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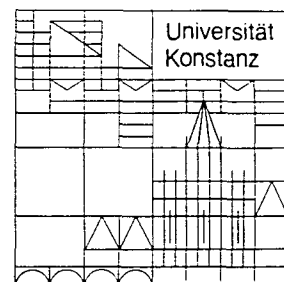
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Sonderforschungsbereich 178
„Internationalisierung der Wirtschaft“

Diskussionsbeiträge

Juristische
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Fakultät für Wirtschafts-
wissenschaften und Statistik

Amihai Glazer
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VOTING ON REDISTRIBUTIVE TAXATION**

Amihai Glazer

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**INTERTEMPORAL COMMITMENT PROBLEMS AND
VOTING ON REDISTRIBUTIVE TAXATION***

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ABSTRACT

A rich person who fears a loss of income may later favor redistributive taxation and a mix of taxes and public goods that differs from the one he now favors. If mobility is costly, and if government in each period uses majority voting to determine policy, then this person may prefer to live in a community that is permanently ruled by poor residents. Majority voting is a mechanism that can overcome intertemporal commitment problems of income insurance.

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1. Introduction

In Tiebout's (1956) seminal article on local public goods people self-select among several communities according to their willingness to pay for local public goods. Tiebout equilibria have a strong tendency towards homogeneity. (Atkinson and Stiglitz 1980, Stiglitz 1983, p. 35). This tendency is reinforced if the rich attempt to avoid redistributive taxes that are imposed in communities where the poor are a majority (see Wildasin 1991, Epple and Romer 1991). This paper examines conditions under which individuals may instead prefer heterogeneity.

While most studies of fiscal federalism examine models with one period, we consider a model with two periods where a person's future income is uncertain. This allows us to consider the behavior of an individual who is currently rich but who faces the risk of becoming poorer. If poor in the second period, such a person would favor a community with redistributive taxes. Given some mobility costs, the individual may therefore also prefer to live in a community with many poorer persons in the first period; he thereby ensures that he could benefit from redistribution.

Consider a successful attorney who currently lives in a community composed overwhelmingly of other rich persons. In the current period this attorney will approve of the tax and expenditure policies favored by the majority. The attorney may fear, however, that next period his income will decline. If mobility costs are sufficiently high, the attorney will not move. He will then find that the same policies favored by the majority impose great hardships to himself. A sufficiently risk averse person may therefore prefer to live in a community in which initially a majority of persons are not as wealthy as he is. In the initial period his utility will be lower. But if the attorney loses income, in future periods he will find that this community's policies give him greater utility.

An individual may change his preferences for public policy not only because of a

change in his earnings. A divorce can greatly reduce a person's standard of living. Illness, the birth of a handicapped child, or the need to care for a sick parent, can all change the policies a resident wants adopted in his community.

On a smaller scale, similar issues arise within organizations. Consider an academic department where the resources given increase with outside grants a professor receives. A professor successful in the current period may fear that his current topic will lose favor, or that his funding agency will suffer a budget cut. This professor may therefore want some assurance that when his outside funding declines, the department will not drastically reduce the resources it gives him. Indeed, he is willing to take a salary cut this year if he can thereby increase his welfare in some future period. One way of obtaining such implicit insurance is by having colleagues who currently receive little funding. Through their votes on personell cases, persuasive arguments, or mere nagging, they may induce the chairman or department to equalize resources across professors. Though they will do so in the current period at the expense of the initially productive professor, they will also do so in the future, when the professor may be less productive.

These examples suggest that redistributive taxes can be seen as a premium for insurance against the risk of becoming poor in the future. The interpretation of redistributive taxation as a form of insurance is not new (cf. e.g., Eaton and Rosen 1980, Varian 1980, Gordon and Varian 1988, and, in the context of median voter models, Bishop *et al.* 1991). The two main and related problems of this literature are, first, to explain why private markets do not provide this insurance¹. Second, in particular when voting is considered, it is unclear why voters should stick to the tax

¹ If, e.g., private markets suffer from incomplete information and therefore may not exist, there is no reason to believe that progressive taxation as a substitute does not lead to similar adverse incentive problems. For a more complete discussion of this argument see Dixit (1987).

rules they liked under the "veil of ignorance", once they know their true income. Clearly there is a serious commitment problem.

Our analysis will not consider a first-best world which only suffers from the lack of income insurance markets due to whatever reason. We consider a second-best world which lacks the possibility of intertemporal commitment. The naive "voting for insurance" incentive exists in this framework, but it cannot be enforced, once there is no intertemporal commitment. Traditional views of insurance implicitly always assume intertemporal commitment. Decisions on taxation and public good provision in real world are based on an inefficient political decision mechanism such as majority voting, where tax policy for a period can be decided (or altered) once uncertainty is resolved. If a majority can expropriate a minority, the majority may nullify insurance benefits, by a tax on insurance benefits as an extreme possibility, or by a tax on wealth exceeding some level. Even if the individual migrates to live in a community of exclusively rich people, without intertemporal commitment, insurance may be not feasible. The majority of rich may decide to tax away all insurance payments on wealth losses: as long as they are rich (and a majority), they have no reason to care about those who suffer an income reduction. Taxing away insurance payments is something agreeable for those who do not get such payments. To summarize: in a world without intertemporal commitment traditional insurance may be not feasible.

Majority voting after resolution of uncertainty also rules out an agreement on redistributive taxation on the basis of a "veil of ignorance" argument. An economy may have unanimously agreed to have redistribution in the future. Not knowing their final income position in the future, individuals have an insurance demand against income risks. Inequality reducing income redistribution in the future seems to provide this kind of insurance. However, once an individual knows his true income, and it turns out that he is lucky, why should he commit himself to the redistributive policy he liked ex ante? This commitment problem is acknowledged

(e.g., by Gordon and Varian 1988, p. 187), but typically it is assumed away. We will show, however, that living in a community with poor individuals itself is an insurance mechanism which is incentive compatible, i.e., does not even require any intertemporal commitment.

The discussion here is related to work by Strotz (1955–56), Kydland and Prescott (1977), Barro and Gordon (1983), and Persson (1988) who demonstrate that current decisions of economic agents depend in part on their expectations of future policy actions. Phelps and Pollak (1968) apply the principle to determine optimal savings decisions when the current generation cares about the consumption of future generations, but nevertheless realizes that its preferences differ from theirs. Alesina and Tabellini (1988) and Tabellini and Alesina (1990) extend these insights to show that voters may favor budget deficits which constrain the choices government may adopt in the future. Glazer (1989) applies these principles to demonstrate that collective choices will show a bias towards durable projects.

Insurance is implicitly provided by majority voting as long as a majority does not become rich. (We will rule this out as a less relevant case.) The majority (the poor) in each period will tax the rich to redistribute income to the poor. So a community ruled by the poor provides some benefits which partially compensate for the loss of wealth.

2. Majority voting and redistribution

We shall consider a simple two-period model. Our goal is to determine the equilibrium level of taxes and income transfers for a given community composition in the initial period. There are two periods (0 and 1). The proportion of individuals in period 0 who are rich is ρ_0 ; a poor person is defined to have income w_p , a rich person has income w_r , with $w_r > w_p$. Consumption in each period equals disposable income in that period. No saving or borrowing is allowed. Government activity is limited to redistribution; there are no public goods. A community ruled by the rich

makes no redistributions; a community ruled by the poor redistributes income from the rich to the poor.

Our critical assumption is that a rich person in period 0 may become poor in period 1 and vice versa. A rich person in period 0 remains rich with probability π_r . He becomes poor with probability $(1-\pi_r)$. A poor person in period 0 becomes rich in period 1 with probability π_p . In both periods 0 and 1, a person who incurs moving costs of m_t ($t = 0,1$) can move to a community in which the rich are a majority.²

ρ_t	Fraction of rich in period t ($= 0, 1$)
w_p	Income of a poor individual
w_r	Income of a rich individual
π_p	Fraction of poor becoming rich (= subjective probability of a poor to become rich in period 1)
π_r	Fraction of rich which stays rich (= subjective probability of a rich to stay rich)
m_t	Migration cost in period t ($= 0,1$)
T_t	Tax paid by a rich person in period t ($= 0,1$)
L_t	Lump-sum subsidy recieved by a poor person in period t ($= 0,1$).

Table 1: Notation

We assume that all rich individuals are treated equally in a particular period, regardless of whether they were rich or poor in previous periods. All poor individuals in a community are also treated identically. The tax therefore only depends on present income. In this case it is natural to think that the poor would like to tax the rich and to redistribute the tax proceeds equally among the poor.

² Later it will be shown that in period 1 a poor living in a rich community has no incentive to move to a community ruled by the poor if this imposes the same period-1 moving costs as moving from a poor to a rich community. Moreover, the new community may discriminate against new members; e.g., to be eligible to receive aid from a poverty program, regions may require people to have lived there for some time.

However, as the rich have an outside option, not all their income can be taxed. The incentive compatibility constraint in period 1 is

$$(1) \quad m_1 \geq T_1$$

where T_1 is the tax to be paid by a rich. If the tax were larger, the rich would move to the rich community. In period 0 there is a similar incentive compatibility constraint.

$$(2) \quad u(w_r - T_0) + \pi_r u(w_r - T_1) + (1 - \pi_r) u(w_p + L_1) \geq u(w_r - m_0) + \pi_r u(w_r) + (1 - \pi_r) u(w_p).$$

We assume that individuals maximize the sum of expected utility of income in both periods: $EU = u(y_0) + Eu(y_1)$ where y_0 is period-0 net income and y_1 is period-1 net income (i.e., after tax and redistribution). The small u are concave period utility functions.³ T_0 is the tax levied on rich individuals in period 0 in a poor community. L_1 is the lump-sum redistributions received by any poor individual in period 1. The right hand side of (2) describes the expected utility of an individual who is rich in period 0 and decides to move to the rich community. The left hand side describes the expected utility if he stays. The discount rate of time preference is set equal to zero for simplicity. Condition (2) takes into account that in period 1 all rich in a poor community will be taxed by $T_1 = m_1$ according to constraint (1). The period-1 transfers are determined by

³ We disregard any status effects of living as a rich among poor or among similarly rich. For the impact of status seeking on risk-taking behavior see Konrad and Lommerud (1992).

$$(3) \quad L_1 = [\pi_r \rho_0 + \pi_p (1 - \rho_0)] m_1 / [(1 - \pi_r) \rho_0 + (1 - \pi_p) (1 - \rho_0)] \equiv \rho_1 m_1 / (1 - \rho_1),$$

again taking into account $m_1 = T_1$. In (3), ρ_t is the fraction of the population which is rich in period t ($= 0, 1$). The poor fulfill both incentive compatibility constraints and maximize their utility by their choice of T_0 and T_1 .

Note that $L_1 < m_1$. If moving costs are symmetric, this makes clear why it is not worthwhile for a rich in period 0 to move to a poor community in case he becomes poor in period 1. In this case his moving costs would be higher than L_1 , his insurance benefit.

Note also that the equilibrium values of taxes and redistribution are typically not Pareto optimal. In particular, there is a commitment problem. In period 1 they will always levy a tax $T_1 = m_1$. They cannot commit themselves to a smaller tax in period 1, partially because the majority of individuals in period 1 consists of different individuals than in period 0. Assume, e.g., $m_0 = m_1 = m$, $\pi_r = 1 - \pi_p = 1$. In this case, (2) becomes $u(w_r - T_0) + u(w_r - T_1) \geq u(w_r - m) + u(w_r)$. Given decreasing marginal utility of income, the best the poor could do is to levy an equal tax T in both periods. By risk aversion, in this case, $2T > m$. The rich know that in period 1 there will be a tax $T_1 = m$. Therefore, if the poor choose $T_0 > 0$, all rich will move to the rich community in period 0. This dilemma is similar to the taxation dilemma considered by Kotlikoff, Persson and Svensson (1988).

The insurance property of the equilibrium is most obvious in the case with no moving costs in period 0 ($m_0 = 0$), but positive moving costs in period 1. If there were no insurance benefit, the rich would move for any positive tax rate. However, it turns out that tax rates that make a rich person stay in the poor community can be positive in both periods. Redistribution in period 1 is determined by m_1 only. Obviously, for appropriate parameter values and sufficiently declining marginal utility between w_p and w_r ,

$$\pi_r u(w_r - T_1) + (1 - \pi_r) u(w_p + L_1) > \pi_r u(w_r) + (1 - \pi_r) u(w_p)$$

can hold. In this case the poor can extract revenue from the rich in period 0, even if there are no moving costs in period 0, up to the amount that is equivalent to this difference in period-1 expected utility.

Now turn to the comparative statics of the equilibrium. Utility of the poor is increasing in the redistributions in the first period, $L_0 \equiv \rho_0 T_0 / (1 - \rho_0)$. Their expected utility is also increasing in L_1 if their probability of becoming rich is sufficiently small. We can now obtain the reactions of L_1 from (3):

$$(4) \quad dL_1/d\rho_0 = (\pi_r - \pi_p)m_1/(1 - \rho_1)^2 > 0,$$

$$(5) \quad dL_1/dm_1 = \rho_1/(1 - \rho_1) > 0,$$

$$(6) \quad dL_1/d\pi_r = \rho_0 m_1 / (1 - \rho_1)^2 > 0.$$

The redistributions are larger the larger the initial proportion of rich, the moving costs in period 1, and the probability of rich individuals staying. Similarly, from (2) we get

$$(7) \quad dT_0/dw_r^1 = \pi_r [u'(w_r - m_1) - u'(w_r)] / u'(w_r - T_0) > 0,$$

$$(8) \quad dT_0/w_r^0 = [u'(w_r - T_0) - u'(w_r - m_0)] / u'(w_r - T_0) \begin{cases} \geq \\ \leq \end{cases} 0 \Leftrightarrow T_0 \begin{cases} \geq \\ \leq \end{cases} m_0$$

$$(9) \quad dT_0/dm_0 = u'(w_r - m_0) / u'(w_r - T_0) > 0$$

$$(10) \quad dT_0/dm_1 = \frac{-\pi_r u'(w_r - m_1)}{u'(w_r - T_0)} + \frac{\rho_1}{1 - \rho_1} \frac{(1 - \pi_r) u'(w_p + L_1)}{u'(w_r - T_0)},$$

$$(11) \quad dT_0/d\pi_r = \frac{u(w_r - m_1) - u(w_r)}{u'(w_r - T_0)} + \frac{u(w_p) - u(w_p + L_1)}{u'(w_r - T_0)} + \frac{(1 - \pi_r)u'(w_p + L_1)}{u'(w_r - T_0)} \frac{\partial L_1}{\partial \pi_r},$$

and

$$(12) \quad dT_0/d\rho_0 = \frac{(1 - \pi_r)u'(w_p + L_1)}{u'(w_r - T_0)} \frac{\pi_r - \pi_p}{(1 - \rho_1)^2} m_1 > 0.$$

Some of these signs deserve comment. Inequality (7) shows that the tax in period 0 can be larger if the period-1 income of rich people w_r^1 is larger. The reason is that in period 1 the advantage of having moved in period 0 and being rich in this period is reduced by decreasing marginal utility. The sign of (8) is ambiguous. Only if the tax in period 0 exceeds the moving costs in this period, if the income of the rich in period 0 increases can the tax be increased. The reason is the same as the one explaining (7). Equation (10) shows that an increase in the period-1 moving costs has an ambiguous result. The first effect measures the utility loss in period 1 of increased taxes $dT_1 = dm_1$ if the person stays rich. An individual who considers whether to move in period 0 must consider the overall tax burden of staying. An increase in period 1's tax tightens the incentive compatibility constraint of period 0 with respect to T_0 . On the other hand, an individual who is rich in period 0 and poor in period 1 obtains higher redistributions if the tax is increased. This is described by the second term on the right hand side of (10). These benefits are higher the higher the taxes, the higher his probability of being poor in period 1, and the larger the fraction of rich in period 1. Note that an individual gets these benefits when poor, i.e., when his marginal utility of income is high.

The value of m_1 which maximizes present tax payments is implicitly determined by $dT_0/dm_1 = 0$, or by

$$(13) \quad \frac{u'(w_p + L_1)}{u'(w_r - m_1)} = \frac{\pi_r}{1 - \pi_r} \frac{1 - \rho_1}{\rho_1}.$$

The rich receive only their reservation utility level which is determined by the period-0 moving costs. This reservation utility level is independent of their

period-1 moving costs. If period-1 moving costs can be freely chosen in period 0 by the majority of poor, then the rich are indifferent with respect to their choice. The poor may not be indifferent, however, as will be derived later.

Once the rich have decided not to move in period 0 and taxation in period 0 is decided, they are not indifferent to changing their moving costs in period 1. An increase of moving costs m_1 at this point would mean an additional redistribution from the rich to the poor.

Equation (11) says that the poor may get more or less tax revenue in period 0 the smaller the probability is that a rich person becomes poor. Note that $\rho_1 < 0.5$ implies $m_1 > L_1$. If $d\pi_r > 0$, the rich are less likely to benefit from redistribution and more likely to suffer from being taxed in period 1. This decreases the tax they are willing to accept in period 0. On the other hand, by (6), $d\pi_r > 0$ increases L_1 , i.e. the subsidies someone obtains if he is poor in period 1. This makes a rich in period 0 willing to pay more taxes T_0 . It depends on the parameters which of these effects dominates. Finally, equation (12) shows that the first-period tax is higher if there are more rich in the first period. Notice that this result is not trivial. We do not say that the total tax proceeds increase with the fraction of rich, which is also true but not surprising. Instead, the period-0 payments of each rich person is higher if there are more rich. The intuition of this result is as follows. If there are more rich in period 0, for $\pi_r > \pi_p$ there are also more in period 1. This increases the insurance benefits of becoming poor and staying in the community.

The expected utility of a poor individual in period 0 depends on the values of ρ_0 , w_r^0 , w_r^1 , m_0 , m_1 and π_r . We get

$$\begin{aligned}
 (14) \quad dEU/d\rho_0 = & \\
 & u'(w_p + L_0) \left[T_0 / (1 - \rho_0)^2 + \rho_0 (1 - \pi_r) u'(w_p + L_1) (\pi_r - \pi_p) m_1 / [u'(w_r - T_0) (1 - \rho_0) (1 - \rho_1)^2] \right] \\
 & + (1 - \pi_p) u'(w_p + L_1) (\pi_r - \pi_p) m_1 / (1 - \rho_1)^2 \\
 & > 0,
 \end{aligned}$$

$$(15) \quad dEU/dw_r^0 = u'(w_p+L_0) (dT_0/dw_r^0) \rho_0/(1-\rho_0) \left\{ \begin{matrix} \geq \\ \leq \end{matrix} \right\} 0 \Leftrightarrow T_0 \left\{ \begin{matrix} \geq \\ \leq \end{matrix} \right\} m_0,$$

$$(16) \quad dEU/dw_r^1 = u'(w_p+L_0)(dT_0/dw_r^1) \rho_0/(1-\rho_0) + \pi_p u'(w_r-m_1) > 0,$$

$$(17) \quad dEU/dm_0 = u'(w_p+L_0) (dT_0/dm_0) \rho_0/(1-\rho_0) > 0,$$

$$(18) \quad \begin{aligned} dEU/dm_1 &= u'(w_p+L_0) (dT_0/dm_1) \rho_0/(1-\rho_0) \\ &\quad - \pi_p u'(w_r-m_1) + (1-\pi_p) u'(w_p+L_1) \rho_1/(1-\rho_1), \end{aligned}$$

$$(19) dEU/d\pi_r = u'(w_p+L_0) (dT_0/d\pi_r) \rho_0/(1-\rho_0) + (1-\pi_p) u'(w_p+L_1) \rho_0 m_1 / (1-\rho_1)^2.$$

Equation (14) shows that the poor individuals like a high percentage of rich. However, they cannot afford the risk of the rich individuals constituting the majority in any period. They would therefore like to choose the maximum fraction of rich individuals which fulfills this requirement. Generally, (14) could cause some instability; If communities can choose ρ_0 freely they may choose one for which the rich are in a majority in period 1 with some positive probability. However, this is not a relevant problem. Migration is costly and the poor extract the maximum amount of resources from rich that are already in their community. This policy rules out that it is attractive for a rich individual from another region to spend some migration cost to move into this community. The poor make conditions for the rich just not bad enough to make it attractive to emigrate, but this implies that conditions are definitely bad enough for a rich not to immigrate.

Equation (15) shows that poor individuals prefer the rich to be very rich in the first period only if taxes paid in the first period are higher than the moving costs. $T_0 > m_0$ is a possible case because the rich get the insurance benefits in period 1 only if they do not move. Equation (16) shows that the poor prefer the rich in

period 1 to be as rich as possible. Notice that this effect arises because some of the poor face a positive probability of becoming rich in period 1, and because this allows higher taxes in period 0. Equation (17) says that the poor want high moving costs in period 0. Equation (18) shows that there may be an interior optimum of period-1 moving costs. If moving costs m_1 are zero, there is no tax in period 1 and no insurance benefit to anyone. If m_1 is infinitely high, probably all rich will be gone in period 1. Also in this case insurance is impossible.

Finally, equation (19) shows that an increase in the probability that a rich person stays rich has two possibly counteracting effects. It changes the rich's willingness to pay for income insurance, similar to the effect described in equation (11). This is expressed by the first term on the right hand side of (19). The second term describes the redistributions that have to be shared among less individuals if less rich become poor in period 1. The more individuals stay rich the larger are the second period tax proceeds and the larger the share each poor person gets.

3. Moral hazard

Individuals usually have some influence on whether they are rich or poor. In particular, one could expect that a rich person's probability of staying rich is not exogenous but it depends on the person's effort. If there is redistribution in period 1, the incentive to use resources to stay rich is probably smaller than if there is no income redistribution: like any insurance with community rating, the income redistribution can cause moral hazard. The rich reduce their effort to stay rich to a socially undesirably low level. This section studies the effect of moral hazard on the equilibrium amount of redistributive taxation that is chosen by the poor.

Suppose that a rich can influence the probability of becoming poor in period 1 by choosing a level of effort e in period 0, so that $\pi_r'(e) \equiv d\pi_r/de > 0$, and

$\pi_r'' \equiv d^2\pi_r/(de)^2 < 0$.⁴ The higher the effort level, the higher the probability that a rich person in period 0 is also rich in period 1, but effort is decreasingly effective. This changes the equilibrium as follows.

Incentive compatibility condition (1) remains unchanged. Still, in period 1, if there is a majority of poor, there is nothing that could prevent them from taxing the rich by an amount that makes them indifferent on whether to stay or to move. If a person is rich in period 0, he may migrate to a community of rich. In this case he chooses a level of effort that maximizes his expected lifetime utility given that he migrates in period 0, i.e., he maximizes

$$(20) \quad EU^m(e) = u(w_r - m_0 - e) + \pi_r(e) u(w_r) + (1 - \pi_r(e)) u(w_p),$$

where e is the amount of resources (effort) spent on self protection against the income risk. The only difference compared to section 2 is that the probability of becoming poor in period 1 depends on effort e that lowers the consumption in period 0. The first-order condition that describes an interior solution for an optimal effort level e^m if the individual moves to a rich community is

$$(21) \quad \pi_r'(e^m) = u'(w_r - m_0 - e^m) / [u(w_r) - u(w_p)].$$

The expected utility that a rich can achieve in this case is denoted by EU^m .

If he stays in the community that is governed by the poor, he knows that there will be a tax $T_1 = m_1$ in period 1. For any given tax T_0 in period 0 the rich can calculate an optimal level of income-loss prevention. His utility is

⁴ Also π_p could be endogenous. The incentive to become rich is also reduced if the rich are taxed and the poor are subsidized. For simplicity we restrict our attention to the case of endogenous π_r , though.

$$(22) \quad EU^s(e, T_0) \equiv u(w_r - T_0 - e) + \pi_r(e) u(w_r - m_1) + (1 - \pi_r(e)) u(w_r + L_1(e, T_0)),$$

with

$$(23) \quad L_1 = \frac{\pi_r(e)\rho_0 + \pi_p(1-\rho_0)}{(1-\pi_r(e))\rho_0 + (1-\pi_p)(1-\rho_0)} m_1.$$

The first-order condition that implicitly determines the optimal income-loss-prevention effort in case the person does not move to a rich community is

$$(24) \quad \pi_r'(e^s) = u'(w_r - T_0 - e^s) / [u(w_r - m_1) - u(w_p + L_1)].$$

The level of effort that solves (24) is labelled e^s , and is a function of the tax T_0 that is levied in period 0. Using the implicit function theorem we obtain

$$(25) \quad \frac{de^s}{dT_0} = \frac{-u''(w_r - T_0 - e^s)}{u''(w_r - T_0 - e^s) + \pi_r''[u(w_r - m_1) - u(w_p + L_1)] - \pi_r' u'(w_p + L_1) [\partial L_1 / \partial e^s]},$$

where, by (23),

$$(26) \quad \frac{\partial L_1}{\partial e^s} = \frac{\pi_r'(e^s)\rho_0}{[(1-\pi_r)\rho_0 + (1-\pi_p)(1-\rho_0)]^2} > 0.$$

The numerator of (25) is positive. The denominator consists of three negative terms. Therefore, $\frac{de^s}{dT_0}$ is negative. The effort level is lower the higher the first-period tax, as this increases the opportunity cost of investing in staying rich. Suppose $EU^{s*}(e^s, T_0)$ is the expected utility of a rich in period 0 if the poor choose a tax T_0 in period 0 and, given this tax, the rich choose their individually optimal level of effort that is described by (24), (25) and (26). The incentive compatibility constraint for a choice of T_0 that corresponds to (2) is

$$(27) \quad EU^{s*}(T_0) \geq EU^{m*}.$$

The utility of a rich in case he moves to a rich community in period 0 shall not be larger than the utility of staying.

The poor take the function $e^s(T_0)$, and the incentive compatibility constraints (1) and (27) as given and choose a tax policy T_0 that is optimal from their perspective. Clearly, the moral hazard effect weakens their position. Condition (27) is fulfilled for smaller T_0 than it is for a situation in which the rich cannot adjust to the fact that, if he stays, his advantage of being rich is smaller, and his disadvantage of becoming poor is higher than if he emigrated in period 0. As is well-known from insurance theory, moral hazard may lead to a break down of insurance markets.

Note that, by their choice of T_0 , the poor have an influence on whether the insurance mechanism will break down or not, if T_0 is known before the migration decision in period 0 has to be made. The poor will maximize

$$(28) \quad EUP = u(w_p + \frac{\rho_0}{1-\rho_0} T_0) + \pi_p u(w_r - m_1) + (1-\pi_p) u(w_p + L_1)$$

subject to the constraint (27), with L_1 defined in (23). If effort is a function of T_0 , it is not necessarily true that the poor choose the maximum T_0 that is compatible with (27). This can be seen from

$$(29) \quad dEUP/dT_0 = u'(w_p + \frac{\rho_0}{1-\rho_0} T_0) + (1-\pi_p) u'(w_p + L_1) \frac{dL_1}{des} \frac{des}{dT_0},$$

with $\frac{dL_1}{des} \frac{des}{dT_0} < 0$. The first term in (29) is the effect that also shows up without moral hazard. An increase of T_0 increases redistributions in period 0 and a poor benefits from increased redistributions. The second term describes that an increase of T_0 decreases redistributions in the second period indirectly. Each rich will pay the same tax $T_1 = m_1$; however, if the rich pay a higher tax in period 0, their opportunity cost of trying to stay rich are higher. Therefore, there are fewer rich in

period 1 who can be taxed. Suppose that T_0^* is the maximum tax that fulfills incentive compatibility (27), and \hat{T}_0 is the tax for which $dEUP/dT_0 = 0$. The poor will choose $T_0 = \min(T_0^*, \hat{T}_0)$.

4. Communities with a public good

Similar results apply when the issue is provision of a public good rather than straightforward income redistribution. Not much changes if the tax proceeds are used to finance a public good. One could imagine that the public goods or publicly provided goods benefit only the poor. For example, publicly provided schools may be just bad enough to make the rich send their children to private schools. Similarly, governmental provision of health care may be just bad enough to make it unattractive for the rich.

So far we considered a situation where the poor exploit the rich in communities with a majority poor. We assumed that the rich in communities with a majority rich do not exploit the poor. One could also expect that the poor that live in a community with a majority rich are exploited by the rich. The rich could, e.g., collect a poll tax to finance a public good which does not yield much benefit to poor individuals. An example will illustrate the effect. As in DeBartolome (1990) assume that service levels of public goods are decided by majority vote and financed by a head tax. Suppose that there are three members of the community. If they are all rich, the optimum level of the public good costs \$2000 per capita and gives benefits of \$2,100 to each. A poor person gets no benefit from this public good. A rich person in period 1 therefore fears that he will suffer if poor in period 2. He may thus prefer to be in a community with 2 poor persons. Then, if a person becomes poor he will be in a majority and the expensive public good will not be provided.

Let the probability that a rich person becomes poor next period be $(1-\pi_r)$. Consider a particular person, Smith. He will be either rich or poor in period 2, and

the majority may be either rich or poor in period 2. Suppose that all three are initially rich. The table below gives the probability of each event multiplied by the utility under each event.

	Majority Rich	Majority Poor
Smith Rich	$100[(\pi_r)^2 + 2(1-\pi_r)\pi_r]$	$0 (1-\pi_r)^2$
Smith Poor	$(-2000)\pi_r^2$	$0[(1-\pi_r)^2 + 2\pi_r(1-\pi_r)]$

Table 2

Smith's expected consumer surplus is then $(1-\pi_r)(-2000)\pi_r^2 + \pi_r 100[\pi_r^2 + 2\pi_r(1-\pi_r)]$. If instead Smith is in a community which has a majority of poor persons in both periods, then his consumer utility is 0. Solving the equation shows that Smith, who is initially rich, prefers to be in a community with poor persons for all $(1-\pi_r)$ in the interval $(.12 < (1-\pi_r) < .72)$. Similar calculations will apply for the utility of a rich person if he is in a community with initially only one poor person and two rich persons. Note that this preference for heterogeneity holds even if there is no risk aversion. Under risk aversion the desire to live among the poor will be even stronger.

5. Discussion

The voting mechanism in a two-period model of fiscal federalism shows that redistributive income taxation can be an insurance mechanism which works even if there is no possibility for intertemporal commitment. Traditional insurance requires intertemporal commitment. Where this commitment is absent, voting on redistributive taxation and public good provision are second-best tools for providing some insurance.

Of course, insurance reduces the incentives of earning high income. An

individual's insurance premium equals the expenses for a policy guided by the interest of the presently poor, instead of the presently rich. Since this is an average premium, which does not consider the effort of a particular individual to stay rich, a moral hazard problem may arise. Insurance may also suffer from adverse selection. Persons who feel especially safe about staying rich will move to a community where they are ruled by a majority of rich. These are standard properties of insurance markets. They may explain why some rich people prefer to live in communities which are ruled by the poor where others prefer to form their own communities which are ruled by the rich.

The mechanism has more applications and yields some testable hypotheses. We expect that there are more heterogeneous communities ruled by the poor in countries with high migration costs. Also, higher mobility of the income distribution would favor heterogeneous communities governed by the poor. We expect to observe heterogeneity with respect to characteristics which are intertemporally unstable. Whites do not incur a risk of becoming black (and vice versa of course). Men are unlikely to become women. In the middle ages aristocrats faced a negligible risk of becoming farmers. Discrimination and self-selection with respect to these characteristics therefore cannot be overcome by insurance motives.

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University of Konstanz
Sonderforschungsbereich 178
"Internationalization of the Economy"

**Workshop on
International Political Economics of Taxation**

July 2-3, 1992
University of Konstanz
Großer Sitzungssaal, V 1001

Thursday, July 2, 1992

- 10.00 Opening Address
 Hans-Jürgen Vosgerau (Speaker of the SFB 178)
 Introduction
 Bernd Genser (SFB 178)
- 10.30 Chair: Bernd Genser (SFB 178)
 "Intergovernmental Tax Competition"
 Bruno S. Frey (University of Zürich)
- 11.30 "International Tax Competition and Public Goods Supply:
 Alternative Views of Government Behaviour"
 Andreas Haufler (University of Konstanz)
- 12.30-14.00 Lunch (IBZ, University of Konstanz)
- 14.00 Chair: Gebhard Kirchgässner (University of St.Gallen)
 "Explaining the Use of Related Tax Instruments"
 Stanley L. Winer (Carleton University/Ottawa) and Walter
 Hettich (California State University/Fullerton)
- 15.00 "Intertemporal Commitment Problems and Voting on
 Redistributive Taxation"
 Amihai Glazer (Carnegie Mellon University/Pittsburgh)
 and Kai A. Konrad (University of München)
- 16.00-16.30 Coffee Break
- 16.30 Chair: Friedrich Breyer (University of Konstanz)
 "The Effects of Tax Administration on Tax Morale"
 Werner W. Pommerehne (University of Saarbrücken)
 and Bruno S. Frey (University of Zürich)
- 17.30 "Fuel Taxation in EC Countries: A Political-Economy
 Approach"
 Bernd Genser and Hannelore Weck-Hannemann (SFB 178)
- 19.30 Dinner (Schwedenschenke, Insel Mainau)

Friday, July 3, 1992:

- 08.30 *Chair: Heinrich Ursprung (SFB 178)*
 "Fiscal Policy During the Transition in Eastern Europe"
 Roger H. Gordon (University of Michigan/Ann Arbor)
- 09.30 "Corporate Income Tax Competition, Double Taxation
 Treaties, and Foreign Direct Investment"
 Eckhard Janeba (University of Bonn)
- 10.30-11.00 Coffee Break
- 11.00 *Chair: Hannelore Weck-Hannemann (SFB 178)*
 "The Development of the Shadow Economy under Changing Tax
 Systems and Structures: Some Theoretical and Empirical
 Results for Austria"
 Friedrich Schneider (University of Linz) and Reinhard Neck
 (University of Bielefeld)
- 12.00 Closing Address
 Bernd Genser (SFB 178)
- 12.30 End of Workshop
- 13.00 Lunch (Hotel Mainaublick, Egg)

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