

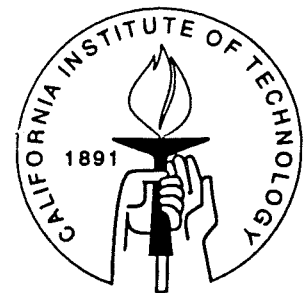
DIVISION OF THE HUMANITIES AND SOCIAL SCIENCES

CALIFORNIA INSTITUTE OF TECHNOLOGY

PASADENA, CALIFORNIA 91125

WELFARE MAGNETS, THE LABOR-LEISURE DECISION AND ECONOMIC EFFICIENCY

Jason Saving



SOCIAL SCIENCE WORKING PAPER 890

June 1994

WELFARE MAGNETS, THE LABOR-LEISURE DECISION AND ECONOMIC EFFICIENCY

Jason Saving

Abstract

This paper develops a model designed to capture the fiscal externalities associated with redistributive policy in a system of jurisdictions. Policy changes in one jurisdiction affect other jurisdictions through both migration and work-disincentive effects. Previous work ignores work-disincentive effects and concludes that centralization is sufficient to eliminate fiscal externalities. Inclusion of work-disincentive effects unambiguously worsens fiscal externalities under both centralized and decentralized redistribution. Sufficiently severe work-disincentive effects guarantee that an increase in redistribution will harm the poor.

Keywords: Migration, redistribution, spillovers, externalities, centralization

JEL Classification numbers: H23, H73

WELFARE MAGNETS, THE LABOR-LEISURE DECISION AND ECONOMIC EFFICIENCY*

Jason Saving

1 Introduction

Within the European Union, a debate has arisen over the migrational consequences of a borderless society. Economic theory predicts that, when individuals are costlessly mobile across a system of jurisdictions, individuals will "vote with their feet" and choose the jurisdiction whose policies maximize their utility [Tiebout 1956]. Recent literature suggests that this rent-seeking behavior penalizes high-benefit countries in a common labor market because those countries will attract welfare recipients and repel workers [Brown and Oates 1987]. To the extent that this is the case, it appears likely that a "common market" in Europe would yield greater benefits to nations with low levels of redistribution; worse, it is feared that these pressures would encourage the more "progressive" members of the EU to lower their benefits [Sinn 1990]. To a European Union whose leaders support high levels of redistribution, such pressures are anathema.¹

Traditional economic analysis suggests that redistribution should be performed by a central government rather than by decentralized jurisdictions. Economists such as Musgrave [1971] and Oates [1968] have noted that a central government could impose equal levels of redistribution across all jurisdictions, thereby eliminating the fiscal incentives to migrate. In effect, centralized redistribution can transform a system of jurisdictions into a single jurisdiction from which mobile individuals cannot escape. From this, advocates of redistribution have concluded that a high level

¹I would like to thank Peter Mieszkowski, Thomas R. Saving and participants at the 1994 annual meetings of the Public Choice Society for helpful comments and suggestions. Any remaining errors are my own.

of redistribution can be achieved without harmful spillovers through the intervention of a central government.

This conclusion is critically dependent on the absence of any labor-supply effects of redistributive policy. Previous work is virtually silent on the subject of the labor-leisure decision.² However, endogeneity of the labor-leisure decision can have significant effects on equilibrium outcomes. For example, a rise in welfare benefits by one jurisdiction might increase the absolute number of poor as well as induce migration across jurisdictions. Even a central government is vulnerable to these effects; although workers/recipients cannot escape a central government's redistributive policy through migration, it is possible for them to choose leisure over labor. For this reason, endogeneity of the labor-leisure decision permits an analysis of spillovers that traditional analyses fail to capture.

The basic framework of the paper is as follows. The first section of the paper describes the basic model. The second section examines migratory responses to differential levels of redistribution in the context of common markets for labor and amenities when the decision to work is exogenous. In this section, we reach the standard conclusions of the "fiscal federalists" with an intriguing twist: the observed relationship between benefits and wages need not rely on altruism for its explanation. The third section extends the basic analysis through endogeneity of the labor-leisure decision. In this section, we severely weaken the standard conclusions of the "fiscal federalists" and conclude that an increase in redistribution by a single jurisdiction need not benefit the poor. The fourth section applies the analysis to centralization and economic efficiency. In this section, we show that centralization does not suffice to eliminate spillovers and that centralized redistribution does not produce economic efficiency when the central authority chooses a positive level of redistribution. The final section gives concluding thoughts. In this section, we apply the conclusions of the paper to the European Union and the United States.

2 A Description of the Model

In this paper, we examine redistribution in the context of a system of jurisdictions whose citizens seek to maximize net income. In general, previous work assumes that income is exogenous to the model, and individuals migrate in response to differentials in the price of housing [e.g. Epple and Romer 1991]. However, a pioneering article by David Wildasin explicitly considers the case in which income is endogenous to the model [Wildasin 1991]. In the Wildasin framework, a number of jurisdictions share a common labor market within which income-maximizing individuals receive

both welfare benefits and wages. Although this model provides a number of empirical insights, it is most appropriate for an analysis of local public goods because most workers do not receive welfare payments and most recipients do not work [Orr 1976]. Thus, an explicit attempt to model welfare benefits requires a different formulation.

When jurisdictions offer differential incomes to costlessly mobile individuals, the individuals will migrate until incomes are equalized.³ In order for jurisdictional incomes to equilibrate, income must be congestible in the sense that, for each type of individual, an increase in the number of residents lowers jurisdictional income.⁴ It is natural for labor markets to form the basis of this congestibility when all mobile individuals are employed. In a theoretical framework which incorporates both working and nonworking individuals, the exclusive use of labor markets to equilibrate individuals becomes problematic. If the poor do not respond to a common labor market, however, to what equilibrating mechanism do they respond?

We assume that both poor and employed individuals respond to market forces in the form of locational amenities. It is well known that amenities affect the migration decisions of individuals [Rosen 1979, Graves and Linneman 1979]. In fact, empirical work reveals that regional wage differentials are largely a function of amenities [Roback 1982]. A broad range of amenities are subject to congestion; examples include beaches, public parks, and even the crime rate, which increases with increasing population density.⁵ Thus, a broadly defined measure of locational amenities satisfies a necessary condition for market equilibrium.

Although both poor and employed individuals respond to amenity differentials in the model, we assume that a poor individual will consume a greater quantity of amenities than an employed individual. This assumption need not rest upon any of the observed correlations between personal income and deleterious activities such as crime, although these effects would only accentuate the conclusions of this paper. We need only assume that individuals who work must sacrifice time that would otherwise have been used to consume amenities, or that poor individuals are likely to engage in a relatively intense consumption of amenities because they lack the money to purchase consumer goods. Without loss of generality, we normalize these congestion effects in relation to poor individuals.

There are two types of individuals in the model, employed and poor, who are costlessly mobile across a fixed number of jurisdictions.⁶ Each jurisdiction is endowed with a Ricardian production function $f_i(e_i)$ for the numeraire commodity, where i is the jurisdiction of interest and e_i

is the number of individuals who are employed in the jurisdiction.⁷ This production function is monotonically increasing and concave in the number of employed individuals. Each jurisdiction is also endowed with an amenities function $a_i(p_i + \alpha e_i)$, where α is a scale factor less than unity and p_i is the number of individuals who reside in the jurisdiction but are not employed.⁸ The amenities function is monotonically decreasing in its argument.

Employed individuals are endowed with one unit of labor which must be used to produce the numeraire commodity. Each employed individual receives from his employer the marginal value of labor in production of the numeraire, and no resident who is able to work may be excluded from employment. Poor individuals, on the other hand, receive subsidies from their local jurisdiction instead of wages from an employer. These subsidies are identical across all recipients in a given jurisdiction, and no resident who is poor may be excluded from the subsidy. Subsidies are provided by landlords, who are assumed to claim all residual profits; both the landlords and their capital are immobile.

Let the benefit level paid to poor individuals from a given jurisdiction be denoted b_i . Then the net income of poor individuals in jurisdiction i is given by

$$Y_i^P = b_i + a_i(p_i + \alpha e_i) \quad (1)$$

Suppose that the poor seek to maximize net income. Since the poor are costlessly mobile across jurisdictions, the equilibrium net income of the poor must be identical across all jurisdictions. In other words,

$$b_i + a_i(p_i + \alpha e_i) = b_j + a_j(p_j + \alpha e_j) \quad \forall i, j. \quad (2)$$

Denote this level of net income by Y^P .

Let the wage paid to employed individuals from a given jurisdiction be $f_i'(e_i)$. Then the net income of employed individuals is given by the expression

$$Y_i^E = f_i'(e_i) + a_i(p_i + \alpha e_i) \quad (3)$$

Suppose that the employed seek to maximize net income. Since the employed are costlessly mobile across jurisdictions, the equilibrium net income of the employed must be identical across jurisdictions. In other words,

$$f'_i(e_i) + a_i(p_i + \alpha e_i) = f'_j(e_j) + a_j(p_j + \alpha e_j) \quad \forall i, j. \quad (4)$$

Denote this level of net income by Y^E .

Finally, let M be the total number of mobile individuals in the system. Since these mobile individuals are divided into at most two types, it must be the case that

$$\sum p_i + \sum e_i = M \quad (5)$$

When the decision to work is exogenous to the model, it is possible to write equations for each type of individual:

$$\sum e_i = E \quad (5b)$$

$$\sum p_i = P \quad (5a)$$

3 Comparative Statics and the Wage-Benefit Correlation

An examination of the traditional framework is instructive both for its confirmation of traditional conclusions and its application to an empirical regularity: the wage-benefit correlation. There is substantial evidence from the United States that the level of welfare benefits provided by a jurisdiction is correlated with the prevailing wage in that jurisdiction [Orr 1976]. Economists have generally explained this correlation through an appeal to altruism tempered by decreasing marginal utility of income [Gramlich and Laren 1984]. According to this explanation, a relatively high prevailing wage induces a relatively high welfare payment in a jurisdiction. In this section, we investigate the comparative statics of the system of jurisdictions and reach a dramatically different explanation for the wage-benefit correlation.

An increase in redistribution by jurisdiction i increases the net income of the poor in jurisdiction i . Since such a difference cannot persist in equilibrium, poor individuals must migrate from other jurisdictions to jurisdiction i . It is convenient to solve for the migration of employed individuals first. To determine the magnitude of this effect, we must first solve the system of equations characterized by (2) and (4). A joint implication of these equations is that the equilibrium income differential is equalized across jurisdictions. Therefore,

$$Y^E - Y^P = f'_i(e_i) - b_i = f'_j(e_j) - b_j \quad \forall i, j. \quad (6)$$

Using this equation, it is possible to solve implicitly for $e_i(Y^E - Y^P + b_i)$. The resulting functions are simply $f^{-1}(Y^E - Y^P + b_i)'$ and their derivatives must be negative because wages are decreasing in e_i . Substituting each labor-demand equation into (5b), it is possible to solve for the net income differential as a function of benefit levels.

It can be shown by implicit differentiation of (5b) that

$$\frac{\partial(Y^E - Y^P)}{\partial b_i} = -\frac{e'_i}{\sum e'_k} \quad (7)$$

This derivative, which we shall denote by the symbol β_i , measures the marginal impact of a change in redistribution on the distribution of income. The migration of employed individuals induced by a change in b_i is given by

$$\frac{\partial e_i}{\partial b_i} = (1 + \beta_i)e'_i < 0 \quad (8a)$$

$$\frac{\partial e_j}{\partial b_i} = \beta_j e'_i > 0 \quad (8b)$$

These equations demonstrate the spillover effect for employed individuals: the equilibrium number of employed individuals is unambiguously lower in jurisdiction i and higher in all other jurisdictions.

In a similar manner, once the equilibrium effects on employed individuals are known, it is possible to solve for the equilibrium allocation of poor individuals. The change in net income for poor individuals is

$$\frac{\partial Y^P}{\partial b_i} = \frac{(a_i^{-1})'}{\sum (a_k^{-1})'} > 0. \quad (9)$$

This derivative, which we shall denote by the symbol π_i , measures the marginal impact of a change in redistribution on the net income of the poor. The migration of poor individuals induced by a change in b_i is given by

$$\frac{\partial p_i}{\partial b_i} = -(1 - \pi_i)(a_i^{-1})' - \alpha(1 + \beta_i)e_i' > 0 \quad (10a)$$

$$\frac{\partial p_j}{\partial b_i} = \pi_j(a_i^{-1})' - \alpha\beta_j e_i' < 0. \quad (10b)$$

These equations demonstrate the spillover effect for poor individuals: the equilibrium number of poor individuals is unambiguously higher in jurisdiction i and lower in all other jurisdictions.

These results permit a discussion of the aggregate effects of a change in b_i . A unilateral increase in benefits by jurisdiction i induces poor individuals to move from all other jurisdictions to jurisdiction i . Since every jurisdiction experiences a change in the number of resident poor, every jurisdiction experiences a change in the level of amenities available to employed individuals. In particular, the reduced level of amenities in jurisdiction i and the increased level of amenities in all other jurisdictions induce migration of employed individuals from jurisdiction i into all other jurisdictions. This migration continues until a new equilibrium is established. In this new equilibrium, the net income of the poor is unambiguously higher, although equation (9) demonstrates that the net income of the poor in jurisdiction i cannot increase by the full amount of the benefit increase.

The presence of a wage-benefit correlation follows directly from the conclusions of this section. By equation (6), the benefit level offered by a jurisdiction will be positively correlated with the wage in that jurisdiction. However, the wage-benefit correlation is due to market forces rather than altruism. Causation is reversed from the traditional explanation: high benefit levels increase the scarcity of labor by "driving out" employed individuals, and it is this decrease in the number of employed individuals that increases the prevailing wage. Thus, the wage-benefit correlation need not rely on altruism for its explanation.

4 Costs and Benefits Under Labor-Leisure Endogeneity

In the first section, we have considered a model in which the decision to work is exogenous. However, there is reason to believe that the labor-leisure decision is an important component of the equilibrium behavior of mobile individuals. Economic theory suggests that, by lowering the relative price of leisure, an increase in redistribution will induce individuals to choose leisure over labor, and empirical work has confirmed the existence of this effect [Blank 1988, Treysz et al 1993]. In this section, we investigate the additional implications of a benefit increase that occur when the decision

to work is endogenous and we discover that the severity of spillover effects is unambiguously greater. We further discover that, under certain conditions, an increase in welfare benefits unambiguously worsens the welfare of the poor.

Suppose there are a fixed number of mobile individuals, M , who are costlessly mobile across types as well as jurisdictions. Let each individual receive some disutility from work, and represent these disutility values by g^I .⁹ Mobile individuals are assumed to compare the net income differential between the employed and the poor with their disutility value, and to work if and only if it is in their interest to do so. That is, a given individual with disutility value g^I will choose to work if and only if

$$Y^E - Y^P > g^I \quad (11)$$

Let these preferences be represented by the function $P(Y^E - Y^P)$, where P is the total number of poor individuals.

The following equations describe the equilibrium changes that would result from an infinitesimal shift from labor to leisure:

$$\frac{\partial p_j}{\partial P} = \pi_j(1 - \alpha) - \alpha \beta_j > 0 \quad (12)$$

$$\frac{\partial e_j}{\partial P} = \beta_j < 0 \quad (13)$$

$$\frac{\partial Y^P}{\partial P} = \frac{(1 - \alpha)}{\sum (a_k^{-1})'} < 0 \quad (14)$$

$$\frac{\partial (Y^E - Y^P)}{\partial P} = -\frac{1}{\sum (e_k)'} > 0 \quad (15)$$

These comparative statics may be employed to obtain the net effect of type-changing on the equilibrium results of the previous section. Suppose that, after interjurisdictional migration in response to a rise in b_1 establishes an equilibrium, individuals are permitted to change their type. Given $P(Y^E - Y^P)$, it can be shown that

$$\frac{\partial P}{\partial b_i} = -\frac{e_i' P'}{P' + \sum e_k'} \quad (16)$$

The total effect of the change in P is given by the following set of equations:

$$\left(\frac{\partial p_j}{\partial P}\right)\left(\frac{\partial P}{\partial b_i}\right) = -[(1-\alpha)\pi_j - \alpha\beta_j]e_i' L^* > 0 \quad (17)$$

$$\left(\frac{\partial e_j}{\partial P}\right)\left(\frac{\partial P}{\partial b_i}\right) = -\beta_j e_i' L^* < 0 \quad (18)$$

$$\left(\frac{\partial Y^P}{\partial P}\right)\left(\frac{\partial P}{\partial b_i}\right) = -\frac{(1-\alpha)e_i' L^*}{\sum (a_k^{-1})'} < 0 \quad (19)$$

$$\left(\frac{\partial(Y^B - Y^P)}{\partial P}\right)\left(\frac{\partial P}{\partial b_i}\right) = -\beta_i L^* > 0 \quad (20)$$

where

$$L^* = \frac{P'}{P' + \sum e_k'}$$

will be referred to subsequently as the *coefficient of leisure*.

The interpretation of these comparative statics yields the result that labor-leisure endogeneity worsens spillover effects for all jurisdictions. When a jurisdiction increases its benefit level, a certain number of employed individuals throughout the system choose leisure over labor. This effect is relatively severe when the labor demand curve in jurisdiction i is elastic and a large number of employed individuals barely prefer work in the absence of a benefit increase. The independent effects on the system that arise from this change are an increase in the number of poor individuals in each jurisdiction, a decrease in the number of employed individuals in each jurisdiction, a decrease in the welfare of the poor, an increase in the wage rate, and an increase in the net income differential between employed and poor.¹⁰

These effects yield an important implication for previous analyses of redistribution. Consider the following total derivatives, which describe the overall effects of an increase in redistribution by jurisdiction i :

$$\frac{dp_i}{db_i} = -\alpha e_i'(1 + \beta_i - \beta_i L^*) - (a_i^{-1})'(1 - \pi_i) - (1 - \alpha)\pi_i e_i' L^* > 0 \quad (21a)$$

$$\frac{dp_j}{db_i} = -\alpha \beta_j e_i'(1 - L^*) + (a_j^{-1})'\pi_j - (1 - \alpha)\pi_j e_i' L^* > \frac{\partial p_j}{\partial b_i} \quad (21b)$$

$$\frac{\partial e_i}{\partial b_i} < \frac{de_i}{db_i} = [1 + \beta_i(1 - L^*)]e_i' < 0 \quad (22a)$$

$$\frac{\partial e_j}{\partial b_i} > \frac{de_j}{db_i} = \beta_j e_i'(1 - L^*) > 0 \quad (22b)$$

$$\frac{dY^P}{db_i} = \pi_i - \frac{(1 - \alpha)e_i' L^*}{\sum (a_k^{-1})'} < \frac{\partial Y^P}{\partial b_i} \quad (23)$$

$$\frac{\partial(Y^E - Y^P)}{\partial b_i} < \frac{d(Y^E - Y^P)}{db_i} = \beta_i(1 - L^*) < 0 \quad (24)$$

$$\frac{dY^E}{db_i} = \pi_i + \beta_i(1 - L^*) - \frac{(1 - \alpha)e_i'}{\sum (a_k^{-1})'} \quad (25)$$

In each case, aggregate spillover effects are minimized when workers are forbidden to choose leisure over labor; in each case, aggregate spillover effects increase as the coefficient of leisure increases. Therefore, analyses of redistribution that ignore labor-supply effects are likely to understate the costs of increased redistribution and overstate the benefits.

There is a further result that is rather striking: when the coefficient of leisure is sufficiently high, it is possible for the marginal loss of amenities induced by labor-supply changes to exceed the marginal benefit to the poor from the additional redistribution. In other words, it is possible for an increase in redistribution by jurisdiction i to unambiguously worsen the welfare of its poor. This phenomenon, which we shall call the *New York City effect*, is difficult to identify through empirical observation because the most easily observable components of utility (benefits and wages) are unambiguously higher when the effect occurs. Nevertheless, both the poor and the employed are worse off when the effect occurs.¹¹ It should be noted that, since individuals are costlessly mobile, an increase in redistribution by jurisdiction i affects the entire system of jurisdictions.¹² Therefore,

redistributive programs designed to help the poor in one jurisdiction can actually harm the poor in all jurisdictions. For this reason, concern for the poor need not imply support for redistributive benefits.

5 Implications for Decentralization

Perhaps the most common policy prescription in the fiscal federalism literature is for a central government to control redistribution. In general, previous work has concluded that centralized redistribution eliminates spillovers and induces economic efficiency [Buchanan 1950, Wildasin 1991].¹³ Advocates of redistribution have used these conclusions to argue for centralization [Sinn 1990]. In this section, we examine the properties of centralized redistribution and we find that they do not hold when the labor-leisure decision is endogenous.

Suppose that, in a system of jurisdictions that satisfies the assumptions of the traditional framework, a central authority simultaneously increases welfare benefits in all jurisdictions. Since a simultaneous benefit increase does not create any interjurisdictional differentials, the increase cannot induce interjurisdictional migration. Furthermore, there is a one-to-one relationship between increased redistribution and increased net income for the poor because of the absence of work-disincentive effects. For these reasons, traditional economic analysis has concluded that centralization is sufficient to eliminate spillovers and induce economic efficiency.¹⁴

This conclusion is crucially dependent on the assumption of labor-leisure exogeneity. When mobile individuals may choose between labor and leisure, a simultaneous increase in welfare benefits inflicts labor-supply effects even though traditional analyses predict economic efficiency. The magnitude of migratory spillovers is given by the summation of equations (17) and (19) over all jurisdictions:

$$\frac{dp_i}{db} = 0 - [(1 - \alpha)\pi_i - \alpha\beta_i]L * \sum (e_k') > 0 \quad (26)$$

$$\frac{dY^P}{db} = 1 - \frac{(1 - \alpha)L * \sum (e_k')}{\sum (a_k^{-1})'} \quad (27)$$

Equation (27) demonstrates that the one-to-one correspondence between benefit increases and the welfare of the poor is lost when the coefficient of leisure is larger than zero. In particular, the extent to which fiscal externalities exist under simultaneous benefit increases is directly related to the

magnitude of the coefficient of leisure, and it is once again possible for an increase in redistributive benefits to harm the poor.

The presence of spillovers under centralized redistribution illustrates the inadequacy of traditional concepts of economic efficiency as applied to redistribution. Basic economic theory predicts that economic efficiency is achieved when the marginal product of each factor is equalized across jurisdictions. When workers are the sole factor of production and receive their marginal product, optimal factor allocation implies that wages must be equalized across jurisdictions. Since welfare benefits distort the locational decisions of workers, optimal factor allocation also implies that benefit levels be equalized across jurisdictions. Since the level at which benefits are set does not affect the labor-leisure decision, economic efficiency is achieved at any level of benefits.

That marginal factor product equalization does not suffice to guarantee economic efficiency when workers are free to choose leisure over labor can be seen from an examination of the model given here. Since workers are perfectly mobile, wages are equalized when and only when amenity levels are equalized. Since the poor are perfectly mobile, amenity levels are equalized when and only when benefit levels are equalized. Therefore, benefit equalization is a necessary and sufficient condition for the equalization of marginal factor products. However, the level at which benefits are set affects the supply of labor and hence national output.

It is useful to label the equalization of marginal factor products as *allocative efficiency* in order to distinguish this aspect of efficiency from output maximization. Economic efficiency under labor-leisure endogeneity is obtained when and only when both allocative efficiency and output maximization are satisfied. Unfortunately, it is not possible to make a definitive statement about the effect of a benefit increase by a single jurisdiction on national output. However, it must be the case that a simultaneous rise in welfare benefits across all jurisdictions reduces national output. Furthermore, it can be shown that the unique set of benefit levels which maximizes national output occurs when all jurisdictions refrain from redistribution. Since this set of benefit levels also satisfies allocative efficiency, it is the unique efficient outcome.

The public finance literature has identified three basic objectives of government economic policy: an efficient allocation of resources, a desirable distribution of income, and a high and stable level of employment/output [Oates 1968]. Although previous studies found that all of these goals could be fulfilled through centralization, the implicit assumption upon which that conclusion was based is at odds with both empirical evidence and the theoretical model presented in this paper.

Although governments do not (and should not) have economic efficiency as their only objective, economic efficiency must play a role in the determination of public policy. Although centralization can enhance economic efficiency, there is no guarantee that it will do so, and the extent to which centralization harms efficiency is directly related to the level at which the central authority sets its benefit. Ironically, then, policymakers who listened to the traditional assertions of the fiscal federalists are most likely to ignore the harmful aspects of centralization and thereby impede rather than promote economic efficiency.

6 Conclusion

In this paper, we have examined the effects of redistributive policy on the welfare of its citizens. We have shown that previous work systematically understates the magnitude of redistribution-induced spillovers and overstates the extent to which redistribution raises the net income of the poor. We have also shown that altruism does not cause the wage-benefit correlation and need not imply support for redistribution when redistribution induces a portion of the workforce to choose leisure over labor. Finally, we have shown that centralized redistribution does not imply economic efficiency unless all jurisdictions refrain from redistribution.

It should be noted that an important assumption in this paper is especially kind to jurisdictions that engage in redistribution. In particular, workers are not taxed to fund redistributive programs. If workers were taxed such that each worker paid a sum bp/e_p , the incentive to move to areas with low numbers of poor individuals would increase, as would the incentive to exit the labor force. Thus, workers would face more powerful incentives to migrate and to exit the labor force. Both of these effects amplify the results of this paper.

The main conclusions of this paper bear directly on the question of interstate redistribution in the European Union. The idea that a high-redistribution central government harms efficiency is not well-understood by a number of officials in the European Union, as well as some economists, who argue for centralized redistribution in order to ensure that benefits are "leveled up" to the more "progressive" countries rather than "leveled down" to the less progressive ones. The analysis given in this paper is unambiguous: the higher the level of redistribution provided by a central government, the lower the economic efficiency of the system of jurisdictions. A central government that does not know labor-demand curves, amenity-demand curves and the coefficient of leisure is likely to

overstate the extent to which centralization will help the poor and might even harm the very individuals that it seeks to help..

The conclusions of this paper also apply to the public policies of New York City and the state of California. It may well be the case that, in these areas, the poor have been harmed by increased redistribution. If these jurisdictions are victims of the New York City effect, their policy prescriptions are clear: increase the welfare of the poor by decreasing redistributive benefits. Although advocates of redistribution have used the experience of New York City to justify centralized redistribution in the EU, a uniformly high welfare benefit across Europe will produce substantially fewer benefits than traditional analyses would predict, while a reduction in welfare benefits by relatively generous members of the European Union might increase both economic efficiency and the welfare of the poor throughout Europe.

Appendix

Proof of Result 7:

Implicitly differentiating (5a) with respect to b_i we have

$$\frac{\partial E}{\partial b_i} = \frac{\partial \sum (e_k)}{\partial b_i}$$

Since E is fixed,

$$\begin{aligned} 0 &= \frac{\partial \sum e_k}{\partial b_i} \\ &= \frac{\partial e_i + \sum_{k \neq i} e_k}{\partial b_i} \\ &= e_i' \frac{\partial(Y^E - Y^P + b_i)}{\partial b_i} + \sum_{k \neq i} e_k' \frac{\partial(Y^E - Y^P + b_k)}{\partial b_i} \\ &= e_i' \left(\frac{\partial(Y^E - Y^P)}{\partial b_i} + 1 \right) + \sum_{k \neq i} e_k' \frac{\partial(Y^E - Y^P)}{\partial b_i} \\ &= e_i' + \left(\frac{\partial(Y^E - Y^P)}{\partial b_i} \right) \sum e_k' \end{aligned}$$

Therefore, we have result (7) below

$$\frac{\partial(Y^E - Y^P)}{\partial b_i} = -\frac{e_i'}{\sum e_k'} = \beta_i \quad (7)$$

Proof of Result 9:

Since $Y^P = b_i + a_i(p_i + \alpha e_i)$, it must be the case that $p_i + \alpha e_i = a_i^{-1}(Y^P - b_i)$.

Implicitly differentiating (5) with respect to b_i yields,

$$\frac{\partial(P + \alpha E)}{\partial b_i} = \frac{\partial \sum a_k^{-1}}{\partial b_i}$$

Since P , α and E are fixed,

$$\begin{aligned}
0 &= \frac{\partial \sum a_k^{-1}}{\partial b_i} \\
&= \frac{\partial \{a_i^{-1} + \sum_{k \neq i} a_k^{-1}\}}{\partial b_i} \\
&= a_i^{-1} \left(\frac{\partial Y^P}{\partial b_i} - 1 \right) + \left(\frac{\partial Y^P}{\partial b_i} \right) \sum_{k \neq i} a_k^{-1} \\
&= \left(\frac{\partial Y^P}{\partial b_i} \right) \sum a_k^{-1} - a_i^{-1}
\end{aligned}$$

Therefore, we have result 9,

$$\frac{\partial Y^P}{\partial b_i} = \frac{a_i^{-1}}{\sum a_k^{-1}} = \pi_i \tag{9}$$

Proof of Result 16:

Let W be the change in $(Y^E - Y^P)$ that occurs as a result of the influx of new poor. Since

$$\frac{\partial(Y^E - Y^P)}{\partial P} = -\frac{1}{\sum e'_k}$$

and the change in $(Y^E - Y^P)$ that results from interjurisdictional migration is β_i , it must be the case that

$$-W \sum e'_k = -P'(\beta_i - W)$$

in equilibrium. This equation may be simplified to

$$W(P' + \sum e'_k) = P'\beta_i$$

or

$$W = \frac{\beta_i P'}{P' + \sum e'_k}$$

The change in P is given by

$$\begin{aligned}\frac{\partial P}{\partial b_i} &= -P'(\beta_i - W) \\ &= -P' \left(\frac{\beta_i \sum e'_k}{P' + \sum e'_k} \right)\end{aligned}$$

Therefore, we have result 16,

$$\frac{\partial P}{\partial b_i} = -\frac{e'_i P'}{P' + \sum e'_k} \tag{16}$$

Endnotes

1. As Emerson [1991] notes, collective arrangements such as the Social Charter have been designed by EU leaders to mitigate these competitive pressures.
2. In fact, the most provocative analysis to date of the labor-leisure decision is contained in a footnote offered by Pauly [1973].
3. As Wildasin [1992] notes, costless mobility is an increasingly realistic assumption due to advances in communications and transportation technology.
4. If this were not the case, the system would equilibrate at a "corner solution" in which each type of mobile individual would reside in exactly one jurisdiction. Such a system would offer scant theoretical or empirical insight.
5. Although there are noncongestible amenities (such as temperature), we do not require that each component of the amenities function be congestible. It is only necessary that some portion of the amenities function be congestible, so that the level of amenities is downward sloping in population.
6. Although we assume that all poor and employed individuals are mobile, such an assumption is not crucial for the analysis. It should be noted that, when some individuals are immobile, the implication of changes in welfare policy may differ considerably for mobile and immobile individuals.
7. The production function need not differ across jurisdictions. However, the model is completely general with regard to employer human capital and jurisdictional technology, both of which could generate interjurisdictional differences in the production function.
8. The amenities function, like the production function, need not differ across jurisdictions.
9. Note that the disutility value of an individual need not be a reflection of his "work ethic" if individuals differ in ways that are irrelevant to the production process but relevant in other respects. For example, if a single parent places a relatively high value on free time or a member of a minority group faces discrimination in the workplace, these individuals are likely to have high disutility values.
10. If workers with high disutility values are concentrated in certain jurisdictions, compensatory worker migration into those jurisdictions may be necessary to achieve equilibrium. The function $P(Y^E - Y^P)$ combines these effects, thereby masking the degree to which compensatory migration occurs. However, a separation of the two effects is not relevant for this analysis.
11. The increase will, however, reduce the income differential between the employed and the poor.
12. While the overall reduction in utility for the poor is identical across all jurisdictions, the composition of this reduction will differ across jurisdictions. In particular, the reduction in

amenities for jurisdiction i will exceed that of all other jurisdictions by the amount of the benefit increase.

13. In this paper, "centralized redistribution" is equivalent to the presence of a common benefit level across jurisdictions. Thus, the analysis applies to both coordinated and centralized redistribution.

14. The discussion that follows shall focus on the economic effects of centralized redistribution rather than the moral or philosophical justifications for such redistribution. Issues such as regional taste differentials and central government "remoteness," while powerful rationales for decentralization, are beyond the scope of this paper.

Bibliography

- Blank, Rebecca M. 1988. "The Effect of Welfare and Wage Levels on the Location Decisions of Female-Headed Households." *Journal of Urban Economics*, 24: 186-211.
- Brown, Charles C., and Wallace E. Oates. 1987. "Assistance to the Poor in a Federal System." *Journal of Public Economics*, 32: 307-330.
- Buchanan, James M. 1950. "Federalism and Fiscal Equity." *American Economic Review*, 40: 583-599.
- Emerson, Michael. 1991. "Europe After 1992: Aspects of Economic and Monetary Policy." In *Europe After 1992: Three Essays* (Tommaso Padoa-Schioppa, ed.). Princeton: Princeton University Press, pp. 5-15.
- Epple, Dennis, and Thomas Romer. 1991. "Mobility and Redistribution." *Journal of Political Economy*, 99: 828-858.
- Gramlich, Edward M., and Deborah S. Laren. 1984. "Migration and Income Redistribution Responsibilities." *Journal of Human Resources*, 19: 489-511.
- Graves, Philip E., and Peter D. Linneman. 1979. "Household Migration: Theoretical and Empirical Results." *Journal of Urban Economics*, 6: 383-404.
- Musgrave, Richard A. 1971. "Economics of Fiscal Federalism." *Nebraska Journal of Economics and Business*, 10(4): 3-13.
- Oates, Wallace E. 1968. "The Theory of Public Finance in a Federal System." *Canadian Journal of Economics*, 1: 37-54.
- Orr, Larry L. 1976. "Income Transfers as a Public Good: An Application to AFDC." *American Economic Review*, 66: 359-371.
- Pauly, Mark V. 1973. "Income Redistribution as a Local Public Good." *Journal of Public Economics*, 2: 35-58.
- Roback, Jennifer. 1982. "Wages, Rents, and the Quality of Life." *Journal of Political Economy*, 90: 1257-1278.
- Rosen, Sherwin. 1979. "Wage-Based Indexes of Urban Quality of Life." In *Current Issues in Urban Economics* (Peter Mieszkowski and Mahlon Straszheim, eds). Baltimore: Johns Hopkins University Press, pp. 74-104.

- Sinn, Hans-Werner. 1990. "Tax Harmonization and Tax Competition in Europe." *European Economic Review*, 34: 489-504.
- Tiebout, Charles M. 1956. "A Pure Theory of Local Expenditures." *Journal of Political Economy*, 64: 416-424.
- Treyz, George I., Dan S. Rickman, Gary L. Hunt, and Michael J. Greenwood. 1993. "The Dynamics of U.S. Internal Migration." *Review of Economics and Statistics*, 75: 209-214.
- Wildasin, David E. 1991. "Income Redistribution in a Common Labor Market." *American Economic Review*, 81: 757-774.
- Wildasin, David E. 1992. "Relaxation of Barriers to Factor Mobility and Income Redistribution." *Public Finance/Finance Publiques*, 47(Supplement): 216-230.