

**IMF Working Paper**

© 1997 International Monetary Fund

This is a *Working Paper* and the author(s) would welcome any comments on the present text. Citations should refer to a *Working Paper of the International Monetary Fund*. The views expressed are those of the author(s) and do not necessarily represent those of the Fund.

WP/97/78

INTERNATIONAL MONETARY FUND

Fiscal Affairs Department

**Tax Burden and Migration: A Political Economy Perspective<sup>1</sup>**

Prepared by Assaf Razin<sup>2</sup> and Efraim Sadka<sup>3</sup>

Authorized for distribution by Vito Tanzi

June 1997

**Abstract**

The extent of taxation and redistribution policy is generally determined at a political-economy equilibrium by a balance between those who gain and those who lose from a more extensive tax-transfer policy. In a stylized model of migration and human capital formation, we find, somewhat against conventional wisdom, that low-skill migration may lead to a lower tax burden and less redistribution than no migration, even though the migrants join the pro-tax coalition.

**JEL Classification Numbers:**F22, H2, J1

**E-mail:** razin@econ.tau.ac.il; sadka@econ.tau.ac.il

---

<sup>1</sup>Research on this paper began while the authors were visiting the International Monetary Fund, the first author at the Research Department and the second author at the Fiscal Affairs Department. The research was completed while the two authors were visiting the Center for Economic Studies (CES) at the University of Munich. We thank Charles Kramer for helping us with the simulation in this paper and Gal Hochman for competent research assistance.

<sup>2</sup>Mario Henrique Simonsen Professor of Public Economics, The Eitan Berglas School of Economics, Tel-Aviv University, Tel-Aviv, Israel.

<sup>3</sup>Henry Kaufman Professor of International Capital Markets, The Eitan Berglas School of Economics, Tel-Aviv University, Tel-Aviv, Israel.

**CONTENTS**

Summary .....	3
I. Introduction .....	4
II. A Model of Migration .....	4
III. A Political-Economy Equilibrium .....	7
A. No Migration .....	7
B. Free Migration .....	8
C. Migration Quota .....	10
IV. The Effects of Migration on the Tax Burden .....	10
V. Conclusion .....	12
Figure	
1. A Political-Economy Equilibrium Tax Rate (The No-Migration Case) .....	9
References .....	13

## SUMMARY

The modern welfare state typically transfers income from the rich to the poor, through either cash transfers or in-kind transfers, making the welfare state an attractive destination for immigrants, particularly low-skill immigrants.

The extent of taxation and redistribution policy is generally determined at a political-economy equilibrium by a balance between those who gain and those who lose from a more extensive tax-transfer policy. Low-skill migration can potentially affect this balance in a significant way. This paper analyzes this interaction between migration and the political-economy tax-transfer policy.

Does migration necessarily tilt the political balance in favor of heavier taxation and more intensive redistribution? The answer is not as simple as it may initially seem. On the one hand, the low-income migrants who are net beneficiaries of the tax-transfer system will indeed join forces with the native-born low-income voters in favor of higher taxes and transfers. But, on the other hand, redistribution becomes more costly to the native-born population as the migrants now share some of the benefits at their expense. These conflicting effects are analyzed here in a stylized model of migration and human capital formation.

The paper shows that migration does not necessarily tilt the political balance. The reason is that, as the number of migrants grows, more native-born individuals from the middle of the income distribution are hurt by the extra tax burdens and shift to the side of the high-income anti-tax coalition. This shift may be larger than the addition to the pro-tax coalition brought about by the migrants who joined this coalition. Furthermore, with free migration, which keeps the income of the migrants constant at the level of their alternative source-country income regardless of the host-country tax-transfer policy, migrants lose interest in the outcome of the political-economy process. Thus, the tax burden necessarily falls as migration quotas are gradually increased to a nonbinding level (i.e., free migration).

## I. INTRODUCTION

The modern welfare state typically transfers income from the rich to the poor, either by cash transfers or by in-kind transfers. This redistribution feature makes the welfare state, therefore, an attractive destination, particularly for low-skill immigrants. A recent study by George Borjas (1994) indicated that foreign-born households in the United States accounted for 10 percent of households receiving public assistance by 1990, and for 13 percent of total cash assistance distributed, even though they constituted only 8 percent of all households in the United States. This feature is becoming increasingly important in view of the recent trend of an increase in the proportion of the U.S. population which is foreign born.<sup>4</sup>

Does migration necessarily tilt the political balance in favor of heavier taxation and more intensive redistribution? This paper addresses this issue. The extent of taxation and redistribution policy is generally determined at a political economy equilibrium by a balance between those who gain and those who lose from a more extensive tax-transfer policy. The main purpose of this paper is to analyze this interaction between migration and the political-economy equilibrium tax-transfer policy.

The paper is organized as follows. Section II develops a stylized model of migration and human capital formation. Section III describes the nature of the political economy equilibrium tax-transfer policy with or without migration quotas. Section IV derives the effects of migration on the tax-transfer policy. We then conclude the paper in Section V with a brief discussion of policy implications.

## II. A MODEL OF MIGRATION

Following Saint-Paul (1994) and Razin and Sadka (1995), we assume a stylized economy in which there are only two types of labor productivity: "low" and "high." While a high-productivity worker provides one efficiency unit of labor, the low-productivity worker provides only  $\rho < 1$  efficiency units of labor. Every individual can acquire education which makes her a high-productivity (denoted "skilled") worker. If she, however, does not acquire an education she remains a low-productivity (denoted "unskilled") worker. There is a continuum of individuals varying in the cost,  $c$ , of acquiring education (due to, say, innate ability). We assume that the distribution of these costs in the population is uniform over the interval  $[0, 2\bar{c}]$ . To simplify the notation, the size of the native-born population is normalized to 1.

---

<sup>4</sup>This trend results in part from a declining birth rate among native-born Americans, but more from increased immigration, according to a recent U.S. Census Bureau Report (August 1996).

Suppose that the government levies an egalitarian income tax. The literature (e.g., James Mirrlees, 1971) suggests that a best egalitarian income tax can be approximated by a linear tax. We therefore consider an income tax with a flat rate ( $t$ ) and a lump-sum cash grant ( $\beta$ ). The uniform cash grant may also capture free provision of public services such as health and education (if all families are of similar size and age structure). To simplify, we assume that migrants qualify for all the ingredients of the entitlement programs in the destination country (see LaLonde and Topel, 1994).

We assume that the individual labor supply is fixed, so that the income tax does not distort individual labor-supply decisions. We endogenize the migration decision, however, by assuming that they depend on international net-income differentials. Specifically, we assume that there is a (given) net wage rate  $w^*$  for unskilled labor in the source country which is below the net income of unskilled workers in the destination country when there is no migration. Unskilled labor then migrates from the source country to the destination country, thereby narrowing the income gap expressed in the following condition:

$$(1-t)\rho w + \beta \geq w^* \quad (1)$$

where  $w$  is the wage per efficiency unit of labor. If the host country imposes a quota on the number of immigrants, and the quota is binding, then condition (1) holds with a strict inequality; whereas free migration eliminates the income gap, bringing condition (1) to an equality.

Each individual can either invest in human capital (through education) or in physical capital which yields a return  $r$ . There exists a cutoff level,  $c^*$ , such that all those with education cost below  $c^*$  invest in human capital and become skilled, while everyone else remains unskilled. The cutoff level is determined by the equality between the marginal return to education and the marginal opportunity cost of education (via investment in physical capital). In the absence of taxation and income redistribution,  $c^*$  is formally determined by:

$$c^* = \frac{(1-\rho)}{(1+r)} w, \quad (2')$$

Typically, an income tax (levied also on capital income) distorts investment decisions between physical and human capital because investment in human capital (i.e., the cost of acquiring education) is not tax deductible, while investment in physical capital is deductible via depreciation allowances (see Nerlove et al., 1993). We, therefore, incorporate from this distortion by assuming that the cost of education is not tax deductible. Thus, the equation which determines the cutoff cost level ( $c^*$ ) is:

$$c^* = \frac{(1-\rho)w(1-t)}{1+r(1-t)} \quad (2)$$

so that the tax affects investment decisions, as can be seen by comparing equations (2') and (2).

The proportion ( $x$ ) of skilled workers in the total population is given by:

$$x = c^*/2\bar{c} \quad (3)$$

Therefore, a total of:

$$\int_0^{c^*} (c/2\bar{c})dc = (c^*)^2/4\bar{c} \equiv H, \quad (4)$$

is invested by the economy in human capital.

Denoting the initial endowment by  $I$ , the endogenously determined stock of physical capital ( $K$ ) is given by:

$$K = I - H. \quad (5)$$

We specify a Cobb-Douglas production function for the GDP of our economy with constant returns to scale:

$$Y = AK^\alpha L^{1-\alpha} \quad (6)$$

where

$$L = x + \rho(I-x) + \rho m, \quad (7)$$

is the aggregate input of labor in efficiency units (notice that, for simplicity, the two types of labor are assumed to be perfect substitutes in production). All immigrants are assumed to be unskilled, and their proportion in the native-born labor force is denoted by  $m$ . To simplify, we assume that capital does not depreciate, implying that  $Y+K$  is available for consumption at the end of the production process. The wage rate ( $w$ ) and the return to capital ( $r$ ) are given by the standard marginal productivity conditions:

$$w = (1-\alpha)A(K/L)^\alpha, \quad (8)$$

and

$$r = \alpha A(L/K)^{1-\alpha}. \quad (9)$$

Finally, the government's budget must be balanced. Since the income tax is levied on both labor and capital income and on both native-born and migrant workers, it follows that the entire GDP (namely,  $Y$ ) constitutes the tax base. As the cash grant is paid fully to both native-born individuals and immigrants, the government budget constraint is:

$$tY - \beta(1+m) = 0. \quad (10)$$

The disposable income or consumption of a native-born individual with an education cost level of  $c$  is given by:<sup>5</sup>

$$v(c) = w(1-t) + \beta + (I-c)[1+r(1-t)] \text{ for } c \leq c^*. \quad (11)$$

and

$$v(c) = \rho w(1-t) + \beta + I[1+r(1-t)] \text{ for } c \geq c^*. \quad (11')$$

Notice that  $v$  is strictly decreasing in  $c$  for  $c \leq c^*$  and then constant for  $c \geq c^*$ . Notice that with free migration the migrant's consumption is always  $w^*$ , since condition (1) becomes an equality, no matter what action the government takes.

### III. A POLITICAL-ECONOMY EQUILIBRIUM

Given the flat tax rate  $t$ , equations (1)-(10) determine the market equilibrium levels of  $w$ ,  $r$ ,  $c^*$ ,  $x$ ,  $H$ ,  $K$ ,  $Y$ ,  $L$ ,  $m$ , and the budget-balancing level of the universal transfer  $\beta$ . We now turn to a description of the political mechanism which determines the tax burden,  $t$ .

#### A. No Migration

Consider first the closed-economy version of this model (i.e., suppose there is no migration). In this case  $m = 0$  and the equilibrium migration condition (1) is irrelevant. Start from a zero tax rate. A positive tax  $t$  transfers income from the low- $c$  individuals (the "rich") to the high- $c$  individuals ("the poor"). As long as more than 50 percent of the population favors a higher tax

---

<sup>5</sup>The reader can verify that total consumption of native-born individuals, the integral sum of  $v(c)(1/\bar{c})dc$ , ranging from 0 to  $2\bar{c}$ , is equal to GNP, that is,  $(Y - w^*m)$ , plus the stock of physical capital ( $K$ ). This identity, of course, follows from Walras' law.

rate,  $t$  will rise. An equilibrium is achieved when the median voter stops this process. That is, the political equilibrium tax rate ( $t_0$ ) is a solution to:<sup>6</sup>

$$\text{Max}_{t \geq 0} v^0(\bar{c}, t). \quad (12)$$

Since there is no migration, so that the population size is constant, it follows that  $\bar{c}$  is the median level of  $c$  (because the cost levels are uniformly distributed over  $[0, 2\bar{c}]$ ). We denote by  $v^0(c, t)$  the consumption of a  $c$ -level individual with zero migration and a tax rate of  $t$ .

The political equilibrium tax rate in this no-migration case is depicted in Figure 1, where individual consumption is plotted against the cost level  $c$ . Consumption falls with the cost of education level up to the point  $c^*$ . From this point on, individuals do not acquire education, so that the cost difference among them is irrelevant. Therefore, consumption is constant for  $c \geq c^*$  (see also equation (11')). Typically, equilibrium is achieved when the cutoff level of  $c$  between the  $c$ -levels of those who gain and those who lose from a very small increment  $\Delta t$  in the tax rate occurs exactly at  $\bar{c}$ , the median voter's  $c$ -level. (With a large increment in the tax rate, some people with a higher  $c$ -level than  $\bar{c}$  may also lose.)

### B. Free Migration

Consider now the political equilibrium with free migration. In this case, equation (1) is relevant and  $m$  is endogenously determined. Recall that immigrants always enjoy a consumption level of  $w^*$ , regardless of the flat tax rate  $t$  (and the implied transfer  $\beta$ ). They are thus indifferent to the outcome of the political game. Therefore, regardless of whether they participate in the political process or not, the decisive median voter is still the individual with a skill level of  $\bar{c}$ . Hence, the equilibrium level of tax rate,  $\hat{t}$ , is a solution to:

$$\text{Max}_{t \geq 0} \hat{v}(\bar{c}, t), \quad (12')$$

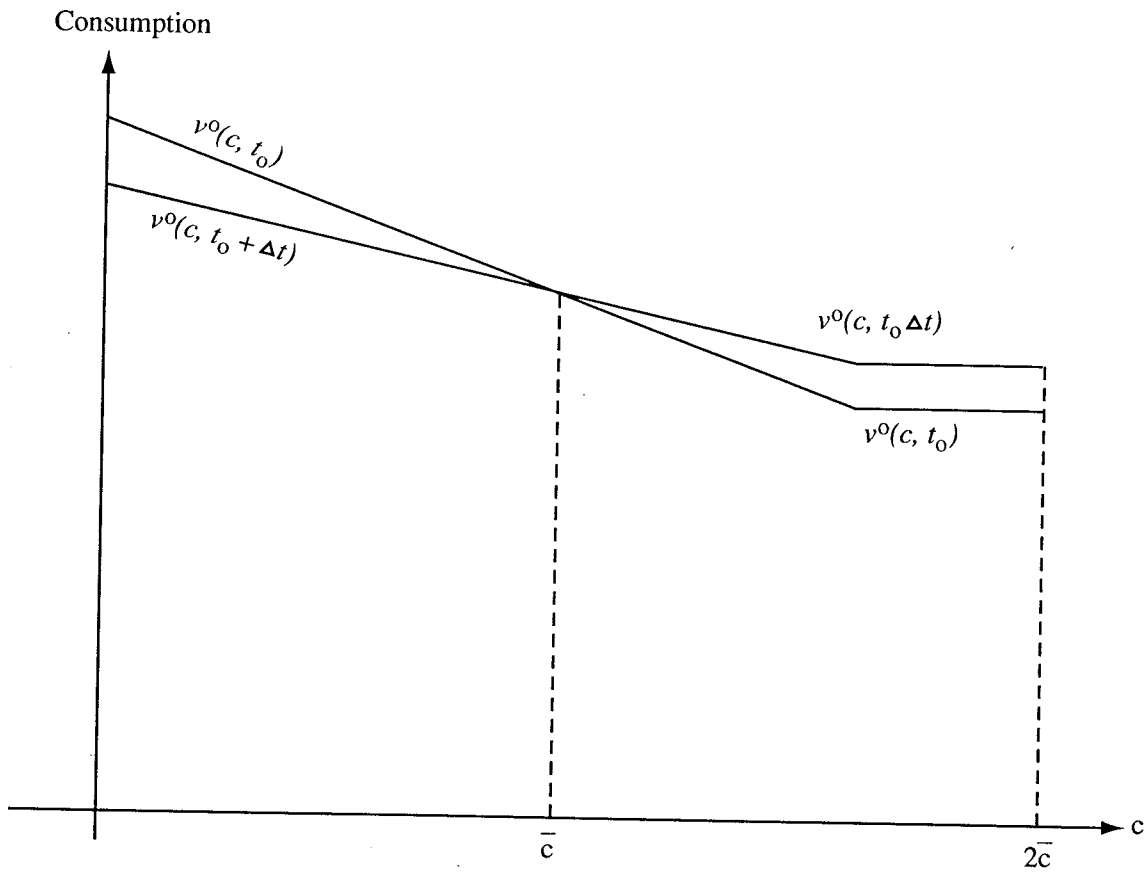
where  $\hat{v}(c, t)$  is the consumption level of a  $c$ -level individual with free migration and a tax rate of  $t$ . Migrants thus affect the political balance, not by a direct vote, but rather at the equilibrium, through their effects on factor incomes and, consequently, consumption of the native-born residents.

---

<sup>6</sup>We restrict the tax rate ( $t$ ) to be nonnegative, to avoid a situation where a majority of rich people tax the poor minority ( $\beta < 0$ ), a situation we deem socially politically implausible.



Figure 1. A Political-Economy Equilibrium Tax Rate  
(The No-Migration Case)



### C. Migration Quota

A third case which we consider is with some migration but at a restricted level. Formally, we again drop condition (1) and set  $m$  fixed at some arbitrary level of quota (of course, for this quota to be binding, the left-hand side of (1) must be larger than the right-hand side). In this case, migrants' consumption is no longer fixed at  $w^*$ , but rather depends on  $t$  (and  $\beta$ ). Hence, migrants have a stake in the outcome of the political process and their vote will influence it. Lacking any physical capital, their consumption would be even lower than that of the native-born low-skill residents. Thus, they will always opt for a higher  $t$  (and  $\beta$ ). The median voter will be the individual with a skill level of ( $c_m$ ) which is equal to  $\bar{c} + m/2$ . Thus, the political equilibrium level of tax ( $t^m$ ) is a solution to:

$$\text{Max}_{t \geq 0} v^m(\bar{c} + m/2, t), \quad (12'')$$

where  $v^m(c, t)$  is the consumption of a  $c$ -level individual with a restricted level of migration,  $m$ , and a tax rate of  $t$ .

### IV. THE EFFECTS OF MIGRATION ON THE TAX BURDEN

We resort to numerical simulations in order to study the nature of the political-economy equilibrium. In general a higher tax rate  $t$  is, by itself, welfare-reducing to all. The compensation comes in the form of a higher demogrant ( $\beta$ ), assuming that the economy is still on the "right" side of the so-called "Laffer Curve."

On balance, unskilled people with high  $c$ -levels stand to gain from a higher  $\beta$  more than they lose from the higher  $t$  needed to finance the higher  $\beta$  (i.e., the net tax burden for them is negative). The opposite is true for the skilled (low  $c$ -level) individuals (i.e., their net tax burden is positive). For low ( $\beta, t$ ) configurations a majority of the population will opt for an increase in  $t$  (and  $\beta$ ), because the distortion effect of the tax is relatively low. As  $t$  rises, the distortion increases as well, so that a further increase of  $t$  raises less revenue than before and therefore enables only a smaller increase in  $\beta$ . Thus, as  $t$  rises less and less people gain from the increase until the median voter stops this process.

Consider the first Case III.A: No Migration. The equilibrium tax rate is quite high in this case: 52 percent. As we allow some migration (Case III.C), two conflicting effects are at play. On the one hand, the low-skill migrants (whose net tax burden is negative) generally tilt the political power balance in favor of higher taxes (the "protax effect"). But, on the other hand, the revenue generated by a given increase in  $t$  is shared by a larger population so that it can finance only a smaller increase in  $\beta$ . Thus, more of the native-born individuals (at the low- to mid-end of the  $c$ -distribution) would oppose a further tax hike (the "antitax effect"). It turns out that the second effect dominates and the equilibrium tax rate falls as the migration quota

rises. As a matter of fact, for the particular parameter values we chose, the protax effect completely vanishes. The reason is that our chosen value of the parameter  $\bar{c}$  is relatively high,<sup>7</sup> so that the cut-off cost level ( $c^*$ , which is endogenously determined) turned out to be below  $\bar{c}$ , and a fortiori below the median  $c$ -level which is  $\bar{c} + m/2$ . In this case, the unskilled native individuals constitute more than half of the population even without the migrants. This coalition has already exhausted its electoral power in setting a high tax rate, even before the arrival of the migrants.<sup>8</sup>

When the migration quota is set at a level of 15 percent of the native-born population, the tax rate drops slightly below 40 percent. The tax rate drops all the way to zero (and, consequently, the transfer  $\beta$  also falls to zero) as the migration quota is further increased to a level equaling about one third of the native-born population.

When the migration quota is lifted altogether (Case III.B), the population almost doubles ( $m$  reached 0.97). As was already pointed out, the tax-transfer policy does not affect the well-being of the migrants, as their consumption remains constant at their opportunity cost of  $\omega^*$ . Therefore, the native-born individuals lose nothing to the migrants as a result of raising the transfer  $\beta$ . Hence, they will opt again for some redistribution. We find the political-economy equilibrium tax rate to jump to a level of about 12 percent in this case.

It is interesting to examine also a value for the parameter  $\bar{c}$  which is low enough so that  $\bar{c} < c^*$  and the protax coalition is initially dominated by the antitax (skilled) coalition in the absence of migration. This happens, for instance, when  $\bar{c} = 0.3$ . With no migration, the political equilibrium tax rate is indeed nil. In this case the protax effect of migration dominates the antitax effect, as migrants flow in. For instance, when  $m = 0.2$ , the political equilibrium tax rate rises to about 40 percent.<sup>9</sup> As the migration quota is raised (say to  $m = 0.35$ ), the second (antitax) effect dominates and the political-economy equilibrium tax rate drops slightly below 15 percent. With free migration the tax rate drops to zero, as the migrants are indifferent about the tax transfer policy and the median voter among the native-born population (i.e., the individual with a  $c$ -level of  $\bar{c} = 0.3$ ) is a skilled individual (since  $\bar{c} < c^*$ ).

---

<sup>7</sup>The other parameter values:  $\alpha = 0.33$ ,  $\rho = 0.33$ ,  $I = 3$ ,  $A = 1$ ,  $\omega^* = 0.5$  (which is about 15 percent below the no-migration pretax wage for low-skill workers).

<sup>8</sup>The migrants would have liked to raise the tax rate even further, but the (unskilled) median voter who is richer than the migrants (because she owns some physical capital) puts a lid on this tax-hike pressure.

<sup>9</sup> Indeed, if migrants are not allowed to vote, the political-equilibrium tax rate remains zero.

## V. CONCLUSION

Earlier studies have examined the burden imposed on the modern welfare state by migration. For instance, Wildasin (1994) and Razin and Sadka (1995) showed how all income groups of the native-born population may lose from migration with income redistribution schemes.

In this paper we examine how these schemes are shaped in the context of a political-economy equilibrium. We show that migration does not necessarily tilt the political balance in favor of heavier taxation and more intensive redistribution. The reason for this is that more native-born individuals from the middle of the income distribution (i.e., the *c*-distribution) may lose from the extra tax burden brought about by the need to finance the transfer to the migrants and shift to the side of the high-income antitax coalition. This shift may be larger than the increase to the pro-tax coalition brought about by the migrants who joined this coalition.

**REFERENCES**

- Borjas, G., 1994, "Immigration and Welfare, 1970-1990," Working Paper No. 4872 (Cambridge, MA: National Bureau of Economic Research).
- LaLonde, R., and R. Topel, 1994, "Economic Impact of International Migration and the Economic Performance of Migrants," Center for the Study of the Economy and the State Working Paper No. 96 (Chicago: University of Chicago).
- Mirrlees, J.A., 1971, "An Exploration in the Theory of Optimum Income Taxation," *Review of Economic Studies*, Vol. 38, No. 114, pp. 175-208.
- Nerlove, M., A. Razin, E. Sadka, and R. von Weizsaecker, 1993, "Comprehensive Income Taxation, Investments in Human and Physical Capital, and Productivity," *Journal of Public Economics*, Vol. 50, No. 3, pp. 397-406.
- Razin, A., and E. Sadka, 1995, "Resisting Migration: Wage Rigidity and Income Distribution," *American Economic Review: Papers and Proceedings*, pp. 312-16.
- Saint-Paul, G., 1994, "Unemployment, Wage Rigidity and Returns to Education," *European Economic Review*, Vol. 38, pp. 535-1544.
- Wildasin, D.E., 1994, "Income Redistribution and Migration," *Canadian Journal of Economics*, Vol. 27, No. 3, pp. 637-56.