Journal of Applied Economics, Vol. II, No. 2 (Nov 1999), 311-335

TRANSACTION COSTS AND OVERINSURANCE IN GOVERNMENT TRANSFER POLICY

ALVARO FORTEZA*

Economics Department

Universidad de la República, Uruguay

Benevolent governments lacking commitment ability provide too much insurance, if opportunistic private agents free ride on the government´s concern and exert too little effort expecting government assistance. Yet, the costs of implementing the transfer policy work as a commitment device, alleviating the credibility problem. Indeed, despite of the lack of commitment capacity, the government might provide incomplete insurance because of these transaction costs. Therefore, transaction costs can increase welfare by resolving the dynamic inconsistency faced by a welfare maximizing policymaker.

JEL classification: D60; D82; H10; H30; I30; P16

Keywords: Transfer policy; Transaction costs; Incomplete insurance.

I. Introduction

Most governments provide assistance to the less fortunate members of society and to groups of individuals facing adverse temporary shocks. Some do most of it in a very formal and sustained way (welfare states), while others rely on less formal and more discretionary interventions. Government transfers are known to distort economic incentives, but the extent this happens does not seem to be uniform across countries and periods. Welfare states have recently been under severe criticism, even in the countries in which the

* Suggestions from Torben Andersen, Karl Moene, Martín Rama and two anonymous referees from this journal were very useful in revising this paper. Financial support from SAREC, Sweden, and the Danish Social Research Council, Denmark, is gratefully acknowledged.

system enjoyed more political support, like some North European countries [Barr (1992); Atkinson and Mogensen (1993); Lindbeck et al. (1994); and the Scandinavian Journal of Economics special issue (1995)]. The main concern is about the distortions that welfare policies might be introducing in the economic system. Many think that the welfare state has gone “too far”, with the costs of the system outweighing the benefits. Despite of many obvious differences, similar concerns motivate proposals for reform in less developed countries, including reforms supported by international organizations like the World Bank (The World Bank (1995); Burki and Perry (1998); among many others). Most of these proposals seek to remove regulations and controls that are thought to distort incentives in excess.

The goal in this paper is twofold, to provide a simple model that can explain why, and in what sense, rational and benevolent governments may implement transfer policies that cause distortions *in excess*, and to explore the role of transaction costs in these policies. The basic story is that a government that does not have the ability to commit not to help “unlucky” agents induces individuals to free ride on the government’s concern, exerting too little effort. If the government could commit the policy in advance, instead, it could credibly announce a policy mix that provided the right incentives. That policy would typically include incomplete insurance, in order to induce agents to exert above minimum effort. Without commitment, the announcement of such a policy would not be credible, for agents would know that afterwards the benevolent government would anyway help the “unlucky”.

Governments have access to a wide range of instruments to perform redistribution and insurance. The use of some of these instruments can be committed in advance, as it is mostly the case of formal welfare policies in the welfare states. But governments can also take many actions that systematically affect individuals exposition to risk and that cannot be committed in advance. Temporary tax reductions to economic activities or groups of the population that are suffering a negative shock, especially favorable credit lines for some target groups, bailouts of firms that are facing bankruptcy, are just some examples of the many means governments have to perform transfers on a discretionary basis. The hypothesis that governments might provide insurance in excess due to the lack of commitment capacity refers to these instruments and not to the formal welfare programs that are especially prevalent in some developed countries. This distinction is crucial for both the interpretation and the empirical assessment of the results of the formal model.

Real world governments do not fully eliminate disparities between the lucky and the unlucky. Even in highly distorted economies, private agents face some degree of risk, i.e. there is incomplete insurance. The reason for the government not to fully insure private agents in the model presented in this paper is that transfer policies consume resources. This reason differs from the standard agency theory type of argument in which incomplete insurance is part of an incentive scheme. Therefore, despite of partial insurance, there might be overinsurance in the sense that agents are facing less risk than what it is ex-ante socially optimal.

Wright (1996) and Persson and Tabellini (1992) have also proposed models in which incomplete insurance does not arise as part of an incentive scheme. In their setting, agents face varying risks with some individuals having intrinsically higher probability of achieving a good outcome and hence higher expected output. Citizens vote on transfer policies that simultaneously perform redistribution and insurance. Even though agents are risk averse, incomplete insurance arise because full insurance might cause too much redistribution from the point of view of the median voter. Therefore, there would be complete insurance, according to these models, if the population were homogenous. In the present paper instead incomplete insurance does not require that the population be homogenous. More important, the argument in this literature rest on an *assumed* link between redistribution and insurance, where more insurance can only be performed through more redistribution. The models provide no formal reason why governments could not provide full insurance assuring each citizen his own expected output, thus performing no redistribution from an ex-ante perspective. In the present paper instead, the government is allowed to freely choose individual transfers with no more restrictions than the overall resource constraint.

The benevolent government assumed in this paper faces what Buchanan (1975) called a Samaritan's dilemma. The government cares about individuals´ welfare so it is tempted to help the unlucky, but it also knows that while assisting the needy it induces individuals to be careless, recreating the problem. There is an extensive literature that explores possible rationales for social policies that might help preventing Samaritan's dilemmas to take place. According to this literature, the government mandates agents to buy some services or directly provides them to avoid that some people fail to do it in anticipation of altruistic agents or government charitable assistance (Lindbeck and Weibull (1988); Hansson and Stuart (1989); Bruce and Waldman (1991); Coate (1995)). The present paper deals instead with situations in which governments cannot fully avoid the dilemma. In fact, it is not rare to see governments having to decide whether to help people affected by natural disasters, enhanced foreign competition, and the like.

The paper proceeds as follows. In section II, the model is introduced. Equilibria are explored in section III. Section IV contains welfare comparisons and section V ends the paper with some remarks.

II. The Model

Consider an economy populated by a large number of identical individuals. All of them produce the same consumption good, incurring an effort (a), which, for the sake of simplicity, can take just two values: high (H) and low (L) effort (H > L). Still, individuals might decide on a continuum of strategies, since they can randomize. Thus, in general, each agent can pick certain probability of putting in high effort. If he chooses 0 or 1, he is said to play a pure strategy, otherwise he plays a non-degenerate-mixed strategy.

There is individual uncertainty concerning the output: each agent gets an amount X with probability P(a) and x with probability (1 - P(a)). Just to fix ideas, assume X > x so that P(a) is the probability of "being lucky". This probability is a function of the individual's action. The probability of getting a good outcome is higher when the agent chooses to put in high effort (P(H) > P(L)). Probabilities of different individuals are independent, so that, by the law of large numbers, there is no aggregate risk.

Individuals choose effort levels in order to maximize expected utility functions, which are increasing and concave in consumption and decreasing in effort. Concavity in consumption implies that individuals are risk averse. Call W the consumption level in the good state of nature, i.e. when output is X, and w the consumption in the bad state. Assume that utility functions are additively separable in consumption and effort:

$$V(w, W, a) = P(a)\, u(W) + [1 - P(a)]\, u(w) - a \tag{1}$$

In the absence of insurance and redistribution, each agent would consume his own output, so that a lucky individual would consume W = X, while an unlucky individual would consume the smaller amount w = x. But, if there were insurance companies or a government redistributing output, individual consumption might be different from individual realized output.

There is a government ruled by a benevolent politician that redistributes output aiming at maximizing agents welfare. The government objective function is the summation of individual expected utilities. Economic policy reduces the variability of individual consumption. Thus, from an ex-ante perspective, the government provides insurance[1].

---

[1] Private insurance companies might do the job, but if insurance markets were incomplete, citizens might give politicians a mandate to provide insurance. As Dixit (1987, 1989) has emphasized, however, imperfect insurance markets do not necessarily imply that the government *should* intervene. It might not have any advantage over the private companies to overcome the distortions that caused the market failures. Yet, the point in the present paper is that afterwards, when the uncertainty is revealed, the politician might be tempted to help the unfortunate. Moreover, government temptation to provide free insurance ex-post might deter private companies from doing it at the beginning. Thus, government intervention could operate as a separate cause for market failures.

Individual effort is private information. Other agents and the government can only observe individual output. Thus, the government can associate consumption to output, but not to effort. Having observed individual output, the government computes aggregate output and the proportion of lucky agents in the population N.

Governments consume resources. They produce government services out of inputs. This is also the case of redistributive-insurance policy, which is the unique activity of the government in this model. Thus, the taxes levied on the “lucky” [N(X - W)] cannot be lower than the subsidies distributed to the “unlucky” [(1 - N)(w - x)] *plus* the resources spent to support the government:

$$N(X - W) \geq (1 - N)(w - x) + \text{cost of redistribution} \quad (2)$$

The “redistribution technology” can be summarized by the cost of redistribution function. It is assumed in this paper that total costs of government activities are increasing in the amount redistributed, i.e. in the taxes levied on the lucky and on the subsidies distributed to the unlucky. More specifically, total government costs are assumed proportional to the redistributed income[2]:

$$\text{cost of redistribution} = c\,[N(X - W) + (1 - N)(w - x)]; \quad 0 < c < 1 \quad (3)$$

The timing is as follows. First, private agents simultaneously pick effort levels. Second, output is realized. Third, the government redistributes output,

[2] The assumption that costs are proportional to the amount redistributed is not crucial for the results that follow. What is crucial is that the costs of the policy are non decreasing in “taxes” levied on the lucky (X - W) and on “subsidies” distributed to the unlucky (w - x), being increasing in at least one of them. Some of the results that follow would not hold if the costs of the welfare state were just fixed costs, independent of the amount redistributed. It is not difficult to analyze that case, but the one described in this paper seems both more realistic and more interesting.

and so chooses consumption levels for the lucky and the unlucky. Notice that, unlike private insurance companies that must write the insurance contract before agents choose actions, the government is assumed to choose afterwards. The main implication is that the government will not take private incentives into account when designing redistribution. Not because it is not aware of incentives, but because when its turn to play arrives private agents have already taken their decisions.

This timing formalizes the idea of lack of commitment capacity. Much of the government provision of insurance is informal, implicit in its policies, and involves a wide range of instruments. Thus, it is much more difficult to impose legal constraints on these activities, than on standard insurance contracts. Therefore, under discretion, the only credible announcement that the government can make is that it will choose consumption allocations that maximize its objective function ex-post. The government lacking a commitment capacity can only implement some "contracts", those that are incentive compatible.

III. The Equilibria

A discretionary equilibrium is a set of consumption allocations and individual probabilities of working hard such that: i) both the government and private agents are optimizing, taking other's strategies as given; and ii) private agents' forecasts about other agents choices are on average correct.

A. The Government Reaction Function

In the discretionary regime, when the government plays, private agents have already picked effort levels, and production has taken place. Each individual belongs now to one of the following four groups: 1) those that worked hard and got high output; 2) those that worked hard, but got low output; 3) those that did not work hard, and still got high output; and 4) those that did not work hard and got low output. Calling q the proportion in the population of individuals that worked hard, the ex-post government objective function can be written as:

$$q\,P(H)\,[u(W) - H] + q\,[1 - P(H)]\,[u(w) - H] + (1 - q)\,P(L)\,[u(W) - L] +$$

$$+ (1 - q)\,[1 - P(L)]\,[u(w) - L] \tag{4}$$

Individual effort is not observable, but the proportion of individuals that worked hard can be inferred from the aggregate outcome:

$$N = P(H)\,q + P(L)\,(1 - q) \tag{5}$$

The government reaction function can be computed maximizing (4) subject to (2), (3) and (5). Alternatively, the government program can be more compactly written as:

$$\underset{w,W}{\text{Maximize:}}\; N\,u(W) + (1 - N)\,u(w) - [q\,H + (1 - q)\,L]$$

$$\text{s.t.: } W \leq -\frac{1 - N}{N}\,\frac{1 + c}{1 - c}\,w + \text{constant} \tag{6}$$

It follows from the first order conditions that:

$$\frac{u'(W)}{u'(w)} = \frac{1 - c}{1 + c} < 1 \quad \Rightarrow \quad w < W \tag{7}$$

The government thus provides incomplete insurance when marginal costs are positive ($c > 0$). Equation (7) states that the marginal rate of substitution between consumption of the lucky and the unlucky must be equal to the marginal rate of transformation implicit in the distribution technology. In the absence of transaction costs, the marginal rate of transformation would be one. Transaction costs of transfer policies imply that the pool of unlucky agents receive less than one additional unit of output per unit withdrawn from the lucky, i.e. the marginal rate of transformation is less than one. The larger the costs of the policy, the smaller the marginal rate of transformation, and thus the smaller the marginal rate of substitution in an optimum. A smaller marginal rate of substitution means a larger gap between consumption of the lucky and the unlucky, i.e. less insurance. In summary, the government might provide incomplete insurance ex-post because providing insurance involves transaction costs[3].

It seems convenient to represent the government program and its reaction function graphically in the w - W space (figure 1). The government budget constraint is a straight line, passing through the point (x, X), which is the point of no intervention[4] . Its slope depends on the proportion of lucky agents and on the costs of the redistribution policy. The larger the marginal costs of redistribution, the steeper the budget constraint; i.e. the less efficient the government is in redistributing income, the more it must take out of the lucky per unit received by the unlucky. The smaller the proportion of individuals that got high output the steeper the government budget constraint. The intuition is also clear: the larger the number of the unlucky, the less each one receives per unit withdrawn from the lucky. The proportion of the lucky, in turn, depends on the proportion of individuals that decided to put in high effort q. According to (5), the proportion of lucky agents reaches its maximum, equal to P(H), when everybody decided to work hard (q = 1), and its minimum, equal to P(L), when nobody decided to work hard (q = 0).

There are well-behaved government indifference curves with slope given by:

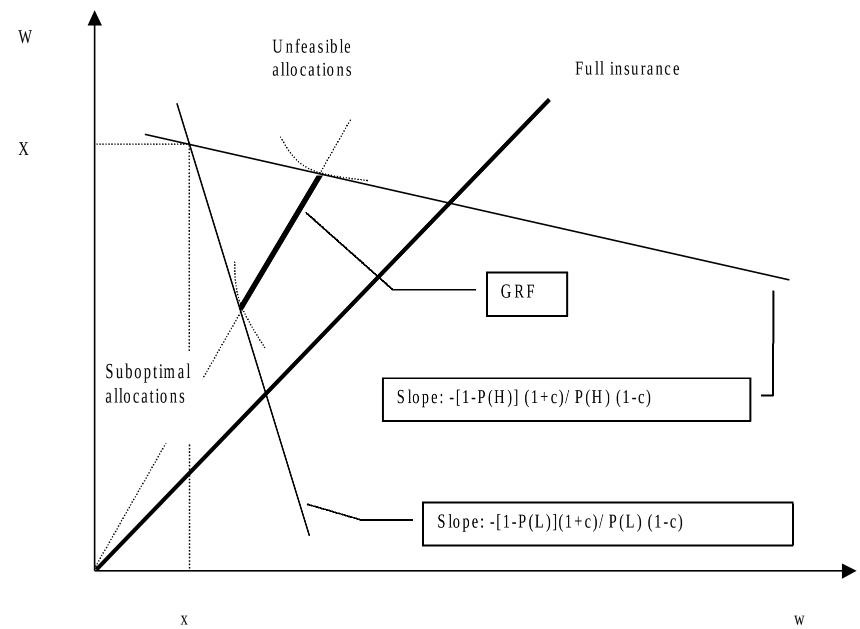
---

[3] Simple as it is, the point should not be oversimplified: the government might still provide full insurance with transaction costs, if all the costs were fixed. In this case, once the government has decided to incur in the costs of mounting the system, costs would not be a reason to provide less than full insurance.

[4] If the cost of redistribution function included fixed costs, the government budget constraint would shift to the southwest. Then, the x - X point would not be feasible, unless the welfare system were dismounted.

$$\left.\frac{dW}{dw}\right|_{Indif.} = -\frac{1-N}{N}\frac{u'(w)}{u'(W)} \tag{8}$$

Figure 1. The Government Reaction Function



The government will choose the point on its budget set (the region enclosed by the axis and the budget line) that corresponds to the indifference curve that is farthest from the origin. There is one such point for each N, and the set of these points conform (the image of) the government reaction function (GRF).

The graphical analysis is done assuming that the utility functions are of the constant relative risk aversion type in consumption (CRRA):

$$u(w) = \frac{w^{1-\gamma} - 1}{1-\gamma} \tag{9}$$

In this case, condition (7) takes the form:

$$\frac{W}{w} = \left(\frac{1+c}{1-c}\right)^{\frac{1}{\gamma}} > 1 \tag{10}$$

The government budget constraint in (6) must be binding in an optimum:

$$W = -\frac{1-N}{N}\,\frac{1+c}{1-c}\,w + \frac{N\,X\,(1-c) + (1-N)\,x\,(1+c)}{N\,(1-c)} \tag{11}$$

The system (10) - (11) yields the pairs of consumption allocations (w,W) that maximize the government objective function for each N. Thus, in the case of CRRA utility functions, the government reaction function is the segment of a straight line passing through the origin, with slope larger than one [equation (10)] and extremes on the budget constraints corresponding to the minimum and the maximum values of N.

It is convenient for the analysis that follows to single out the points that represent full insurance, i.e. consumption allocations such that private agents get the same disposable income in both states of nature (w = W). The 45º line passing through the origin in the w - W space represents these points.

The larger the marginal costs of the transfer policy, the farther the GRF from the full insurance line. Other things equal, the government is less willing to provide insurance the more costly it is to do it.

B. Private Agents Strategies

As it was already pointed out, private agents simultaneously pick effort levels before uncertainty is revealed and before the government chooses the redistribution scheme. They know the government objective function, so that they can solve its program and get the government reaction function. The problem might be much more difficult, however, in regards to other private agents’ choices. Each one must correctly anticipate other agents decisions - not at the individual level, but on average -, for his own best choice might depend on what others do. Indeed, each agent´s optimal effort depends on the consumption allocation (w, W), and consumption allocations depend in turn, through the government reaction function, on the proportion of the lucky, which depends on the proportion of individuals working hard.

There are cases in which guessing other agents choices is not actually difficult. Suppose, for instance, that the government is very inefficient in redistributing income (c is large), so that it will not be willing to help much unlucky agents, no matter the proportion of the unlucky in the population. Then, it is likely that, no matter what other agents do, the best choice for each one is to work hard. In this example, though not specially interesting, it is easy to guess other agents’ decisions: everybody will work hard.

There are other more complex cases in which finding out what other individuals will do is not such an easy task. This is typically the case when agents are indifferent between high and low effort and thus randomize or when the model exhibits multiple equilibria. This difficulty is formally avoided in the present paper by assuming shared beliefs: all agents are assumed to expect the same aggregate outcome. Admittedly, this is not a fully satisfactory treatment of the issue. Yet, the results in the present paper serve as a building block for a dynamic model that addresses the selection between the multiple equilibria (Forteza, 1998). The static equilibria obtained in the present paper are shown to be stationary states of the dynamic version. Thus, the assumption of shared beliefs does not seem to be particularly misleading in the present context.

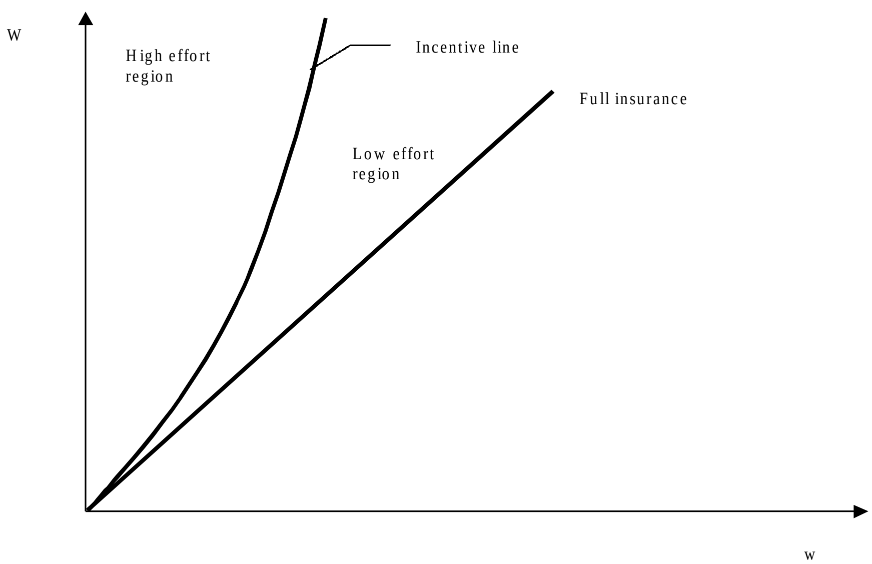
An agent chooses high effort when the expected utility associated with it is larger than the expected utility associated with low effort. Agents dislike effort, but they can still work hard in order to raise the probability of enjoying high consumption. Of course, if consumption in good and bad states of nature were not very different, agents would not work hard. Hence, agents expecting consumption allocations “close” to the full insurance line in the w-W space choose low effort. There is a set of consumption pairs such that agents are indifferent between high and low effort. This locus will be called the incentive line (IL). It separates the w-W space in two regions: to the west agents pick high effort, and to the east they pick low effort. On the incentive line agents are strictly indifferent, so that they might randomize. Under the simplifying assumption of CRRA utility functions, explicit functional forms for the incentive line are obtained:

$$W = \left[w^{1-\gamma} + (1-\gamma)\frac{H - L}{P(H) - P(L)} \right]^{\frac{1}{1-\gamma}} , \quad \text{for } \gamma \neq 1 \tag{12}$$

$$W = w e^{\frac{H - L}{P(H) - P(L)}} , \quad \text{for } \gamma = 1 \tag{13}$$

Figure 2 presents an incentive line and the two effort regions for an economy with $\gamma > 1$. (IL is a straight line when $\gamma = 1$, and it is concave when $\gamma < 1$).

Figure 2. Private Agents Strategies

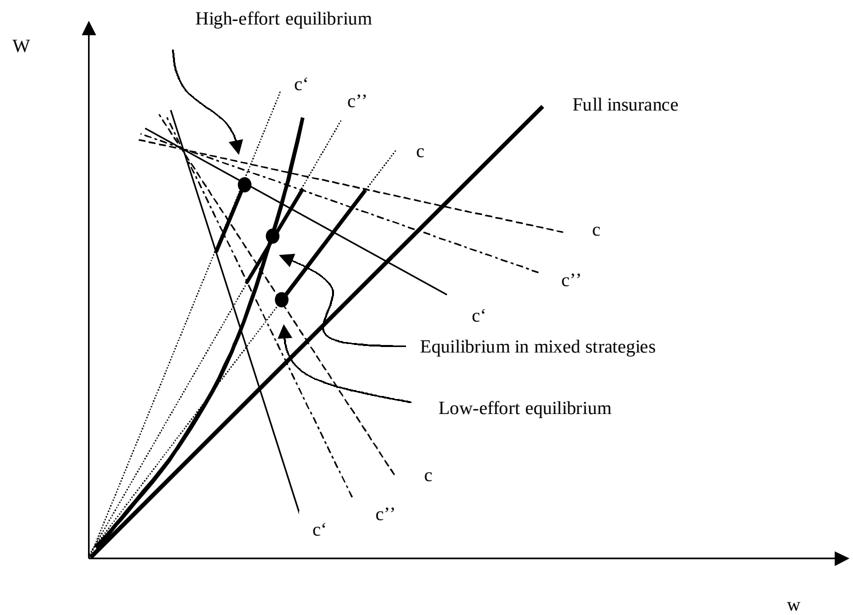


C. The Equilibria

The configuration of the equilibria depends on the parameter values. Some examples for CRRA utility functions are presented in figure 3, all of them for $\gamma > 1$ and the point x - X located to the west of the incentive line.

The first example is built for a small marginal cost of the redistribution policy c. In this case, the government provides incomplete insurance, but still it is not enough to induce agents to choose high effort. Private agents safely anticipate that the government will pick a consumption allocation in the low effort region. Thus, everybody chooses to work little (q = 0), aggregate output reaches its minimum, and the proportion of individuals that will need help reaches its maximum (1 - P(L)). Agents know it, and they also know the government reaction function, so that there are no mistakes.

Figure 3. The Equilibria with Different Costs: c < c'' < c'



Consider now the case of large marginal costs c'. The government provides incomplete insurance, and private agents choose high effort. Like in the previous example, private agents have no problems to anticipate the aggregate outcome. The government reaction function is to the west of the incentive line, so that everybody will choose high effort, and the proportion of the lucky will be N = P(H). In this example, unlike in the previous one, agents work hard. Still, incomplete insurance is not designed to provide the «right» incentives. In equilibrium, agents are facing more risk than what is needed to induce them to choose high effort. Incentives are just a byproduct, not a deliberate policy.

There is a mixed strategies equilibrium at the crossing of the government reaction function and the incentives line, if the marginal costs of the transfer policy is neither as low as in the first example nor as high as in the second one (marginal costs c'' in figure 3). At this point, agents are indifferent between effort levels, so that they might randomize. If they choose probabilities of working hard such that, in the aggregate, the proportion of lucky agents corresponds to the budget line passing through this point, then the government will actually choose the consumption pair corresponding to it. If all this turns out to happen, both the government and private agents will be optimizing, and agents will be making correct guesses.

IV. Welfare

Expected utility in equilibrium is a non-monotone function of the cost parameter. It is decreasing in the cost parameter both in the high and in the low effort equilibria, but it is increasing in this parameter in the mixed-strategies equilibrium, if agents are sufficiently risk averse ($\gamma > 1$). See the appendix for a formal proof.

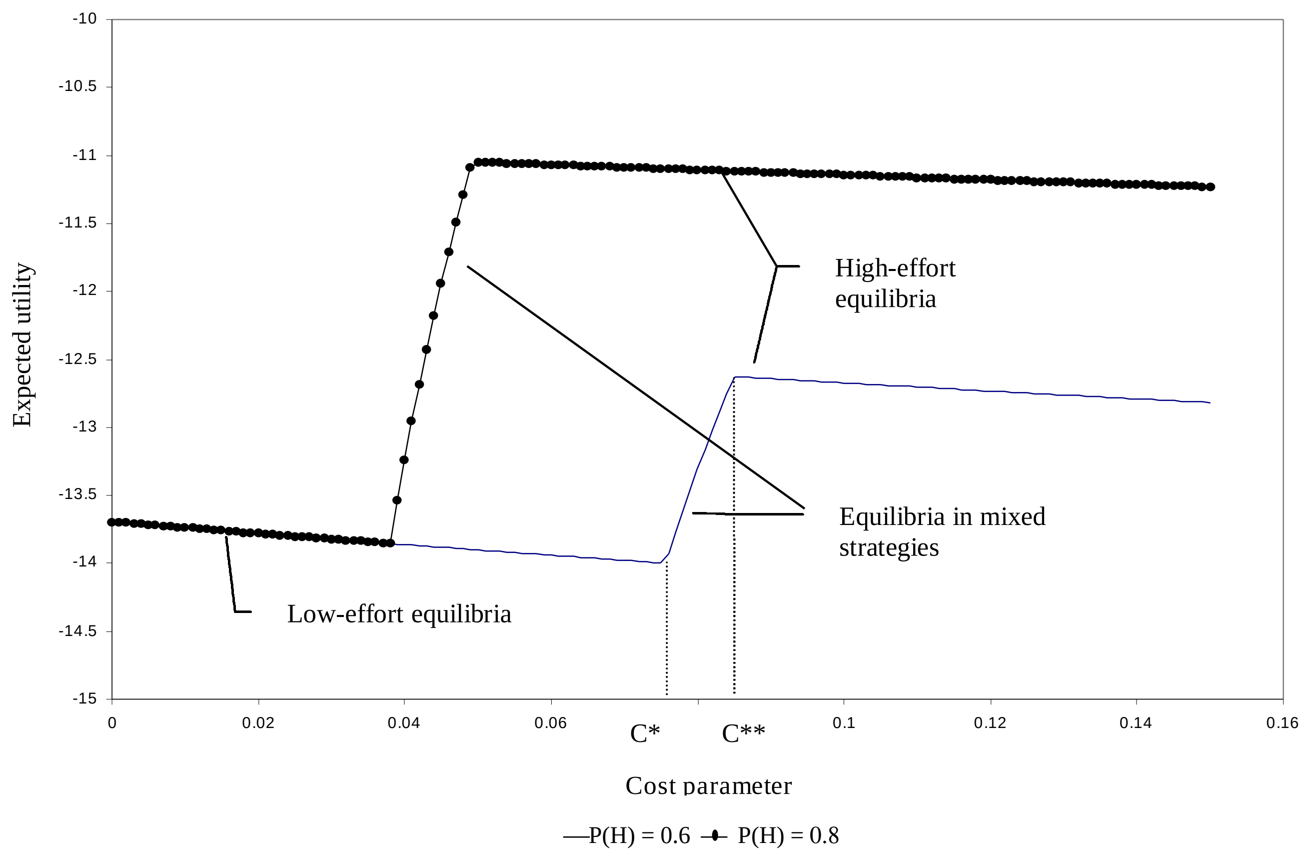
Figure 4 summarizes simulation results. The coefficient of relative risk aversion (γ) was set equal to 5, consistent with reported econometric estimations of the coefficient of intertemporal substitution lying around 0.2 (Reinhart and Végh, 1994). Output in the good state of nature was set 20 per cent higher than in the bad state of nature: X = 0.42, x = 0.35. The parameters that capture disutility of effort were set equal to: H = 2.0 and L = 1.7. The probability of getting high output when exerting low effort was set equal to: P(L) = 0.4. The probability of getting high output when exerting high effort was set at two different values: P(H) = 0.6 and 0.8. Finally, the equilibria were computed for 150 different values of the cost parameter, ranging from 0 to 15 per cent.

Figure 3 helps in understanding figure 4. Consider first the example built for P(H) = 0.6. Start with a high cost c', and reduce it by a small amount, such that agents still continue choosing high effort. The budget lines shift counterclockwise around point x - X and the GRF shifts clockwise around the origin. The new equilibrium allocation lies above the previous budget set. The improvement of the distribution technology makes this point feasible and expected utility rises. Expected utility is thus decreasing in the cost parameter along this high-effort equilibrium.

If the cost parameter is reduced farther down to c**, the pure-strategies-high-effort equilibrium vanishes and a mixed strategies equilibrium appears. Expected utility in this equilibrium is *increasing* in the cost parameter. As the parameter 'c' is reduced, the GRF shifts clockwise around the origin, while the incentive line remains unchanged. Hence the equilibrium located in the crossing of these two lines shifts downwards, meaning that the amounts of disposable income in both states of nature decrease. This reduction in disposable income of both the lucky and the unlucky stems from the reduction in total output caused by the drop in the fraction of the population exerting high effort. Expected utility decreases, due to the reduction of disposable income in both states of nature, and despite of the reduced effort. Indeed, in the mixed-strategies equilibrium, agents are in fact indifferent between high and low effort so changes in the probability they attach to one or the other cannot affect their expected utility. Reductions in disposable income negatively affect expected utility in the usual way.

When the parameter cost is reduced farther to c*, the mixed-strategies

Figure 4. Expected Utility in Equilibrium



equilibrium is substituted by a pure-strategies-low-effort equilibrium. Further reductions in ‘c’ have positive effects on expected utility again.

In summary, reductions in the cost of the transfer policy have a positive effect on expected utility, if private agents’ actions do not change, as it happens inside the high and the low effort regions. But the effect is negative, if the reduction in costs induces agents to exert lower effort.

The disincentive effects of the transfer policy could be larger on less productive societies, increasing the gap between developed and developing countries. This could happen, according to the model, if more advanced societies had higher probability of getting high output when exerting high effort. The expected utility is non-decreasing in this probability (figure 4). For each level of effort, aggregate output is increasing in the probability of getting high output. This effect obviously contributes to more welfare. But there is another effect going through incentives: higher probability of getting high output when exerting high effort provides more incentives for high effort. In terms of figure 4, the set of values of the cost parameter for which individuals work hard in equilibrium is higher when this probability is 0.8 than when it is 0.6. Hence, this example shows that the disincentive effects of the transfer policy could be larger on less productive societies[5].

V. Concluding Remarks

The government provides incomplete insurance in the present model, even though it is not aiming at providing incentives for agents to work hard. Indeed, incomplete insurance does not preclude overinsurance in the present framework. Unlike the standard principal-agent relationship, the government (principal) does not care about agents’ effort. When the government’s turn

[5] It should be mentioned however that, other things equal, the disincentive effects of the transfer policies would be larger, not smaller, for countries with higher P(L). Hence, disincentive effects of the transfer policies could actually be smaller in developing countries, if the technological and organizational advantage of developed economies involved higher P(L) rather than higher P(H).

to play arrives, agents have already chosen their actions, and bygones are bygones. Still, it provides incomplete insurance, because doing so involves incurring in transaction costs.

This reason for incomplete state insurance is also different from the one emphasized by Wright (1986) and Persson and Tabellini (1992). They assume heterogeneous population, with agents facing different individual probabilities of getting high output. Thus, agents with higher probabilities of a good outcome also get higher average output. Redistribution and insurance in their context alter individuals' relative average disposable income. Agents vote on redistribution, and assumptions are made so that the median voter result holds. Like the discretionary government in the present paper, voters face a risk-sharing problem, with no incentive considerations. Still, full insurance is not the best choice for most voters. Full-insurance involves not only the highest level of insurance, which is desirable for all in their setting, but also the highest degree of redistribution, which is only desirable for those with expected output below average. If the median voter coincides with the average of the population - something that happens when the distribution of the voters over types is not skewed -, there will be full insurance. The median voter receives no net transfer while he is interested in an as complete as possible insurance. But if the median voter is above average, there will be incomplete insurance. He will be facing a negative net transfer, but at the same time he is interested in insurance. So the median voter trades off these opposite forces, choosing an intermediate level of insurance and redistribution. Thus the voting model predicts full insurance when the distribution of the population over risk types is not skewed. The model in this paper, instead, yields incomplete insurance even when the population is assumed homogenous or, being heterogeneous, the distribution is not skewed.

The costs of implementing transfer policies might have other important consequences for economic performance, on top of causing incomplete insurance. Not surprisingly, as in other policy games, the existence of costs of government policies might be welfare improving, since they enhance the commitment ability of the government (Lohmann, 1992). Besides, transaction costs generate a continuum of commitment abilities, rather than the frequently assumed two extreme regimes, one of full commitment and one of full discretion.

In principle, credibility could also be attained through reputation. Tough governments might abstain from providing too much insurance signaling their type and hence separating from weak governments. However, in the case of transfer policy it seems unlikely that an elected government with a short elected term will be willing to invest in reputation for being tough. At least, such behavior seems less likely in this case than in the monetary case, in which governments are making decisions and thus sending signals on a daily basis.

The model in this paper stresses the negative impact of *discretionary* transfers on economic efficiency, but it does not imply that more transfers *in general* should be correlated to less economic efficiency. Because the aim of the paper is to analyze the distortions caused by the lack of commitment capacity, policies that can be pre-committed have not been explicitly included in the formal model. In the real world, many policies involving transfers are performed on a pre-committed basis, especially so in formal welfare states. Those policies should not cause distortions "in excess", according to this model, and some of them could actually enhance efficiency, mitigating the Samaritan's dilemma (Lindbeck and Weibull (1988); Hansson and Stuart (1989); Bruce and Waldman (1991); Coate (1995)). This view is consistent with the idea that larger welfare states are economies with more rule of law and less discretion (Burki and Perri, 1998). Also the model implications are not inconsistent with some recent empirical evidence on a positive cross-country correlation between the size of government redistributive programs and economic performance (Bénabou, 1996, Rodrik, 1994). What the model in this paper does imply instead is that discretionary government transfers should be negatively correlated with economic performance. Countries and periods characterized by more bailouts, subsidies to declining industries, trade protectionism, and the like should exhibit less economic efficiency. Casual observation suggests this is likely the case[6].

The model also has some normative implications. As in other policy games, making government actions costly might be welfare improving (Persson and Tabellini (1990)). If possible, the degree of insurance offered by the government should be pre-specified in a law costly to change. With a sufficiently sophisticated contingent rule, such policy would imply no loss of flexibility. However, in many cases, and especially so in developing countries, governments might not be able to specify detailed contingent rules. Still in these cases, real resource costs of transfer policies might serve as a commitment device, alleviating the credibility constraint. And yet, having too high costs might inhibit government interventions when they are needed. Thus, there might be a trade off between commitment to non-sophisticated rules and flexibility. A similar issue has been extensively analyzed in the monetary policy literature (Rogoff (1985); Flood and Isard (1989); Lohmann (1992); and Persson and Tabellini (1993); among others).

Lohmann (1992) explicitly considers the cost for the government of overriding the central banker, and proposes a model to choose it optimally together with the degree of "conservatism" of the central banker. Even though the idea is appealing, it seems more difficult to implement something similar and give it a precise meaning in the present context. Governments make use of a large set of tools to redistribute income and help the unfortunate. It is not easy to set costs to uniformly raise the commitment capacity in all these heterogeneous fronts. Specific welfare programs can be limited, but imperfect substitutes might do worse. In the absence of formal and specialized welfare institutions, politicians might be tempted, and even pressed by their political constituencies, to perform "social" policies by means of other less efficient and more distorting instruments. The experience of some Latin American

[6] Of course, an identificaction problem remains in that, other things equal, larger exogenous shocks would induce governments to provide more transfers. Hence, even if more discretionary transfers were correlated with worst performance, it would not necessarily imply that the former caused the latter.

countries might be illustrative in this respect (especially so in the case of Argentina and Uruguay). Therefore, more research, including some applied one, seems advisable before moving towards policy recommendations.

Appendix

Proposition: With CRRA utility function and coefficient of relative risk aversion higher than 1, expected utility is a decreasing function of the cost parameter c in the pure-strategies equilibria and an increasing function of c in the mixed-strategies equilibrium.

Proof: The expected utility in pure-strategies equilibria can be written as:

$$L[w(c), W(c), c] = P(a)\, u\,[W(c)] + [1 - P(a)]\, u\,[w(c)] - a +$$
$$+\ \lambda\,\{(1-c)N[X - W(c)] + (1+c)(1-N)[x - w(c)]\}$$

where a = H, L. Notice that this expression is the Lagrangian of the government's optimization program in equilibrium (it is not out of equilibrium, though). Indeed, setting q equal to 0 or 1 in the government's program yields the above expression. Hence, the envelope theorem applies, so that indirect effects of changes in c going through w and W can be disregarded. In turn, the proportion of agents getting high output (N) is a given in these equilibria. Differentiating this expression:

$$\frac{dL}{dc}[w(c), W(c), c] = -\lambda\,[N(X - W) + (1-N)(w - x)] < 0$$

The equilibrium in mixed strategies takes place at the crossing of the GRF and the individuals incentive line (figure 3). Hence, equations (10) and (12) imply that:

$$\left(\frac{1+c}{1-c}\right)^{\frac{1}{\gamma}} = \left[1 - \frac{(\gamma-1)(H-L)w^{\gamma-1}}{P(H)-P(L)}\right]^{\frac{-1}{\gamma-1}}$$

implying that: dw/dc > 0, if $\gamma > 1$. From the incentive line (12): dW/dw > 0 and hence dW/dc > 0, if $\gamma > 1$. Consumption in both states of nature is increasing in c. Effort is also increasing in c, but agents are indifferent between high and low effort in a mixed-strategies equilibrium, so expected utility must be increasing in c in this equilibrium.

References

Atkinson, A.B. and G. Mogensen, eds. (1993), "Welfare and Working Incentives," Oxford, Clarendon Press.

Barr, N. (1992), "Economic Theory and the Welfare State: A Survey and Interpretation," Journal of Economic Literature 30: 741-803.

Bruce, N. and M. Waldman (1991), "Transfers in Kind: Why They Can Be Efficient and Nonpaternalistic," American Economic Review 81(5): 1345-51.

Bénabou, R. (1996), "Inequality and Growth," in: B. S. Bernanke and J. J. Rotember, eds. National Bureau of Economic Research Macro Annual 1996, Vol. 11: 11-74.

Buchanan, J. M. (1975), "The Samaritan's Dilemma," in: E. S. Phelps, ed., Altruism, Morality and Economic Theory, New York: Russell Sage Foundation, 71-85.

Burki, S. J. and G. Perry (1998), Beyond the Washington Consensus, The World Bank.

Coate, S. (1995), "Altruism, the Samaritan's Dilemma, and Government Transfer Policy," American Economic Review 85(1): 46-57.

Dixit, A. (1987), "Trade and Insurance With Moral Hazard," Journal of International Economics 23: 201-220.

Dixit, A. (1989), "Trade and Insurance With Adverse Selection," Review of Economic Studies 56: 235-248.

Flood, R. and P. Isard (1989), "Monetary Policy Strategies," International Monetary Fund Staff Papers 35: 612-632.

Forteza, A. (1998), "Welfare State Dynamics," Departamento de Economía, FCS, Universidad de la República, Uruguay.

Hansson, I. and C. Stuart (1989), "Social Security As Trade Among Living Generations," American Economic Review 79(5): 1182-1195.

Lindbeck, A., P. Molander, T. Persson, O. Petersson, A. Sandmo, B. Swedenborg, and N. Thygesen (1994), "Turning Sweden Around," The MIT Press.

Lindbeck, A. and J. W. Weibull (1988), "Altruism and Time Consistency: the Economics of Fait Accompli," Journal of Political Economy 96(6): 1165-82.

Lohmann, S. (1992), "Optimal Commitment in Monetary Policy: Credibility versus Flexibility," American Economic Review 82: 273-286.

Persson, T. and G. Tabellini (1990), Macroeconomic Policy, Credibility and Politics, Harwood Academic Publishers.

Persson, T. and G. Tabellini (1992), "Federal Fiscal Constitutions. Part I: Risk Sharing and Moral Hazard," Discussion papers, Universidad Autónoma de Barcelona- Instituto de Análisis Económico, Spain.

Persson, T. and G. Tabellini (1993), "Designing Institutions for Monetary Stability," Carnegie-Rochester Conference Series on Public Policy 39: 53-84.

Reinhart, C. and C. Végh (1994), "Intertemporal Consumption Substitution and Inflation Stabilization: An Empirical Investigation," IMF Research Department, June.

Rodrik, D. (1996), "Why Do More Open Economies Have Larger Governments?," Columbia University, NBER and CEPR, February.

Rogoff, K. (1985), "The Optimal Degree of Commitment to an Intermediate Monetary Target," Quarterly Journal of Economics 100: 1169-1190.

Rubinstein, A. (1991), "Comments on the Interpretation of Game Theory," Econometrica, 59: 909-924.

Scandinavian Journal of Economics, (1995), Special Issue: The Future of the Welfare State, 97(4).

The World Bank (1995), World Development Report 1995, Workers in an Integrating World, Oxford University Press.

Wright, R. (1986), The Redistributive Roles of Unemployment Insurance and the Dynamics of Voting, Journal of Public Economics 31: 377-399.