ANNALES D'ÉCONOMIE ET DE STATISTIQUE. – N° 45 — 1997

Public Insurance and Mobility: an Exploratory Analysis in the Context of European Economic Unification

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ABSTRACT. – Many studies on the future of social security systems in a unified Europe treat the issue as merely a particular aspect of the broader question of redistribution within a federation with mobile agents. As a result, such studies typically recommend their gradual centralisation. This paper which is based on the model of Rothschild, Stiglitz and Wilson adopts a much less categorical approach, emphasising the need to clarify whether social security systems principally seek insurance or redistribution. In this analytical framework competition between public insurance systems can generate efficiency. It can also remain compatible with cross-subsidisation if the proportion of low risks is sufficiently large. The result depends on the relative proportion of high risks, on the goals of the national social security systems, and on their behaviour when competing with each over.

Protection sociale et mobilité : analyse exploratoire dans le contexte de l'unification européenne

RÉSUMÉ. – La plupart des études consacrées à l'avenir des systèmes de protection sociale dans le contexte de l'intégration européenne abordent cette question comme un cas particulier de problème redistributif à l'intérieur d'une fédération où les agents sont mobiles, ce qui conduit à préconiser la centralisation de cette fonction. Cependant, si la mise en place d'assurances publiques obligatoires répond par contre à des problèmes de sélection adverse, la mobilité ne remet pas toujours en cause ces systèmes.

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1 Introduction

Fiscal competition between national governments tends to concentrate high-income individuals into communities with less redistributive systems. The less well-off, by contrast, have an incentive to move to communities with more redistributive systems. Factor mobility, particularly that of labour, will therefore curb the ability of European Union member States to pursue independent redistributive policies. Today, these are largely supported by national welfare systems. If we follow this argument (WILDASIN [1990], d'ALCANTARA and TULKENS [1993]), the increasing integration of labour markets within the EU will lead member States to restrict their redistributive goals and to shift the corresponding responsibility to the EU level. This prediction is consistent with the normative point of view of the theory of fiscal federalism which argues in favour of a central redistribution policy.

In a more institutional perspective, analysts take a very different view. LAROQUE [1993], for example, regards a pan-European social security system as an outdated utopia. He and others argue that the realistic approach, already widely implemented, consists in coordinating migrant workers' rights instead. The eleven-member protocol on social policy in the Maastricht treaty stipulates that such issues must be decided by unanimous vote. It also establishes a restrictive link between social security and worker protection. In other words, national insurance systems are likely to remain the norm.

The assessment of the future of social protection in Europe is rather complex, and must take into account a highly diverse range of factors. In these debates the distinction between contributions-linked and non-contributions-linked benefits, often equated with insurance versus redistribution, deserves attention. It suggests that we cannot properly understand social-protection issues if we treat social insurance only as a particular form of redistribution policy.

Let us consider a compulsory public insurance system which implements cross subsidies between the different risk classes of the population. Two arguments can actually justify such an organisation: redistributive concerns and adverse selection. In the first case, cross-subsidisation and compulsory enrolment are the direct consequences of the redistributive goals. In the second case cross-subsidisation results from a possible incompatibility of some resource redistribution schemes with (second best) optimality, when the different classes of individuals are not distinguishable. Private insurance markets are then inefficient, since the market alone cannot spontaneously generate cross-subsidies. Furthermore, the possibility of "opting out" for private insurance companies would destroy the non selective feature of a public insurance scheme. Hence, compulsory inclusion of every person in a social security system is the simplest solution to adverse selection.

We take here this case study of an insurance market with adverse selection to show how a detailed assessment of risks and their coverage can enhance the analysis of the impact of mobility on public insurance systems. Our study is based on the model of Rothschild, Stiglitz and Wilson. We have adopted this framework on an exploratory basis. This hypothesis, however,

is simple and offers other advantages as well. First, the crude equation between social security and redistribution is abolished in this context, because the redistribution achieved by social security systems on account of adverse selection may in some cases be inseparable from the efficiency target. Above all, it allows us to consider the case of public insurance systems whose justification is to correct market inefficiencies.

Factor mobility undermines national social security systems when they are justified by ex ante redistributive considerations. The main issue which is discussed here is whether an "efficient insurance" argument leads to the same result or not. Despite similar compulsory public schemes appear necessary in the two situations, there is indeed a major difference between them, which may differentiate their response to factor mobility: in the first case, the implementation of a public insurance system implies welfare gains for some agents, and losses for the others; in the second case, it may provide a Pareto improvement for all agents. The real question here is not to make the agents accept some transfers, but to prevent the development of a inefficient competition between insurance companies.

The paper is organised as follows. After presenting the analytical framework, we examine the efficiency of competition between public insurance systems, with adverse selection. In section 4 we add redistributive goals into our model. Section 5 discusses the hypotheses of the model and offers concluding remarks.

2 Analytical framework

2.1. The Model of Rothschild, Stiglitz and Wilson

Let us consider two countries ($i = 1, 2$), inhabited by individuals with strictly identical preferences. These are characterised by the utility function u (assumed to be strictly increasing and strictly concave) and their income (r). The insured are exposed to an accident risk entailing damage D. Our description of insurance markets is borrowed from ROTHSCHILD, STIGLITZ [1976] and WILSON [1977]. Each population actually contains two homogeneous risk classes whose accident probabilities differ. The probabilities p^h and p^l are respectively attached to high risks and low risks, with $p^l < p^h$. We assume that the classes are indistinguishable. The two countries differ in the make-up of their population, measured by the proportion of high risks δ_i. By convention, we assume that country 1 contains fewer high risks. p_i denotes the mean frequency of accidents in either country, and p the frequency in the two countries when federated $(p_1 < p < p_2)$.

An insurance contract z is described as a vector $z = (q, \pi)$, where q is the compensation and π is the premium level. The resulting utility level is thus

$$v^l(z) = p^l u(r - \pi + q - D) + (1 - p^l) u(r - \pi)$$

for a low risk individual, and

$$v^h(z) = p^h u(r - \pi + q - D) + (1 - p^l) u(r - \pi)$$

for high risks.

2.2. Best Actuarially Fair Policy

In the initial situation, we assume that there are no possible migratory flows between the two countries. To describe national policies, we follow the presentation by HENRIET and ROCHET [1987], which has clarified the relationship between equilibria and optima for markets with adverse selection. In particular, their paper has put forward the connections between efficiency, cross-subsidisation and statistical distribution of risks in this context.

These authors first consider policies without cross-subsidies between risk classes (actuarially fair policies). If $z^l = (q^l, \pi^l)$ and $z^h = (q^h, \pi^h)$ denote the contracts devised respectively for the low risks and for the high risks, a pricing policy is actuarially fair if $\pi^l = p^l q^l$ and $\pi^h = p^h q^h$.

Figure 1 above pictures these two actuarial lines, and iso utilities for the two risk classes such that $v^l(z) = V^l$, $v^h(z) = V^h$. For example the pair (z^l, z^h) defines an actuarially fair policy. With perfect information, the actuarially fair policy $(\bar{z}^L, \bar{z}^H)$ with complete insurance of each class of risks $\bar{z}^L = (D, p^l, D)$, $\bar{z}^H = (D, p^h D)$ would be the optimal one.

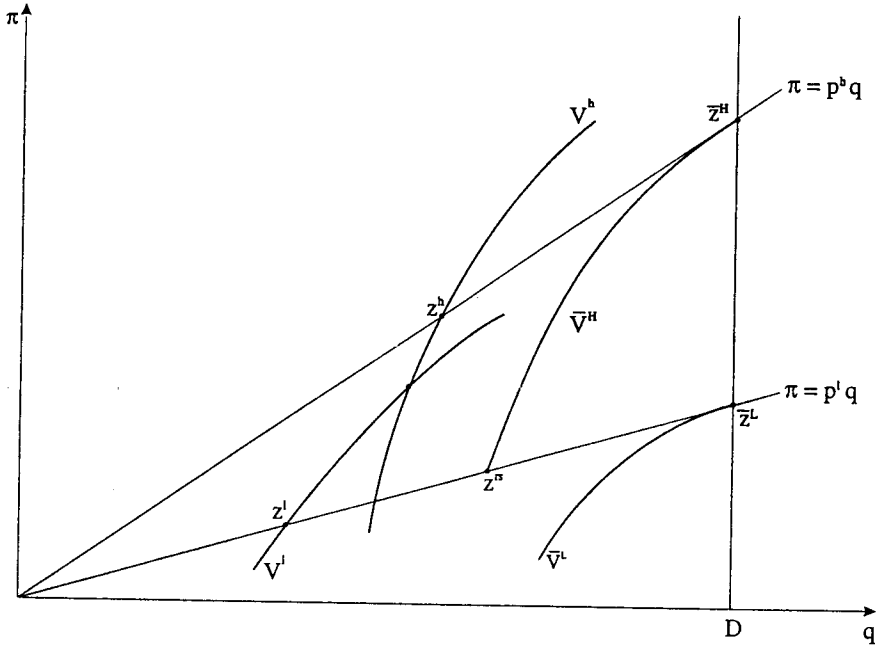


FIGURE 1

Equitable Policies

But it is not admissible with asymmetric information because $v^h(\bar{z}^L)$ is greater than $v^h(\bar{z}^H)$. Hence high risk individuals would choose $\bar{z}^L$. In this context the (second) best actuarially fair policy offers complete insurance to high risks $(\bar{z}^H)$, and a deductible to low risks just sufficient to prevent high risks from choosing the contract z^{rs} devised for low risks. This contract satisfies $z^{rs} = (q^{rs}, p^l, q^{rs})$, with $v^h(z^{rs}) = v^h(\bar{z}^H) = \bar{V}^H$.

2.3. Uniform Contracts

Let us now consider non discriminatory policies. Such uniform contracts pool low and high risks. They therefore imply some redistribution from the low risk class toward the high risk class. Two of these contracts $(q, p_i q)$ are of a special interest:

– the uniform pooled-risks policy with complete insurance $\bar{z}^R(p_i) = (D, p_i D)$, which is also egalitarian,

– the uniform pooled risks policy $z^*(p_i) = (q^*(p_i), p_i q^*(p_i))$ which maximises the utility of low risk individuals $v^l(z)$.

Since we will refer essentially to these two uniform policies and to the best actuarially fair policy in the remainder of the paper, it is useful to recapitulate these three types of policy, and the corresponding notations (cf. Figure 2):

– The best actuarially fair policy (BAFP) combines $\bar{z}^H = (D, p^h D)$ and $z^{rs} = (q^{rs}, p^l q^{rs})$. We denote $v^h(\bar{z}^H) = \bar{V}^H$ and $v^l(z^{rs}) = V^{rs}$;

– The best uniform policy for the low risks (BUPL) corresponds to $z^*(p_i) = (q^*(p_i), p_i q^*(p_i))$. The utilities obtained are written $V^{*l}(p_i) = v^l(z^*(p_i))$, and $V^{*h}(p_i) = v^h(z^*(p_i))$. $V^{*l}(p_i)$ decreases with p_i.

– The uniform policy with full coverage (UFCP), $\bar{z}^R(p_i) = (D, p_i D)$.

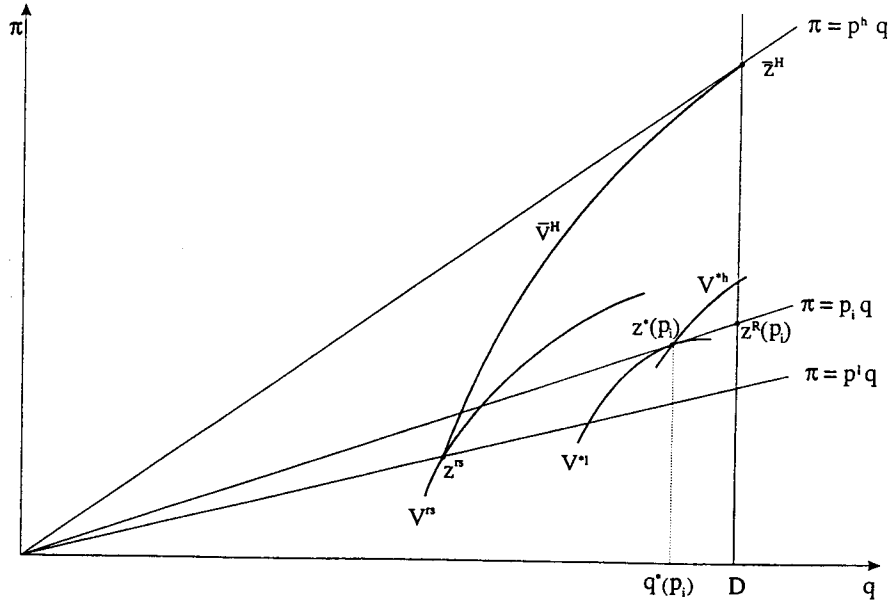
Figure 2 assumes that low risks individuals are better off with BUPL than with BAFP. But the opposite may be also possible: the relative situation between BUPL and BAFP depends on the statistical distribution of risks in the population. As we will see below, the situation illustrated in the above figure provides a strong argument for government intervention, outside any redistributive argument, since BAFP is Pareto dominated by BUPL.

2.4. Government Intervention

ROTHSCHILD and STIGLITZ represent the outcome of competition between private companies in this context by Nash behaviour on price-quantity contracts: an equilibrium is a set of contracts which are not in deficit, and such that there exists no contract that that would make a positive profit if supplied together. Since market cannot generate cross subsidies under this assumption, a competitive equilibrium in this insurance market with adverse selection is actuarially fair. When it exists it is indeed the best actuarially fair policy. But this is the case, only if this policy (BAFP) is not Pareto dominated by a uniform pooled-risks policy $(q, p_i q)$, and especially by the uniform policy $z^*(p_i)$ which maximises the utility level of low risk individuals. This condition is satisfied if the relative proportion of high risks is greater than some threshold δ^{rs}.

FIGURE 2

Pricing Policies



Therefore, two cases have to be considered (cf. HENRIET and ROCHET [1990]):

– the relative proportion of high risks is lower than this threshold. BAFP is not an equilibrium (in the ROTHSCHILD-STIGLITZ sense), and is Pareto dominated by a uniform policy. It follows an "efficient argument" for a public insurance;

– the relative proportion of high risks is greater than δ^{rs}. BAFP is a competitive equilibrium. It is also second best Pareto-optimal if this proportion is greater than some other threshold that is much than δ^{rs}. Otherwise BAFP is not a second-best optimum, but (by definition of δ^{rs}) no uniform policy Pareto-dominates the equilibrium policy. Therefore the implementation of a uniform pooled-risks policy in this context would be inseparable from redistributive considerations.

There are then two possible arguments for public intervention in this insurance market:

– redistribution. Whatever the informational context or the distribution of risks is, the competitive outcome provides the low risks a higher level of expected utility. It thus remains an inequality between the two classes of risks. This situation can justify public intervention. For example the uniform contract with complete insurance $\bar{z}^R(p_i)$ may be preferred by the government. This would be the case in particular with egalitarian goals.

– market failure. As mentioned above BAFP is not an equilibrium and is Pareto dominated by a uniform policy if δ_i is lower than δ^{rs}. When the proportion of high risks is weak, the implementation of a second-best

optimum requires cross-subsidies, even if the government does not care a priori to the inequality between risks subgroups.

The two distinct arguments are considered in our analysis.

2.5. Pricing Policies at the National Level

We use two alternative hypotheses to define the policies in each country:

– Lack of redistributive goals. With perfect information, the country would content itself with competitive actuarially fair policies, that did not redistribute total income. In the asymmetrical information context, private insurance markets still can supply the second best actuarially fair policy if the proportion of high risks exceeds the threshold δ^{rs}. As seen above, this best actuarially fair pricing is achieved by means of self-selective policies that offer full coverage of high risks and apply a deductible to low risks, allowing these to be identified. Actuarial equity is preserved, as each homogeneous risk class bears the cost of its own insurance. But if the proportion of high risks is small ($\delta_i < \delta^{rs}$), the cost of this approach will be disproportionately high, and cross-subsidies between risk classes are needed: the best actuarially fair policy is Pareto-dominated by the uniform (*i.e.* pooled-risks) policy that maximises the utility of low risks. This uniform, pooled-risks policy is not an equilibrium in the Rothschild-Stiglitz sense. It could be offered, however, by a compulsory public social-insurance system.

Under this hypothesis, called (E) for "efficiency argument", the decision-making process is implicitly vested in the low-risk class. We therefore assume that if $\delta_i < \delta^{rs}$, the implementation of a compulsory public social-insurance system will offset the market failure and offer the best uniform policy for low risks BUPL $= z^*(p_i)$. Given the achieved redistribution, the policy also gives to high-risk individuals greater utility level than the one they would obtain through $\bar{z}^H$, the full insurance policy with premiums based on p^h. If $\delta_i \geq \delta_{RS}$, the best actuarially fair policy (BAFP) would be considered adequate. Since it can be offered by private markets, the country would not have any public insurance system in that case.

– Redistributive goals (R). A public insurance scheme is necessary. If we assume that public insurance aims at Rawlsian equity and thus makes the total incomes of the two homogeneous risk classes identical, it offers full coverage UFCP $= \bar{z}^R(p_i)$, whatever the risk distribution is.

2.6. Mobility and Fiscal Competition between Social Insurance Systems

Let us now look at the fiscal competition between the two national public insurance systems when populations are free to move between countries. For this, we suppose that the national insurance systems do not alter their efficiency or redistributive goals, and that they regard the structure of their insured population as a given one at any time (*i.e.* They do not look into the effect of their pricing policy on the population distribution between countries). For example: if a country is of the (R) type, its public system

offers simply full coverage $\bar{z}^R$ to whole its current population. If the country is of the (E) type, its public insurance provides the best uniform policy for the low risks z^* given the current make up of its population (premiums must, of course, be adjusted to this make up), as long as its proportion of high risks is below δ^{rs} . When this proportion becomes higher than δ^{rs}, we assume that the government is satisfied with the competitive equilibrium of private insurance companies (BAFP).

We also take the extreme case in which migration occurs as soon as either social insurance system offers greater net benefits. The analysis therefore consists in determining the long-term equilibrium situations for the population of the "large country" (the new area of mobility created by the abolition of borders between the two initial countries).

Our paper thus analyses the impact of mobility by comparing a situation with no cross-border mobility, and a situation where mobility provides a full response to any differences in national insurance systems. In this case, the equilibrium is obtained when no individual can improve its situation by moving to the other country. This highly schematic assumption aims to identify the potential pressures and mechanisms at work.

One might expect here a detailed modelling of strategic interactions between the different national insurance systems. But this approach would require a lot of assumptions, relating to:

– the goals of the public insurance. For example, how do they account for the potential migrants or for their foreign residents?

– the concept of equilibrium, since a multiplicity of solutions has been suggested in the literature for insurance markets with asymmetric information;

– the speed of migrations.

It is actually difficult to select the most relevant hypotheses in these matters. For the sake of simplicity, we have restricted our study on what would be the trend of national public insurance systems, if they do not adapt their behaviour despite factor mobility. In any case, this is a preliminary step for further analysis.

3 Efficiency of competition between public insurance systems

3.1. Equilibrium

To begin with, let us assume that both countries are of the (E) type. The aim of the government intervention is only to correct market failure. The redistribution which is achieved by national insurance programs is solely due to the informational constraints that may arise, not to deliberate redistributive considerations.

The ex post proportion of high risks in country i is written δ_i', and the global proportion of high risks in the large country δ. The first observation is that a situation where the proportions of high risks verify $\delta_i' \geq \delta^{rs} > \delta_j'$ cannot constitute an equilibrium, since the z^* type of policy offered by country j would dominate for both classes of risks the best actuarially fair policy available in country i. Similarly, a $\delta_j' < \delta_i' < \delta^{rs}$ configuration is not an equilibrium since it would lead to $V^{*l}(p_j) > V^{*l}(p_i)$, triggering flows of low risk individuals from i to j. Two possible types of equilibrium may therefore exist, depending on the proportion of high risks in the "large country":

– $\delta < \delta^{rs}$, hence $\delta_1' = \delta_2' = \delta$. Mobility leads the make-up of the two populations to converge. When this process is achieved, the public insurance systems of both countries offer the same uniform policy $z^*(p)$;

– $\delta \geq \delta^{rs}$, hence $\delta_1' \geq \delta^{rs}$ and $\delta_2' \geq \delta^{rs}$. There is ultimately no more public insurance in this case. The market offers then the best actuarially fair policy in the two countries.

From a qualitative standpoint, we can speak of an "upward" convergence if the proportion of high risks in the "large country" remains smaller than δ^{rs}. The border opening will, in that case, lead to an extension of the public insurance system, since the high risks of the "large country" can be reasonably well absorbed. By contrast, there is a "downward" convergence if the "large country" carries a heavy proportion of high risks. Then mobility jeopardises the public insurance systems prevailing in countries with initially small proportions of high risks.

These two situations are pictured on Figures 3a and 3b. In each case, the initial situation corresponds to the pricing policy $z^*(p_1)$ in country 1, and to the best actuarially fair policy in country 2. In the first case (Figure 3a) δ is lower than δ^{rs}. The pricing policy in the large country is then $z^*(p)$. The second case illustrates a "downward" convergence, with the best actuarially fair policy (*i.e.* $\bar{z}^H$ and z^{rs}) prevailing in the large country.

However it must be noticed that policies offered in the "large country" are efficient, since they are either the best actuarially fair policy, or the uniform policy that maximises v^l if the latter policy is superior to the former. An (E) type federal social security system would not offer any other pricing policy. Hence the words "upward" and "downward" that we have used above are not fully appropriate.

They should only convey the fact that the net impact of mobility on social protection is crucially dependent on the risk distribution in each country: if the "large country" ends up with a large proportion of high risks, the opening of borders will undermine the public insurance system of the country where that system prevailed. This differentiation is hardly surprising, since risk distribution is generally a decisive factor in gauging the response of insurance markets to adverse selection. Nevertheless, it may provide a useful benchmark in analysing the consequences of EU enlargements, for example.

FIGURE 3a

Upward Convergence

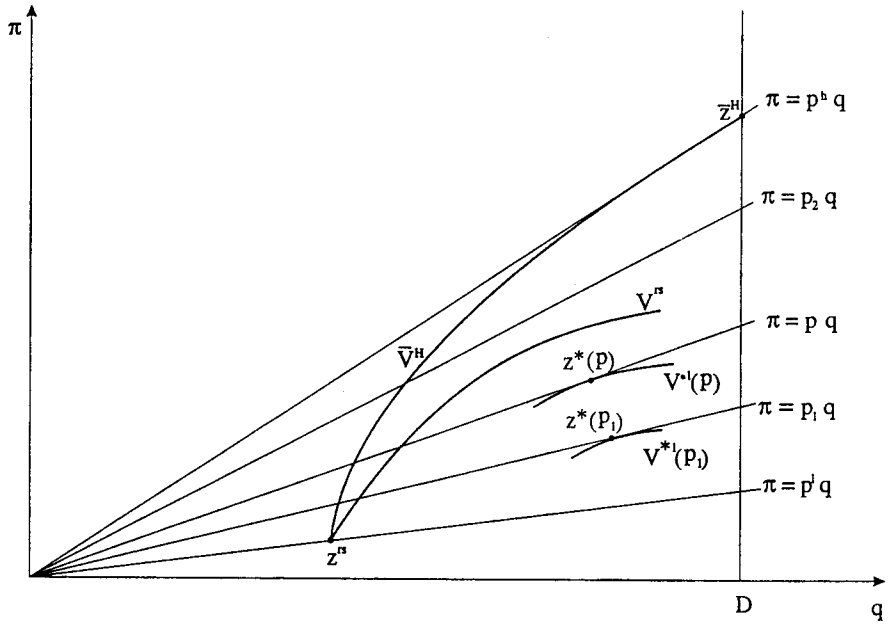
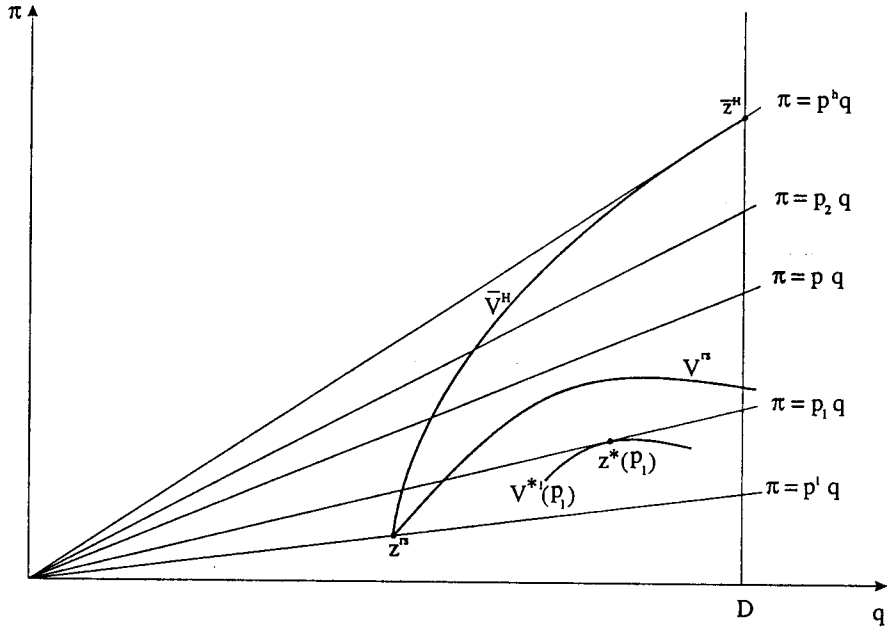


FIGURE 3b

Downward Convergence



3.2. **Redistributive Impact**

Table 1 reports the gains and losses for each risk class, on the basis of the risk distribution in each country. Country 1 is, by definition, the country with the fewer high risks, $\delta_1 < \delta_2$.

In case (1), high risks are very frequent in both countries, and no public insurance is ever actually established. Actuarially fair policies prevail and the policies offered to each risk class are therefore unchanged.

Apart from this case, the country with the highest proportion of low risks always stands to lose from the opening of borders if the loss is measured by the utility level of the low risks which are the policy makers under the (E) hypothesis. In fact, both risk classes typically lose out. In case (2), the migrations cause the proportion of high risks to become too large regard to δ^{rs}. Low-risk individuals are therefore better off reverting to the optimal actuarially fair policy with deductible. This penalises also the country's high-risk individuals by depriving them of the advantage of public insurance. In cases (3) and (4) the "large country" retains a low proportion of high risks (relative to the δ^{rs} threshold). The loss for the low risks thus results from the fact that its public insurance after the opening and after mobility has to cope with more frequent accidents, what results in higher premium levels.

Meanwhile, the country with the larger proportion of high risks achieved symmetrical gains and losses. In case (4), the gain is procured by the greater proportion of low risks, which increases the number of contributors to the pre-existing public insurance system. In case (3), the gain is provided by the additional benefit of a public insurance. In case (2), the country maintains the optimal actuarially fair policy: mobility is then counter-productive for

TABLE 1

Gains and Losses

Risk distribution	(1) $\delta^{rs} \leq \delta_1 < \delta < \delta_2$	(2) $\delta_1 < \delta^{rs} \leq \delta < \delta_2$	(3) $\delta_1 < \delta < \delta^{rs} < \delta_2$	(4) $\delta_1 < \delta < \delta_2 < \delta^{rs}$
Pricing policies				
• in the initial situation				
– in country 1	BAFP	$z^*(p_1)$	$z^*(p_1)$	$z^*(p_1)$
– in country 2	BAFP	BAFP	BAFP	$z^*(p_2)$
• in the "large country"	BAFP	BAFP	$z^*(p)$	$z^*(p)$
Impact of mobility for				
• low risks of country 1	0	$V^{rs} - V^{*l}(p_1) < 0$	$V^{*l}(p) - V^{*l}(p_1) < 0$	$V^{*l}(p) - V^{*l}(p_1) < 0$
• high risks of country 2	0	$\bar{V}^H - V^{*h}(p_1) < 0$	$V^{*h}(p) - V^{*h}(p_1) ? 0$	$V^{*h}(p) - V^{*h}(p_1) ? 0$
• low risks of country 2	0	0	$V^{*l}(p) - V^{rs} > 0$	$V^{*l}(p) - V^{*l}(p_2) > 0$
• high risks of country 2	0	0	$V^{*h}(p) - V^H > 0$	$V^{*h}(p) - V^{*h}(p_2) ? 0$

both countries, since it worsens the situation in country 1 without improving the situation of country 2.

4 Incorporating Redistributive Goals

4.1. Identical Preferences for Redistribution

In a country that adopts a type (R) redistributive social security systems, the decisive parameter for determining the utility reached by its entire population is the average frequency of accidents (p_i), since all liabilities are covered. If both countries have this same objective, mobility will only homogenise the risk distribution in the combined population. This scenario, as well, means a transfer from the country that initially carried the smaller proportion of high risks toward the other country. But such mobility will not endanger the goals of either national system.

4.2. Divergent Goals

The situation is radically different if mobility occurs between countries with divergent goals-one (E), the other (R). Here, there can be no equilibrium with low-risk agents located in the (R) country, because if that would not be the case, two scenarios may develop :

– The redistributing country (R) has a larger proportion of high risks. Low -risk individuals of this country will be better off migrating, since, under an identical distribution of risks an (E) country offers them greater utility. Furthermore, the utility attained by low-risk individuals in an (E) country decreases with the proportion of high risks ;

– The redistributing country has a smaller proportion of high risks. High-risk individuals will be better off migrating to this redistributing country, since, under an identical distribution of risks it offers them larger benefits through its greater redistribution. Moreover, the social contributions associated with policies of type $\bar{z}^R$ are decreasing with the proportion of low risks.

In sum, if the redistributing country has few low-risk individuals, they will bear the full burden of the border-opening and will thus have an incentive to emigrate. In the opposite case, high-risk individuals will have an incentive to immigrate.

Once again, the potential equilibria will depend on the overall proportion δ:

– If $\delta < \delta^{rs}$ the proportion of high risks in the "large country" is low. The population will concentrate in the non-redistributive country (E), which offers finally $z^*(p)$. In this case, we would stress that it is not the entire public insurance system that is in jeopardy and should be assigned at the large level, but only its explicitly redistributive targets. In particular, the

resulting policy does involve cross-subsidies between risk classes. This result shows that social security problems cannot easily be resumed to a simple argument such as that insurance and redistribution should be more clearly separated. Here, mobility undermines not the entire redistribution process, but only the transactions linked to strictly redistributive goals. Fully actuarially fair policies would also be an unsuitable target: it would require a far too expensive deductible, given the few risks the "large country" would need to cover.

– If $\delta \geq \delta^{rs}$, the best actuarially fair policy prevails. It is compatible, for example, with an exclusively high-risk population in the country that initially pursued redistributive targets. Table 2 summarises the possible changes (initial situations and the resulting contracts in the "large country").

TABLE 2

Equilibrium Policies with Divergent Redistributive Goals

Risk distribution	(1) $\delta^{rs} \leq \delta_1 < \delta < \delta_2$	(2) $\delta_1 < \delta^{rs} \leq \delta < \delta_2$	(3) $\delta_1 < \delta < \delta^{rs} < \delta_2$	(4) $\delta_1 < \delta < \delta_2 < \delta^{rs}$
Pricing policies				
• in the initial situation				
– in country 1 of type R	$\bar{z}^R(p_i)$	$\bar{z}^R(p_i)$	$\bar{z}^R(p_i)$	$\bar{z}^R(p_i)$
– in country 2 of type E	BAFP	BAFP	BAFP	$z^*(p_2)$
• in the "large country"	BAFP	BAFP	$z^*(p)$	$z^*(p)$
Pricing policies				
• in the initial situation				
– in country 1 of type E	BAFP	$z^*(p_i)$	$z^*(p_i)$	$z^*(p_i)$
– in country 2 of type R	$\bar{z}^R(p_2)$	$\bar{z}^R(p_2)$	$\bar{z}^R(p_2)$	$\bar{z}^R(p_2)$
• in the "large country"	BAFP	BAFP	$z^*(p)$	$z^*(p)$

At all events, our findings merely illustrate the fact that national governments cannot achieve strictly redistributive goals if their fiscal bases are highly mobile. Some configurations admittedly lead to spectacular changes, for example when both countries initially operate public insurance systems but for different reasons, and when the country with the larger proportion of high risks is the one aiming at a redistributive policy. If the "large country" ends up with a heavy proportion of high risks (bottom of column 2), both public insurance systems will be endangered, as mobility will eliminate the option of coercing contributors into financing the social security system. This is a borderline case, however, as it assumes initially higher redistributive goals in the country with the larger proportion of high risks. In practice, the opposite is probably more frequent as social protection is more extensive in the more developed countries (BENSAÏD, JACOBZONE, and LATTÈS [1993]).

5 Conclusions, Limitations, Extensions

Many studies on the future of social security systems in a unified Europe treat the issue as merely a particular aspect of the broader question of redistributive policies. As a result, such studies typically recommend the gradual centralisation of the systems.

Following this approach the Commission tried to favour social security harmonisation. But she has been gradually retreating under pressure from member States. A new approach emerged, focusing on the convergence of social security goals (see LAROQUE [1993]). This shift was embodied in the 1989 Charter and in the recommendations adopted by the Council in 1992 – which, however, carry no legal weight.

However there is still a debate between member States and the Court of Justice of the European Communities. The Court tends to regard all disparities as a form of discrimination, hence an infringement of the free-circulation principle. This stance has led to several rulings that could encourage EU residents to seek the most generous social insurance system. One ruling, for example, bans member States from giving precedence to residence criteria in family-benefits entitlements. Another ruling states that the regulations of the country of residence cannot take automatic precedence over the regulations of the country of employment in respect to the payment of family benefits. These decisions challenge the redistributive equilibrium achieved by individual member States. They have also been labelled (for example by MEYER and MOPIN [1993]) as a potential source of "social tourism", which would ultimately precipitate the negative effects of mobility on the redistributive function supported by the social insurance systems.

Our exercise shows the need for caution when applying this argument to public insurance. It mainly points out two elements that should be carefully considered: the goals of the social security systems and the proportion of "high risks" in the population.

Much depends on whether the public insurance systems principally seek insurance or redistribution, and on whether the european countries are homogeneous in this respect or not. The make up of the population needs also careful examination, on a case-by-case basis: pure redistributive policies cannot be achieved in isolation, but competition can remain compatible with efficiency and with cross-subsidisation if the proportion of low risks is sufficiently large. Neither mobility nor the ensuing fiscal competition between public insurance systems has a dramatic effect if the "large country" has a low proportion of high risks. Both factors will have a negative influence, instead, if that proportion is large. This is especially the case when countries aiming at different redistributive policies open their borders.

Two factors may favour a still better outcome:

– The pressure for greater efficiency engendered by fiscal competition. The competition induced by mobility is a force for restoring efficiency, as the insured will not accept different levels of contributions unless benefits are

correspondingly different. This is strongly emphasised in the "public choice" literature. There is indeed widespread recognition of the need to make public insurance systems more efficient, particularly through a closer regulation of the moral hazard in health insurance and in unemployment insurance. In this respect the competition between national insurance systems resulting from a growing mobility can constitute an incentive for public insurance efficiency.

– The limits of the assumption of unchanged mean income. In numerous cases the opening of borders in a two- country model is mutually beneficial. If it creates temporary redistributional problems associated with reallocations of production factors, this may reduce the need for certain forms of social protection in the long term. For example, the observed deceleration in the mobility of low-skilled labour in Europe is due to the development of southern European countries.

More specifically, WILDASIN [1991] notes that mobility can, in itself, provide insurance against certain shocks. This approach is validated empirically for the US by BLANCHARD and KATZ [1992], who have shown how emigration by the unemployed has helped labour markets to find a new equilibrium in response to regional shocks. Thus the role of mobility as an insurance factor cannot be overlooked. This argument may apply for example to the present priority given to the coordination of migrant workers'rights.

Informational asymmetries and adverse selection are commonly alleged to justify the social security systems which have been settled in european countries. These arguments are particularly used in debates about health care systems. However our analytical framework which addresses only this question is obviously too crude. Among its limitations, we must emphasise the following implicit assumptions:

– migrations are exclusively determined by the net balance of contributions and benefits offered by social security systems. The relationship between income or fiscal differentials and migration is indeed very complex. However the claim that mobility is low in Europe, for number of reasons, primarily cultural ones, and is unlikely to increase significantly in the near term does not dismiss the debates about the implications of mobility on the ability of european governments to finance social protection, because if massive migrations are fairly improbable, there could be a risk of destabilising migrations among the highly qualified labour force;

– making adverse selection the unique argument for public insurance is a very strong assumption. It implies that above some critical level of risk, the private sector would yield a second-best optimum. In practice, it is generally accepted that public insurance systems have to deal with numerous market failures. For example, moral hazard and agency problems associated with health care provision are also crucial. Moreover, while social security systems can be partially justify on the basis that they remedy market failures, this is not their sole or even their primary rationale. Redistributive concerns are also important, but the empirical magnitudes of the diverse problems is not well established (POTERBA [1994]).

In our model, the systems are also assumed to cover all home-country residents. The same uniform insurance policies would therefore be viable in both countries. But if one country introduced a policy that attracted

low risks only, on the assumption that high-risk individuals would migrate, the outcome would be less favourable. The situation would shift from Wilson equilibrium to an unsustainable ROTHSCHILD-STIGLITZ equilibrium. This is another possible reason for promoting a degree of social security harmonisation: subsidiarity is not a cure-all; policy-makers would be justified in limiting fiscal externalities by preventing national insurance systems from trying to "get rid" of their high risks.

This discussion emphasises the need for more specific studies: the impact of mobility for social security systems depends on the behaviour of the national insurance systems when competing with each over and it requires a cost-benefit analysis on a case-by-case-basis. Moreover the underlying principles of social security systems have to be identified with greater accuracy in order to define a more relevant set of analytical frameworks.

• References

d'ALCANTARA, G., TULKENS, H. (1993). – "Economie et fédéralisme", *Discussion Paper no. 9305*, mineo, IRES.

BENSAÏD, J., JACOBZONE, S., LATTÈS, G. (1993). – "Protection sociale et politiques redistributives dans le contexte de l'UEM", *Economie et Statistique*, 262-263, pp. 87-100.

BLANCHARD, O., KATZ, L. (1992). – "Regional Evolution", *Brookings Papers on Economic Activity*.

HENRIET, D., ROCHET, J.C (1990). – "Efficiency of Market Equilibria with Adverse Selection", Essays in Honor of E. Malinvaud, *MIT Press*, .vol. 1, pp. 215-232.

LAROQUE, M. (1993). – "Coordination et convergence des systèmes de Sécurité sociale des Etats membres de la CEE", *Droit Social 9-10*, pp. 792-800.

MANTEL, S. (1993). – "Quelles perspectives pour la mobilité du travail ?", *Economie et Statistique*, 262-263, pp. 111-122.

MEYER, A., MOPIN, M. (1993). – "Le marché communautaire de l'emploi", *Problèmes Economiques et Sociaux*, 698.

POTERBA, J. (1994). – "Government interventions in the markets for education and health care: how and why?", *NBER working paper*, n° 4916.

ROTHSCHILD, M., STIGLITZ, J.E. (1976). – "Equilibrium in Competitive Insurance Markets", *Quarterly Journal of Economics*, 11, pp. 629-649.

WILDASIN, D.E. (1990). – "Budgetary Pressures in the EEC: A Fiscal Federalism Perspective", *American Economic Review*, 80, pp. 69-74.

WILDASIN, D.E. (1992). – "Relaxation of Barriers to Factor Mobility and Income Redistribution", *Public Finance/Finances Publiques*, 47, pp. 216-230.

WILSON, C. (1977). – "A Model of Insurance Markets with Incomplete Information", *Journal of economic Theory*, 16, pp. 167-207.