulative distribution function $G$. That is, the second generation of the immigrant wave are fully integrated into the society. In fact this assumption, together with the infinite horizon of the economy and the PAYG nature of the pension system, are the driving forces behind our argument.

Consider now the following thought experiment. Suppose that the government continues to maintain the pre-migration social security contribution rate, $t$, intact. We then ask what pension benefit can be paid to retirees in our PAYG system. One can show that
the pension that will be paid to the old, living when the wave of unskilled, working age migration takes place (i.e., period 0), is:

\[ b_0 = (1+n)tw \int_0^{e^*} (1-e)dG(e) + q[1-G(e^*) + m] \],

(1)

whereas the pension paid to all future generations is:

\[ b_1 = b_2 = b_3 = ... = (1+n)tw \int_0^{e^*} (1-e)dG(e) + q[1-G(e^*)] \].

(2)

Upon inspection of equation (1), one can observe that \( b_0 \), the pension benefit to retirees at the period when the migrants wave takes place, increases in the number of unskilled, working age, migrants. Therefore, as expected, the old generation in period 0 is clearly better-off with migration. Upon inspection of equation (2), one can observe that \( b_1 = b_2 = b_3 = ... \), the pension benefit to retirees in all post-migration periods, are unaffected by the migration. In particular, and somewhat surprising, the young generation at the time in which unskilled, working age migration takes place (both the skilled and the unskilled native-born members) is not adversely affected by the migration. Thus, the existing native-born population will welcome the unskilled, working age migration.

Furthermore, by creating some surplus in the pension system (to be invested in a social security fund) during the period of migration (that is, by lowering \( b_0 \) towards, but not all the way, to the pre-migration pension benefit) the gains that accrue only to the current old, could be spread out to the current young as well as to all future generations. In other words, unskilled, working age migration is a Pareto-improving change with respect to migrants, as well as the existing current and future native born generations.

Strikingly, this result obtains even though the unskilled migrants may well be net beneficiaries of the redistributive pension system, in the sense that the present value of their pension benefits exceeds their pension contributions. To demonstrate this point, we calculate the present value of life-time net fiscal burden (NFB) of a representative unskilled migrant. This burden is:
\[ \text{NFB} = \frac{1+n}{1+r}tw \left\{ \int_0^{e^*} (1 - e)dG(e) + q[1 - G(e^*)] \right\} - tqw. \]  

(3)

One can see that the burden is positive if:

\[ \frac{G(e^*)(e^* - \bar{e})}{1-e^*} > \frac{r-n}{1+n}, \]  

(4)

where \( \bar{e} \) is the skilled population mean of the cost-of-education parameter. Note that \( e^* > \bar{e} \), because \( e^* \) is the upper bound of the cost-of-education parameter of skilled individuals, whereas \( \bar{e} \) is the corresponding mean. Thus, the left-hand side of (4) is definitely positive. Consider the plausible case where \( r > n \), in which the economy is dynamically efficient. If a large share of the native-born population is skilled, then condition (4) could be satisfied. In this case, NFB is positive at the same time that unskilled, working age migration is a Pareto-improving change for the migrants and the native-born populations.

As expected (if the host country has a large number of skilled people), then when unskilled, working age migrants come to a country whose pension system redistributes income from the (skilled) rich to the (unskilled) poor, they impose a net fiscal burden. But what we have established is that even though migrants are net "consumers" of the pension system, all existing and future generations of the native-born population may gain from migration.

### 4 Conclusion

An important lesson that we draw here is that in an infinite-horizon set-up, one cannot fully grasp the implications of migration for the welfare state just by looking at the net fiscal burden that migrants impose on the fiscal system. The studies by Sinn et al (2003), and Smith and Edmonston (1977), among others, properly emphasize the fiscal burden that low-skill migration imposes on the fiscal system. However, in an infinite-horizon, overlapping generations economy, this net burden is perfectly consistent with a net gain to

---

7 Evidently, our argument holds trivially in the implausible case where \( r<n \) and the economy is inefficient.
the native born population. The additional obligation of the fiscal system to pay pension benefits to the incoming migrants, when they retire, could be shifted forward, in effect, indefinitely. If, hypothetically, the world would come to a stop at a certain point of time in the future, the young generation at that point would bear the deferred cost of the present migration. But in an ever-lasting economy, the migrants, by supplying work and helping the financing the pension benefit of period zero to native born retirees, are a boon to the the host country population: old, young, and future generations.8

5 References

References


8 Migration may have some other important implications that are not addressed here. Migration may exert a downward pressure on wages. If wages are rigid, then this may cause a rise in unemployment; see Sinn (forthcoming) and Razin and Sadka (1995). But if labor markets are 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 Working Paper Series
(for full list see www.cesifo.de)

1209 Stephan Klasen and Thorsten Nestmann, Population, Population Density, and Technological Change, June 2004


1211 Luis H. R. Alvarez and Erkki Koskela, Taxation and Rotation Age under Stochastic Forest Stand Value, June 2004

1212 Bernard M. S. van Praag, The Connexion Between Old and New Approaches to Financial Satisfaction, June 2004

1213 Hendrik Hakenes and Martin Peitz, Selling Reputation When Going out of Business, June 2004

1214 Heikki Oksanen, Public Pensions in the National Accounts and Public Finance Targets, June 2004

1215 Ernst Fehr, Alexander Klein, and Klaus M. Schmidt, Contracts, Fairness, and Incentives, June 2004

1216 Amihai Glazer, Vesa Kanniainen, and Panu Poutvaara, Initial Luck, Status-Seeking and Snowballs Lead to Corporate Success and Failure, June 2004

1217 Bum J. Kim and Harris Schlesinger, Adverse Selection in an Insurance Market with Government-Guaranteed Subsistence Levels, June 2004

1218 Armin Falk, Charitable Giving as a Gift Exchange – Evidence from a Field Experiment, June 2004

1219 Rainer Niemann, Asymmetric Taxation and Cross-Border Investment Decisions, June 2004

1220 Christian Holzner, Volker Meier, and Martin Werding, Time Limits on Welfare Use under Involuntary Unemployment, June 2004

1221 Michiel Evers, Ruud A. de Mooij, and Herman R. J. Vollebergh, Tax Competition under Minimum Rates: The Case of European Diesel Excises, June 2004


1223 Josse Delfgaauw and Robert Dur, Incentives and Workers’ Motivation in the Public Sector, June 2004

1225 Volker Grossmann, How to Promote R&D-based Growth? Public Education Expenditure on Scientists and Engineers versus R&D Subsidies, June 2004


1227 Bertil Holmlund, Sickness Absence and Search Unemployment, June 2004

1228 Klaas J. Beniers and Robert Dur, Politicians’ Motivation, Political Culture, and Electoral Competition, June 2004

1229 M. Hashem Pesaran, General Diagnostic Tests for Cross Section Dependence in Panels, July 2004


1231 Stefan Homburg, A New Approach to Optimal Commodity Taxation, July 2004

1232 Lorenzo Cappellari and Stephen P. Jenkins, Modelling Low Pay Transition Probabilities, Accounting for Panel Attrition, Non-Response, and Initial Conditions, July 2004

1233 Cheng Hsiao and M. Hashem Pesaran, Random Coefficient Panel Data Models, July 2004

1234 Frederick van der Ploeg, The Welfare State, Redistribution and the Economy, Reciprocal Altruism, Consumer Rivalry and Second Best, July 2004

1235 Thomas Fuchs and Ludger Woessmann, What Accounts for International Differences in Student Performance? A Re-Examination Using PISA Data, July 2004

1236 Pascalis Raimondos-Møller and Alan D. Woodland, Measuring Tax Efficiency: A Tax Optimality Index, July 2004

1237 M. Hashem Pesaran, Davide Pettenuzzo, and Allan Timmermann, Forecasting Time Series Subject to Multiple Structural Breaks, July 2004


1239 Eckhard Janeba, Moral Federalism, July 2004

1241 Hans Jarle Kind, Karen Helene Midelfart, Guttorm Schjelderup, Corporate Tax Systems, Multinational Enterprises, and Economic Integration, July 2004


1243 Wolfgang Eggert and Alfons J. Weichenrieder, On the Economics of Bottle Deposits, July 2004

1244 Sören Blomquist and Vidar Christiansen, Taxation and Heterogeneous Preferences, July 2004

1245 Rafael Lalive and Alois Stutzer, Approval of Equal Rights and Gender Differences in Well-Being, July 2004

1246 Paolo M. Panteghini, Wide vs. Narrow Tax Bases under Optimal Investment Timing, July 2004

1247 Marika Karanassou, Hector Sala, and Dennis J. Snower, Unemployment in the European Union: Institutions, Prices, and Growth, July 2004


1249 Francesco Giavazzi and Guido Tabellini, Economic and Political Liberalizations, July 2004

1250 Yin-Wong Cheung and Jude Yuen, An Output Perspective on a Northeast Asia Currency Union, August 2004

1251 Ralf Elsas, Frank Heinemann, and Marcel Tyrell, Multiple but Asymmetric Bank Financing: The Case of Relationship Lending, August 2004

1252 Steinar Holden, Wage Formation under Low Inflation, August 2004


1254 Klaus Wälde and Pia Weiß, International Competition, Slim Firms and Wage Inequality, August 2004


1256 Guido Tabellini, The Role of the State in Economic Development, August 2004

1257 François Larmande and Jean-Pierre Ponssard, EVA and the Controllability-congruence Trade-off: An Empirical Investigation, August 2004
1258 Vesa Kanniainen and Jenni Pääkkönen, Anonymous Money, Moral Sentiments and Welfare, August 2004

1259 Panu Poutvaara and Andreas Wagener, Why is the Public Sector More Labor-Intensive? A Distortionary Tax Argument, August 2004

1260 Lars P. Feld and Stefan Voigt, Making Judges Independent – Some Proposals Regarding the Judiciary, August 2004

1261 Joop Hartog, Hans van Ophem, and Simona Maria Bajdechi, How Risky is Investment in Human Capital?, August 2004

1262 Thomas Eichner and Rüdiger Pethig, Efficient Nonanthropocentric Nature Protection, August 2004

1263 David-Jan Jansen and Jakob de Haan, Look Who’s Talking: ECB Communication during the First Years of EMU, August 2004

1264 David F. Bradford, The X Tax in the World Economy, August 2004

1265 Hans-Werner Sinn, Migration, Social Standards and Replacement Incomes. How to Protect Low-income Workers in the Industrialized Countries against the Forces of Globalization and Market Integration, August 2004

1266 Wolfgang Leininger, Fending off one Means Fending off all: Evolutionary Stability in Submodular Games, August 2004

1267 Antoine Bommier and Bertrand Villeneuve, Risk Aversion and the Value of Risk to Life, September 2004

1268 Harrie A. A. Verbon and Lex Meijdam, Too Many Migrants, Too Few Services: A Model of Decision-making on Immigration and Integration with Cultural Distance, September 2004

1269 Thomas Eichner and Rüdiger Pethig, Economic Land Use, Ecosystem Services and Microfounded Species Dynamics, September 2004

1270 Federico Revelli, Performance Rating and Yardstick Competition in Social Service Provision, September 2004

1271 Gerhard O. Orosel and Klaus G. Zauner, Vertical Product Differentiation When Quality is Unobservable to Buyers, September 2004

1272 Christoph Böhringer, Stefan Boeters, and Michael Feil, Taxation and Unemployment: An Applied General Equilibrium Approach, September 2004