However, if the variance of θ_1 is large relative to that of θ_2, the market will break down at least for the better risks and perhaps even for all risks. The appendix presents an example where θ_1 and θ_2 are such that none of the workers will be able to find wage insurance in the private market.

In line with the Subsidiarity Principle, the non-insurability of θ_1 and θ_2 is the justification for government insurance through the redistributive tax system. Assume there is a linear labour income tax at rate τ and a lump sum rebate in the form of a monetary transfer or a public good which equals the expected tax revenue:

$$T = \tau \cdot l. \tag{19}$$

The probability distribution of after-tax income will then be given by

$$Y = \theta_1 \cdot \theta_2 \cdot l\,(1-\tau) + T - EC + r\overline{K}. \tag{20}$$

The first two moments of this distribution are

$$\mu = l - EC + r\overline{K} \tag{21}$$

and

$$\sigma = (1-\tau)\cdot S(\theta_1 \cdot \theta_2)\cdot l \tag{22}$$

where $S(\cdot)$ is the standard deviation operator.[8] The expected income μ is not changed due to the government intervention and the standard deviation σ shrinks to $(1-\tau)$ times its pre-tax value. Since the distributions which are attainable with alternative values of τ all belong to the same linear class it is clear that expected utility will increase for a globally risk averse worker when a redistributive tax system is introduced.[9]

[8]Note that the assumptions made about θ_1 and θ_2 imply that $E(l \cdot \theta_1 \cdot \theta_2) = l \cdot E\theta_1 \cdot E\theta_2 = l$.

[9]In the model as set up the optimal tax rate would be 100 %. A more sophisticated model would have to include a counterweight to the direct welfare gain from insurance by allowing for a moral hazard effect, but it would also have to include the beneficial risk taking effects that can be expected from redistributive taxation (see Sinn 1995a). With moral hazard the optimal tax rate is typically less than 100 %, but it is also more than 0 %. As the

To bring about a welfare increase it is not necessary for the government to have superior information than the private insurance market. However two important assumptions have to be met. First, the redistribution scheme must be known before θ_1 becomes known. Second, the government must be able to force the "good risks" to participate by paying their taxes.

The second condition is crucial for understanding the implications of fiscal competition among redistributive tax systems. Suppose the borders are opened and both capital and labour can freely migrate across them. This liberty will not affect the private insurance contract, but it will affect the insurance through redistributive taxation since the government loses its power to enforce the payment of taxes. People can migrate between countries after θ_1 and/or θ_2 have become known, but they cannot "migrate" between insurance contracts after C has become known. Let $i = 1, \ldots, n$ denote the set of competing countries and suppose there is a migratory equilibrium. All countries will have the same rate of interest

$$r_i = r_j \quad \forall\, i,j = 1, \ldots, n, \tag{23}$$

and the wage income net of redistribution will also have to be the same in all countries:

$$\theta_1 \cdot \theta_2 \cdot l_i \cdot (1-\tau_i) + T_i = \theta_1 \cdot \theta_2 \cdot l_i \cdot (1-\tau_j) + T_j \quad \forall\, i,j = 1,\ldots,n. \tag{24}$$

Note that it is not sufficient that the expected utility is the same in each country. Since migration is not limited to the ex-ante phase, the realized utility ex post must also be the same everywhere, and this is only the case if the realized net-of-tax labour income is the same for each value of $\theta_1 \cdot \theta_2$. This becomes clear if (19) is used to write (24) in the form

$$l_i\left[\theta_1 \cdot \theta_2 - \tau_i(\theta_1 \cdot \theta_2 - 1)\right] = l_j\left[\theta_1 \cdot \theta_2 - \tau_j(\theta_1 \cdot \theta_2 - 1)\right] \quad \forall\; i,j = 1,\ldots,n. \tag{25}$$

welfare loss due to moral hazard is a second-order effect while the insurance benefit is a first-order effect, it pays always to introduce some government insurance through redistributive taxation.

Obviously, this equation can hold uniformly for all variates of $\theta_1 \cdot \theta_2$ if, and only if, $l_i = l_j$ and $\tau_i = \tau_j \ \forall \ i,j = 1,\dots,n$.

While a symmetrical solution with redistributive taxation is the only possible candidate for an equilibrium, it is easy to show that an equilibrium does not, in fact, exist if governments act on behalf of their citizens. Note that (16), (23) and the linear homogeneity of the production function imply that a migration of workers will always be coupled with a migration of capital so as to keep the factor prices fixed at the international level.

Consider an initial situation where condition (25) holds. The single country will have an incentive to deviate from this condition by reducing its tax rate τ a little and reducing the transfer T because this will attract net contributors of public funds and deter the net receivers. Suppose τ and T are varied so as to satisfy the budget constraint (19) for a given size and composition of the population. Then there is clearly a Pareto improvement with regard to all those people the national government could possibly care about. "Rich" domestic residents with $\theta_1 \cdot \theta_2 > 1$ will be better off since they pay less, and so it will be with the rich who immigrate from other countries. The "poor" with $\theta_1 \cdot \theta_2 < 1$ would lose from the tax cut if they stayed, but they will not stay. By migrating to other countries they can maintain their income position. The government which finds itself only with net contributors of public funds could even afford to subsidize the emigration of the poor. This makes it obvious that a redistributive equilibrium in systems competition will not exist. The welfare state has no survival chance when an unbridled tax competition is allowed.

The breakdown of the welfare state is a clear efficiency loss. Despite the fact that there is a Pareto improvement from a single country's point of view, given the behaviour of all other countries, there is a Paretian welfare loss if all countries behave in the way described. The increase in expected utility which redistributive taxation generates from an ex ante point of view is no longer available. The only stable equilibrium with fiscal competition is one where $\tau_i = \tau_j = 0 \ \forall \ i,j = 1,\dots,n$.[10] A single country that deviates from this equilibrium by raising τ to positive values would deter the rich and attract the poor thus creating a fiscal deficit. And a single country that deviates by lowering τ below zero would deter the poor and attract the rich, which again implies a fiscal deficit since it would now be the rich who are net receivers and the poor who are net contributors of public funds.

[10]This result can also be derived for a redistribution among factors that are not perfect substitutes as in the present model. See Wildasin (1991, 1992). The difficulty of redistributing income between mobile factors has been observed by a number of authors including R. Musgrave (1969) and Oates (1972).

The deeper economic reason for the efficiency loss resulting from systems competition is again the Subsidiarity Principle, the fact that the government insures those risks which cannot be insured privately. A private solution is infeasible because private redistribution contracts cannot be made early enough, and without a contract, redistribution cannot be enforced. Adverse selection becomes unavoidable. In a closed economy, the government can remedy the situation because it can provide insurance through the tax law. It has the power to enforce the necessary resource transfer between the lucky and the unlucky without having to rely on voluntary private contracts. In an open economy, however, this power vanishes with the right to migrate across the borders. The good risks leave the insurance state just as they leave the insurance company. Obviously, systems competition suffers from the same type of adverse selection that justified the government intervention in the first place. Only if the government did not respect the Subsidiarity Principle and offered signed insurance contracts under the rules of the civil law as private companies do, would a competition of insurance states then be able to work.

4. Cassis-de-Dijon, the Lemons Problem and the Competition of Laxity

Consider now the final example for the role of the Subsidiarity Principle: the competition of quality standards. The establishment of the origin principle for product standards is often seen as one of the great achievements of the Common European market. A commodity that has been legally produced in one country which respects all the existing product regulations there can be freely exported to any other country in the community. The importing country cannot, in general, require its own product specifications to be met. The breakthrough came with the Cassis-de-Dijon judgement of the European Court in Straßburg in 1979 which has since been applied to a number of other cases, including beer imports into Germany and pasta imports into Italy.

The great advantage of the Cassis-de-Dijon judgement is that it helps prevent the single states engaging in protectionist practices. However, there may be not only advantages. The drawback is a potential erosion of consumer protection standards which may result from the national governments attempting to give their industries a competitive lead by relaxing their regulatory constraints. *Competition of laxity* is an appropriate description of this phenomenon.

Whether or not the competition of laxity can be seen as welfare reducing depends again very much on the role of the state. If governments violate the Subsidiarity Principle there may be cases in which a relaxation of regulatory constraints improves the efficiency of the system. However, if the Subsidiarity Principle is respected, as assumed in this paper, then consumer protection laws correct market failure, and if they correct market failure, it may not be wise to subject these laws themselves to a market's decision. The market for consumer protection laws may again suffer from market failure.

The kind of market failure justifying consumer protection laws is Akerlof's (1970) lemons problem. If consumers cannot distinguish product qualities, the sellers cannot convincingly differentiate the price of a product according to quality. The sellers, who are better informed than the consumers, will therefore withold the good qualities and oversupply the bad qualities. Consumers will know what the average quality supplied in the market is and will therefore not pay too much, but, as long as they cannot determine the quality of the goods they buy beforehand, the market will be trapped in a low quality equilibrium.

The lemons problem is often presented as an adverse selection problem, where the sellers have a given set of consumer durables which they can either use themselves (existing cars!) or sell in the market. However, there are equally severe moral hazard problems in production involved. If the consumers cannot distinguish qualities, the producers will save production cost by reducing their product quality, and, in equilibrium, the qualities produced will be lower than those that would have been offered to informed owners. The national consumer protection laws and guide lines set out regulatory measures to avoid this welfare loss. In many cases the measures include the obligation to inform the consumers, but often they simply define minimum quality standards.

With most of the millions of products traded in a market economy such standards may not be necessary since consumers are sufficiently well informed about qualities. This is the case with products whose quality can be detected by using them and which are frequently purchased. Expensive products also do not suffer much from the lemon problem since it pays for the consumers to acquire the relevant information before making a purchase. However, the lemon problem may be severe with other products. These are products which are not frequently purchased, whose quality can only be detected with a small probability with use or whose value is too low to justify intensive information gathering. Food is a good example. Here, minimum quality standards are often defined in terms of maximum content of dangerous ingredients. These can be very harmful but are difficult to detect by experience since there is only a small probability that the damage (cancer!) will occur. Also, food is relatively cheap. Typically, the variety of food products bought by a single person is so large, and the value per item so small, that it would not be worth becoming a specialist in food chemistry before going to the supermarket. Hiring a food specialist through the government may be the more efficient solution.

The rationale for consumer protection and the risks involved with systems competition can easily be demonstrated by a simple model. Let x be the quality of a lemon good and y the quality of another good that can be transformed into x, say leisure. The unit cost of producing x by giving up y is $c(q), c'>0, c''>0$, where q is the quality chosen. Let y be the numeraire and P the price of x. Assume the consumer can observe the average quality, $\tilde{q}$, in the market, but not the quality of the single item he buys. The consumer's problem is to maximize his (well behaved) utility function,

(30) $$\max_{x,y} U(x)+V(q)+y,$$

subject to the budget constraint

(31) $$\bar{y}=y+Px.$$

The consumer cannot choose q but assumes that q equals $\tilde{q}$. The first order condition for his problem is simply Gossen's second law:

(32)
$$U'(x) = P.$$

The producer's problem is

(33)
$$\max_{q,x} \left[P - c(q)\right] x.$$

The first-order conditions are

(34)
$$P = c(q)$$

and

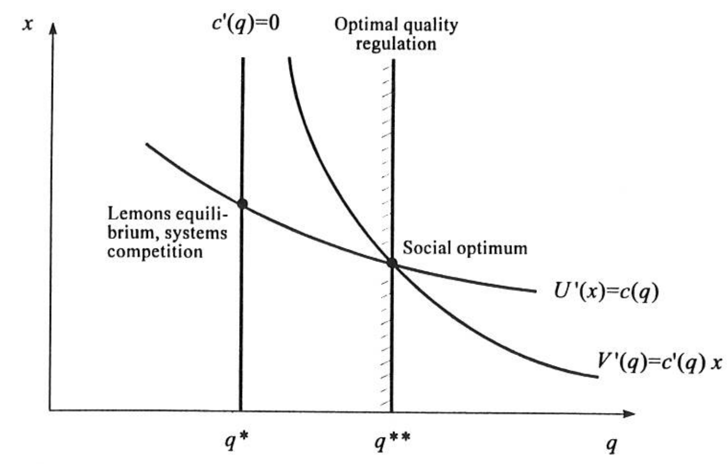
(35)
$$c'(q) = 0 \quad \text{for } x > 0.$$

Equations (32) and (34) imply that

(36)
$$U'(x) = c(q).$$

Equation (35) and (36) they define the market equilibrium under moral hazard. Equation (35) shows that the firm makes no effort to increase quality and equation (36) ensures that the consumer's marginal willingness to pay for a unit of the commodity equals marginal cost. The solution is illustrated in Figure 2. The flatter of the two downward sloping curves is the geometrical locus of points where (36) is satisfied. The vertical line is the geometrical locus of points where (35) is satisfied. It is assumed that this is the case for some positive value of q, call it q^*. The intersection of the two lines defines the lemons equilibrium.

Figure 2: *The competition of laxity*



To see that the equilibrium is inefficient, consider the social planner's problem

(37)
$$\max_{x,q} U(x) + V(q) + \overline{y} - c(q)x.$$

The necessary conditions for this problem are (36) and

(38)
$$V'(q) = c'(q)x.$$

Equation (38) shows that it is efficient to balance the marginal utility from a quality increase with its marginal costs. Since $V' > 0$ while $c'' > 0$, a higher quality than the one chosen by the market turns out to be optimal. In Figure 2, the social optimum is characterized by the intersection between the flat curve representing condition (36) and the steeper curve representing (38). Assume that the point of intersection exists; i.e., that there is a social optimum. Then the solution point must be to the right of q^*. This becomes obvious if it is noted that V' and x are non-negative and that the curve representing (38) can only asymptotically reach the vertical line above q^* as q shrinks to q^*: When q approaches q^*, $c'(q)$ approaches zero and so x has to go to infinity to keep the right-hand side of (38) in balance with $V'(q)$. Thus the quality provided by the market is insufficient. There is indeed a lemons equilibrium.

An optimal kind of government intervention to correct the market failure is the introduction of a minimum quality standard q^{**}, as illustrated in the figure. Since quality is costly the firm will choose $q=q^{**}$ and the equilibrium will continue to satisfy equation (36). Obviously the policy of setting minimum standards can, in principle, correct the market failure and increase the welfare of the community. Of course, the government needs superior information to enforce the standard properly, but, unlike the insurance case where moral hazard occurs with private households, it is not implausible to assume that the government can set up institutions that monitor the producers.

What if free trade according to the Cassis-de-Dijon principle is introduced? An optimistic view would be that the consumers could now freely choose among the national regulations knowing what quality standards they imply. The price of x would be conditioned on the respective national standard of consumer protection as defined by q^{**}. In equation (31) P would be replaced with $P(q^{**})$ and the consumer would assume that $q=q^{**}$.

The national standard would become a choice variable and, in the household's optimum, the marginal utility from choosing a better standard would have to be equal to the marginal expenditure increase this would involve:

(39) $$V'(q^{**}) = P'(q^{**})\,x.$$

The national government, on the other hand, would choose q^{**} so as to maximize the profits earned by its firms. In (33) P would have to be replaced with $P(q^{**})$ and q with q^{**}. The government's profit maximizing choice would be characterized by equality of the marginal revenue from lifting the national standard and the marginal production cost incurred by doing so:

(40) $$P'(q^{**})x = c'(q^{**})\,x.$$

Note that the government would not in addition have to consider its national consumers' preferences. Since the competitive country is a price taker in the international market for consumer goods, its consumers would not be affected by the change in the national standard. As always in competitive markets, production and competition decisions would be perfectly separated.

Taken together, equations (31) and (40) imply the efficiency condition (38). Thus it seems that a competition of national quality standards could work and bring about the optimal quality level.

Again, however, the assumptions underlying such an optimistic result violate the Subsidiarity Principle. There are certainly many commodities about which consumers could be expected to be sufficiently knowledgeable to choose between different national quality standards. However, when the Subsidiarity Principle is valid these are exactly those commodities where the government does not intervene. Consumer protection is instead exclusively limited to those goods where consumers can be expected to have an informational deficit: the goods with low values, the rarely purchased goods, and the goods whose harmful properties will only be detected with a small probability. These are precisely the goods for which a choice between a multitude of national quality standards would be utterly confusing for the consumers. The same difficulties which justified government intervention in the closed economies of the old Europe reappear when governments rather than firms compete with one another in the open economies of the new Europe.

Obviously, with confused consumers, P cannot be conditioned on the national standard q^{**} and hence the profit maximizing government will choose q^{**} so as to minimze production cost; i.e., it will set

(41) $$c'(q^{**}) = 0$$

just as the firms would do if left to themselves [see (35)]. Again there is an underprovision of quality as illustrated in Figure 2. When the government respects the Subsidiarity Principle, systems competition is a competiton of laxity which gets stuck in a lemons equilibrium.

5. Conclusions

For the sake of argument this paper pursued the implications of two strong, but straightforward assumptions. The one assumption was that the state respects the Subsidiarity Principle, that it is an institution which acts on behalf of its people and helps them overcome the collective irrationalities associated with their individual choices. The other assumption was that governments act competitively. The paper has shown that the two assumptions do not fit together. In general, an efficient equilibrium in systems competition does not exist when the Subsidiarity Principle holds.

It follows that economists should be cautious when trying to model systems competition. It is not legitimate to make assumptions about the information and production possibilities of governments which are usually considered as plausible in the modelling of private market economies. There is a selection bias, at least in the weak sense that, of the government's numerous activities, a larger proportion is unsuitable for a competitive environment than of the economic activities carried out by private agents.

The analysis also has consequences for the design of the new Europe. A corner solution, where no central government is formed and all policy decisions are left to the nation states and voluntary contracts between them, is not suggested by the model. It may be useful to further discuss the question of whether at least some sort of centralization may be necessary to take the implications of the Subsidiarity Principle into account.

Europe still is a long way from such a situation. It is entering a difficult phase where some of the dangers described in this paper may soon become virulent before countervailing measures are in place. History will show how this experiment ended.

Appendix: The non-existence of a market for wage insurance

This appendix shows that under the assumptions of the model of section 3 the insurance market for wage insurance may break down completely, leaving no market for bad risks. Assuming that individuals can simultaneously buy contracts from different competitive firms, the analysis can be confined to the possibility of pooling equilibria.

Assume that the utility function exhibits constant relative risk aversion between zero and one and is identical for all individuals. Let $EC = r\overline{K}$ so that the individual's income is $l \cdot \theta_1 \cdot \theta_2$. The insurance market opens after θ_1 and before θ_2 has been revealed. Let θ_1 be uniformly distributed in the range $0 \le \theta_1 \le \theta_1^{max}$ and assume that $\theta_2 \ge 0$.

If an equilibrium in the insurance market exists, there is a critical value $\overline{\theta}_1$ with $0 < \overline{\theta}_1 \le \theta_1^{max}$ such that the "good" risks with $\theta_1 > \overline{\theta}_1$ buy no insurance and the "bad" ones with $\theta_1 \le \overline{\theta}_1$ buy at least some insurance. Using these properties it will be proved by contradiction that an equilibrium may not exist at all.

Let α be the degree of insurance coverage and assume for a moment that all risks choose the same degree of coverage. Note that the average "quality" of abilities as measured by θ_1 is $\overline{\theta}_1 / 2$. When fair insurance is available, the income distribution of individuals of type $\overline{\theta}_1$ will be characterized by a mean of

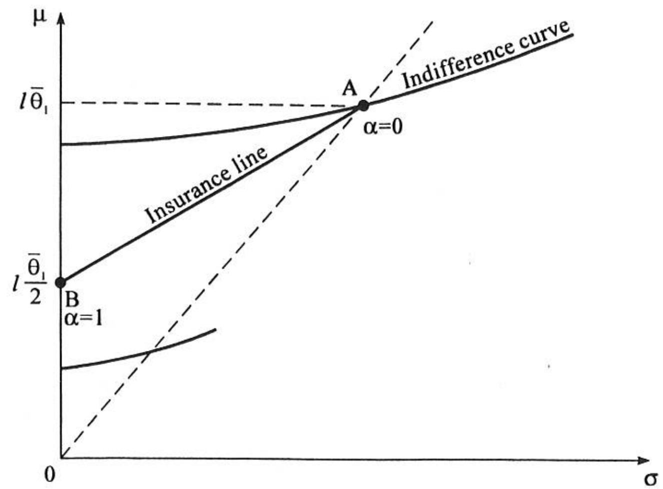
$$\mu = \alpha\, l\, \overline{\theta}_1 / 2 + (1-\alpha)\, l\, \overline{\theta}_1$$
$$= l\, \overline{\theta}_1 \left(1 - \frac{\alpha}{2}\right)$$

and a standard deviation of

$$\sigma = (1-\alpha)\, l\, \overline{\theta}_1\, S(\theta_2)$$

where $S(\cdot)$ is the standard deviation operator. Since the distribution class to which all distributions attainable by varying α is a linear one and relative risk aversion is constant, an expected utility maximizer has a homothetic indifference curve system as shown in Figure 3.

Figure 3: *The non-existence of a market for wage insurance*



Let point A characterize the distribution attainable by the best of the bad risks (i.e., those with $\theta_l = \overline{\theta}_l$) when α=0 and B the one attainable when α=1. The distributions located on the straight line between A and B – the insurance line – are attainable for risks of type $\overline{\theta}_l$ by varying α in the range between zero and one.

Suppose now individuals of type $\overline{\theta}_l$ are allowed to vary α arbitrarily while all others choose a given non-negative value of α. Since individuals of type $\overline{\theta}_l$ have a density mass of zero, this will not affect the conditions under which they can buy insurance. If they decide to buy some insurance, the slope of the indifference curve passing through A must be higher than that of the insurance line. However, in the case considered in the figure, risk aversion is so low that the opposite is true. Risks of type $\overline{\theta}_l$ will stay uninsured if all risks with $\theta_l < \overline{\theta}_l$ choose a given (identical) non-negative degree of insurance coverage. They will a fortiori stay uninsured if the assumption that α is the same among the other risks (i.e., those with $\theta_l < \overline{\theta}_l$) is relaxed. Whatever the exact participation pattern of the other risks: because of the assumption of identical preferences it will always be true that the preferred degree of coverage is a declining function of the quality of innate abilities as measured by θ_l. Thus the conditions under which individuals of type $\overline{\theta}_l$ can find insurance will be even worse than assumed in the

figure. This proves that they will not participate, a contradiction to the assumption that they will.

Note that no particular value of $\overline{\theta}_l$ has been assumed for this proof other than the assumption that $0 < \overline{\theta}_l \leq \theta_l^{max}$. It is easy to see that the non-existence of an equilibrium for a particular value of $\overline{\theta}_l$ implies the non-existence for all other feasible values of $\overline{\theta}_l$ in this range. In Figure 3, a variation of $\overline{\theta}_l$ will move point A along a ray through the origin and point B along the ordinate in a way that keeps the slope of the insurance line unaffected. Due to the assumption of constant relative risk aversion the indifference curve slope remains constant along a ray through the origin. Thus, when the indifference curve slope is lower than the slope of the insurance line at one particular position of A, this will be true for all feasible positions of A along a ray through the origin. This completes the proof that under the assumptions of the paper adverse selection may be strong enough to prevent an insurance market for wage risks from coming into existence. Even a market for the worst of the bad risks would then not be available.

References

Akerlof, G.A. (1970): "The Markets for Lemons: Quality, Uncertainty and the Market Mechanism", *Quarterly Journal of Economics* 84, 488-500.

Arnott, R., and J. E. Stiglitz (1989): "The Welfare Economics of Moral Hazard", in: H. Loubergé, ed., *Risk, Information and Insurance: Essays in Memoriam of Karl Borch.* Norwell, MA: Kluwer Academic Publishers, 91-122.

Bewley, T. F. (1981): "A Critique of Tiebout's Theory of Local Public Expenditures", *Econometrica* 49, 713-740.

Boadway, R. (1980): "A Note on the Market Provision of Club Goods", *Journal of Public Economics* 13, 131-137.

Buchanan, J. M. "An Economic Theory of Clubs", *Economica* 23, 1965, 1-14.

Edwards, J., and M. Keen (1995): "Tax Competition and Leviathan", forthcoming in *European Economic Review.*

Eisen, R. (1979): *Theorie des Versicherungsgleichgewichts*, Duncker und Humblot: Berlin.

Friedman, M. (1953): "Choice, Chance and the Personal Distribution of Income", *Journal of Political Economy* 61, 277-290.

Gerber, R. F., and Hewitt, D. P. (1987): "Decentralized Tax Competition for Business Capital and National Economic Efficiency", *Journal of Regional Science* 27, 451-460.

Harsanyi, J. C. (1953): "Cardinal Utility in Welfare Economics and the Theory of Risk Taking", *Journal of Political Economy* 61, 434-435.

Oakland, W. H. (1972): "Congestion, Public Goods and Welfare", *Journal of Public Economics* 1, 339-357.

Oates, W. E. (1972): *Fiscal Federalism*, Harcourt, Brace, Jovanovich: New York, Chicago et al.

Mohring, H., and M. Harwitz (1962): *Highway Benefits. An Analytical Framework*, Northwestern University Press: Chicago.

Musgrave, P. (1991): "Fiscal Coordination and Competition in an International Setting", in: L. Eden, ed., *Retrospectives on Public Finance*, Duke University Press: Durham and London.

Musgrave, R. (1969): "Theories of Fiscal Federalism", *Public Finance* 24, 521-536.

Pauly, M. (1974): "Overinsurance and Public Provision of Insurance. The Roles of Moral Hazard and Adverse Selection", *Quarterly Journal of Economics* 88, 309-327.

Rawls, J. (1971): *A Theory of Justice*, Harvard University Press: Cambridge, Mass.

Riley, J. G. (1979): "Informational Equilibrium", *Econometrica* 47, 331-359.

Rothschild, M., and J. Stiglitz (1976): "Equilibrium in Competitive Insurance Markets. An Essay on the Economics of Imperfect Information", *Quarterly Journal of Economics* 90, 626-650.

Sandler, T., and J. T. Tschirhart (1980): "The Economic Theory of Clubs: An Evaluative Survey", *Journal of Economic Literature* 18, 1481-1521.

Sinn, H.-W. (1994): "How Much Europe? Subsidiarity, Centralization and Fiscal Competition", *Scottish Journal of Political Economy* 41, 85-107.

---, (1995a): "A Theory of the Welfare State", forthcoming in the *Scandinavian Journal of Economics.*

---, (1995b): "Social Insurance, Incentives and Risk Taking", Paper prepared for the 51st IIPF Congress, Lisbon 1995.

Spence, M., and R. Zeckhauser (1971): "Insurance, Information, and the Individual Action", *American Economic Review* 61, 380-391.

Tiebout, Ch. M. (1961): "An Economic Theory of Fiscal Decentralization", in: *Public Finances: Needs, Sources and Utilization*, A conference of the Universities-National Bureau Committee for Economic Research, Princeton University Press: Princeton, 79-96.

Timm, H. (1961): "Das Gesetz der wachsenden Staatsausgaben", *Finanzarchiv* 21, 201-247.

Wagner, A. (1876): *Allgemeine oder theoretische Volkswirtschaftslehre: Erster Theil. Grundlegung*, Winter'sche Verlagsbuchhandlung: Leipzig und Heidelberg.

Wellisch, D. (1995): *Dezentrale Finanzpolitik bei hoher Mobilität*, J. C. B. Mohr (Paul Siebeck): Tübingen.

Wildasin, D.E. (1991): "Income Redistribution in a Common Labor Market", *American Economic Review* 81, 757-774.

---, (1992): "Relaxation of Barriers to Factor Mobility and Income Redistribution", in: P. Pestieau, *Public Finance in a World of Transition*, Proceedings of the 47th Congress of the International Institute of Public Finance, St. Petersberg 1991, Supplement to *Public Finance* 47, 216-230.

Wilson, Ch. (1979): "Equilibrium and Adverse Selection", *American Economic Review* 69, papers and proceedings, 313-317.

Wilson, J. (1984): "A Theory of Interregional Tax Competition", *Journal of Urban Economics* 19, 296-315.

Zodrow, G., and P. Mieszkowski: "Pigou, Tiebout, Property Taxation, and the Underprovision of Local Public Goods", *Journal of Urban Economics* 19, 356-370.

CES Working Paper Series

---

29 Michael Funke and Dirk Willenbockel, Die Auswirkungen des "Standortsicherungsgesetzes" auf die Kapitalakkumulation - Wirtschaftstheoretische Anmerkungen zu einer wirtschaftspolitischen Diskussion, January 1993

30 Michelle White, Corporate Bankruptcy as a Filtering Device, February 1993

31 Thomas Mayer, In Defence of Serious Economics: A Review of Terence Hutchison; Changing Aims in Economics, April 1993

32 Thomas Mayer, How Much do Micro-Foundations Matter?, April 1993

33 Christian Thimann and Marcel Thum, Investing in the East: Waiting and Learning, April 1993

34 Jonas Agell and Kjell Erik Lommerud, Egalitarianism and Growth, April 1993

35 Peter Kuhn, The Economics of Relative Rewards: Pattern Bargaining, May 1993

36 Thomas Mayer, Indexed Bonds and Heterogeneous Agents, May 1993

37 Trond E. Olsen and Gaute Torsvik, Intertemporal Common Agency and Organizational Design: How much Decentralization?, May 1993

38 Henry Tulkens and Philippe vanden Eeckaut, Non-Parametric Efficiency, Progress and Regress Measures for Panel Data: Methodological Aspects, May 1993

39 Hans-Werner Sinn, How Much Europe? - Subsidiarity, Centralization and Fiscal Competition, July 1993

40 Harald Uhlig, Transition and Financial Collapse, July 1993

41 Jim Malley and Thomas Moutos, Unemployment and Consumption: The Case of Motor-Vehicles, July 1993

42 John McMillan, Autonomy and Incentives in Chinese State Enterprises, August 1993

43 Murray C. Kemp and Henry Y. Wan, Jr., Lumpsum Compensation in a Context of Incomplete Markets, August 1993

44 Robert A. Hart and Thomas Moutos, Quasi-Permanent Employment and the Comparative Theory of Coalitional and Neoclassical Firms, September 1993

45 Mark Gradstein and Moshe Justman, Education, Inequality, and Growth: A Public Choice Perspective, September 1993

46 John McMillan, Why Does Japan Resist Foreign Market-Opening Pressure?, September 1993

47 Peter J. Hammond, History as a Widespread Externality in Some Arrow-Debreu Market Games, October 1993

48 Michelle J. White, The Costs of Corporate Bankruptcy: A U.S.-European Comparison, October 1993

49 Gerlinde Sinn and Hans-Werner Sinn, Participation, Capitalization and Privatization, Report on Bolivia's Current Political Privatization Debate, October 1993

50 Peter J. Hammond, Financial Distortions to the Incentives of Managers, Owners and Workers, November 1993

51 Hans-Werner Sinn, Eine neue Tarifpolitik (A New Union Policy), November 1993

52 Michael Funke, Stephen Hall and Martin Sola, Rational Bubbles During Poland's Hyperinflation: Implications and Empirical Evidence, December 1993

53 Jürgen Eichberger and Ian R. Harper, The General Equilibrium Foundations of Modern Finance Theory: An Exposition, December 1993

54 Jürgen Eichberger, Bayesian Learning in Repeated Normal Form Games, December 1993

55 Robert S. Chirinko, Non-Convexities, Labor Hoarding, Technology Shocks, and Procyclical Productivity: A Structural Econometric Approach, January 1994

56 A. Lans Bovenberg and Frederick van der Ploeg, Consequences of Environmental Tax Reform for Involuntary Unemployment and Welfare, February 1994

57 Jeremy Edwards and Michael Keen, Tax Competition and Leviathan, March 1994

58 Clive Bell and Gerhard Clemenz, The Desire for Land: Strategic Lending with Adverse Selection, April 1994

59 Ronald W. Jones and Michihiro Ohyama, Technology Choice, Overtaking and Comparative Advantage, May 1994

60 Eric L. Jones, Culture and its Relationship to Economic Change, May 1994

61 John M. Hartwick, Sustainability and Constant Consumption Paths in Open Economies with Exhaustible Resources, June 1994

62 Jürg Niehans, Adam Smith and the Welfare Cost of Optimism, June 1994

63 Tönu Puu, The Chaotic Monopolist, August 1994

64 Tönu Puu, The Chaotic Duopolists, August 1994

65 Hans-Werner Sinn, A Theory of the Welfare State, August 1994

66 Martin Beckmann, Optimal Gambling Strategies, September 1994

67 Hans-Werner Sinn, Schlingerkurs - Lohnpolitik und Investitionsförderung in den neuen Bundesländern, September 1994

68 Karlhans Sauernheimer and Jerome L. Stein, The Real Exchange Rates of Germany, September 1994

69 Giancarlo Gandolfo, Pier Carlo Padoan, Giuseppe De Arcangelis and Clifford R. Wymer, The Italian Continuous Time Model: Results of the Nonlinear Estimation, October 1994

70 Tommy Staahl Gabrielsen and Lars Sørgard, Vertical Restraints and Interbrand Competition, October 1994

71 Julia Darby and Jim Malley, Fiscal Policy and Consumption: New Evidence from the United States, October 1994

72 Maria E. Maher, Transaction Cost Economics and Contractual Relations, November 1994

73 Margaret E. Slade and Henry Thille, Hotelling Confronts CAPM: A Test of the Theory of Exhaustible Resources, November 1994

74 Lawrence H. Goulder, Environmental Taxation and the "Double Dividend": A Reader's Guide, November 1994

75 Geir B. Asheim, The Weitzman Foundation of NNP with Non-constant Interest Rates, December 1994

76 Roger Guesnerie, The Genealogy of Modern Theoretical Public Economics: From First Best to Second Best, December 1994

77 Trond E. Olsen and Gaute Torsvik, Limited Intertemporal Commitment and Job Design, December 1994

78 Santanu Roy, Theory of Dynamic Portfolio Choice for Survival under Uncertainty, July 1995

79 Richard J. Arnott and Ralph M. Braid, A Filtering Model with Steady-State Housing, April 1995

80 Vesa Kanniainen, Price Uncertainty and Investment Behavior of Corporate Management under Risk Aversion and Preference for Prudence, April 1995

81 George Bittlingmayer, Industry Investment and Regulation, April 1995

82 Richard A. Musgrave, Public Finance and Finanzwissenschaft Traditions Compared, April 1995

83 Christine Sauer and Joachim Scheide, Money, Interest Rate Spreads, and Economic Activity, May 1995

84 Jay Pil Choi, Preemptive R&D, Rent Dissipation and the "Leverage Theory", May 1995

85 Stergios Skaperdas and Constantinos Syropoulos, Competing for Claims to Property, July 1995

86 Charles Blackorby, Walter Bossert and David Donaldson, Intertemporal Population Ethics: Critical-Level Utilitarian Principles, July 1995

87 George Bittlingmayer, Output, Political Uncertainty, and Stock Market Fluctuations: Germany, 1890-1940, September 1995

88 Michaela Erbenová and Steinar Vagstad, Information Rent and the Holdup Problem: Is Private Information Prior to Investment Valuable?, September 1995

89 Dan Kovenock and Gordon M. Phillips, Capital Structure and Product Market Behavior: An Examination of Plant Exit and Investment Decisions, October 1995

90 Michael R. Baye, Dan Kovenock and Casper de Vries, The All-pay Auction with Complete Information, October 1995

91 Erkki Koskela and Pasi Holm, Tax Progression, Structure of Labour Taxation and Employment, November 1995

92 Erkki Koskela and Rune Stenbacka, Does Competition Make Loan Markets More Fragile?, November 1995

93 Koji Okuguchi, Effects of Tariff on International Mixed Duopoly with Several Markets, November 1995

94 Rolf Färe, Shawna Grosskopf and Pontus Roos, The Malmquist Total Factor Productivity Index: Some Remarks, November 1995

95 Guttorm Schjelderup and Lars Sørgard, The Multinational Firm, Transfer Pricing and the Nature of Competition, November 1995

96 Guttorm Schjelderup, Kåre P. Hagen and Petter Osmundsen, Internationally Mobile Firms and Tax Policy, November 1995

97 Makoto Tawada and Shigemi Yabuuchi, Trade and Gains from Trade between Profit-Maximizing and Labour-Managed Countries with Imperfect Competition, December 1995

98 Makoto Tawada and Koji Shimomura, On the Heckscher-Ohlin Analysis and the Gains from Trade with Profit-Maximizing and Labour-Managed Firms, December 1995

99 Bruno S. Frey, Institutional Economics: What Future Course?, December 1995

100 Jean H. P. Paelinck, Four Studies in Theoretical Spatial Economics, December 1995

101 Gerhard O. Orosel and Ronnie Schöb, Internalizing Externalities in Second-Best Tax Systems, December 1995

102 Hans-Werner Sinn, Social Insurance, Incentives and Risk Taking, January 1996

103 Hans-Werner Sinn, The Subsidiarity Principle and Market Failure in Systems Competition, January 1996