OPTIMAL PUBLIC POLICY AND ENDOGENOUS PREFERENCES: AN APPLICATION TO AN ECONOMY WITH FOR-PROFIT AND NON-PROFIT ENTERPRISES

Luigi Bonatti

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Dott. Stefano Comino
Dipartimento di Economia
Università degli Studi
Via Inama 5
38100 TRENTO ITALIA

Luigi Bonatti*

OPTIMAL PUBLIC POLICY AND ENDOGENOUS PREFERENCES: AN APPLICATION TO AN ECONOMY WITH FOR-PROFIT AND NON-PROFIT ENTERPRISES

Abstract: We present a general equilibrium model where profit-maximizing firms and non-profit organizations coexist, and the people's propensity to devote efforts to non-profit activities increases with the stock of social capital. In its turn, the formation of social capital is stimulated by an increase in the aggregate volume of non-profit activities. Therefore, a public policy subsidizing the nonprofits has an indirect effect on people's preferences concerning the effort to devote to these organizations via its positive impact on the accumulation of social capital. Within this framework, we analyze the optimal policies of a government facing myopic or rational agents.

* University of Trento

E-mail: Luigi.Bonatti@economia.unitn.it

1 INTRODUCTION

There is a growing number of studies focusing on the endogenous formation of preferences.[1] However, only recently economic models have started analyzing the interaction between public policies and the evolution of preferences, attitudes and values. This interest was preceded from the recognition that "the effectiveness of policies and their political viability may depend on the preferences they induce or evoke" (Bowles, 1998, p.104).[2] The present paper models this link between public policy and the evolution of preferences, thus contributing to shed light on issues that are still largely unexplored.

We deal with these issues by considering an economy where profit-maximizing firms and non-profit organizations coexist. In this context, the non-profit organizations have an "altruistic" objective, and the people's attitudes toward working in one of them may depend on the degree of cohesion, generalized trust and altruism existing in the social environment, namely on the stock of "social capital" existing in the society.[3] Hence, a peculiar hypothesis underlying the general equilibrium model proposed in this paper is that the people's propensity to devote time and efforts to non-profit activities depends on the outstanding endowment of social capital.[4] In its turn, the formation of social capital is stimulated by an increase in the aggregate

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[1] Among the significant contributions concerning the formation, transmission and evolution of norms and cultural values, see Arrow (1974), North (1990), Becker and Madrigal (1994), Greif (1994), Becker (1996), Kreps (1997), Posner (1997), Bisin and Verdier (1998), Bowles (1998).

[2] Aaron (1994) notes that this recognition amounts to an extension of the Lucas critique: it applies to people's preferences what holds for Lucas with regard to people's expectations, namely that it is incorrect to assess the relative merits of alternative policies by treating expectations as invariant with respect to changes in policy.

[3] The concept of social capital used here is close to the definition of Putnam et al. (1993), according to which the social capital has to be intended as those networks of human relations and those systems of norms and shared values that make coordination and cooperation easier. It is worth emphasizing that--differently from physical and human capital—social capital conceived in this way cannot be privately appropriated, since it is embedded in the community that generated it. Moreover, the accumulation of social capital is often to be considered as a by product of individual or collective behavior aiming at other scopes, and not as a result of actions made intentionally by individuals, organizations or groups in order to increase its stock.

[4] There is a vast literature which has recognized a fundamental characteristic of many non-profit organizations in the motivational mix of those operating within them, whose behavior is not exclusively self-interested. Indeed, the mission inspiring the existence and actions of those organizations allows them to rely also on altruistic and ethical motives. Thus,

volume of activities undertaken by the non-profit organizations.[5] Therefore, a public policy subsidizing the activities of these organizations has an indirect effect on people's preferences concerning the level of effort to devote to these organizations via its positive impact on the accumulation of social capital.

Beside modeling a market economy with a non-profit sector, the paper focuses on three points that are relevant when the public policies can affect individual preferences.

First, the paper formally addresses some implications of the fact that one cannot correctly assess the long-term effects of economic policies without considering that these policies may affect market outcomes also by influencing individual preferences. One of the few formal analysis of the interdependence between policy and preferences is conducted by Bar-Gill and Fershtman (2005) with an evolutionary model of subsidizing contributions to a public good.[6] However, this model does not provide a formal treatment of the peculiar problem that a policy maker has to face in order to select an optimal policy in the presence of endogenous preferences (see below). Furthermore, the approach adopted by the authors prevents their model from distinguishing between rational and myopic agents. This distinction is particularly important, since in this

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the non-profit organizations are able to mobilize resources that otherwise would be left unused (for instance, voluntary labor, social engagement and care that without them would not find the ways and the reasons for being activated). This tends to occur mainly in organizations whose aims are prevailing social and altruistic and not merely coincident with the interests of those directly involved in their functioning: the "external social benefits generated by the firm employing the worker" may play an important role in motivating the firm's employees (see Preston, 1989, 1993; Mirvis, 1992; Borzaga, 2000). As a matter of fact, the prevailing evidence seems to confirm that—in comparison to the workers employed in for-profit or public enterprises—those working in these organizations are willing to accept lower wages or to give more effort and time because of their extra-monetary motivations, without experiencing lower levels of satisfaction (see e.g. Brown and McIntosh, 1998; Almond and Kendall, 2000a, 2000b; Borzaga, 2003a).

[5] The role of the nonprofits in the formation of social capital has been recently stressed by Evers and Schulze-Böing (1998), Evers (2001), Laville and Nyssens (2001). The idea is that, by evoking non-selfish motivations in individuals and by channelling them in collective actions, the nonprofits generate positive externalities, since they strengthen civic spirit, community bonds and networks based on reciprocity and trust.

[6] Some recent papers model the role of legal policies in shaping individual attitudes toward trustworthiness, honesty and fairness (Huck, 1998; Bohnet et al., 2001; Bar-Gill and Fershtman, 2004). Palacios-Huerta and Santos (2004) focus on the role of market arrangements in affecting individual preferences by modeling the influence of the extent of markets on risk attitudes.

context it coincides with the distinction between agents which are aware of the fact that their preferences may change over time and agents which make their current choices without taking into account that the impact of these choices on their future well-being depends on preferences that may be different from their current ones. It is a distinction that is well known to the literature on habit formation, which studies the different implications for the dynamics of consumer demand of admitting that individuals fail to recognize that their future tastes depend on their current choices or of assuming that they have perfect foresight of all the effects of their choices.[7] In this paper, in contrast with this literature, we maintain that the evolution of individual preferences does not depend on the choices of the individual, but it is the result of a social process on which no single individual has control.[8] This notwithstanding, agents aware of the evolution of their preferences as a result of this process will react differently to policies with effects in the future than myopic agents. Therefore, in the model presented here, the distinction between rational and myopic agents plays a relevant role. It is only in the presence of myopic agents, indeed, that a government aiming at its reelection may implement a policy which is (temporary) unpopular, in the anticipation of a change in the preferences of its constituency which its policy may help triggering and which will make it popular just in time for the next election.[9] Moreover, it is only in the presence of rational agents that multiple equilibria are possible, since under these circumstances more than one set of rational expectations regarding future preferences may have the potential to be validated, thus creating indeterminacy (and uncertainty on the effects of policies).

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[7] In Pollak (1970)--which can be considered a pioneering work on habit formation--it is assumed that consumers do not recognize the effect of their consumption on their future behavior. In contrast, Becker and Murphy (1988) assume that consumers fully recognize these dynamic effects.

[8] As it is stated effectively by Jon Elster, "Choice according to consistent preferences is an important part of what we mean by intentionality, whereas the laws governing the endogenous change of preferences are purely causal operating 'behind the back' of the actor concerned. The actor may, of course, try to anticipate the impact of present behavior upon future preferences and make his [or her] present choice in light of his [or her] evaluation of these consequences" (Elster, 1978, pp. 39-40).

[9] It is a common observation that, at the beginning of their term, democratically elected governments may implement unpopular policies. Indeed, such a behavior requires that the government have a time horizon sufficiently long and the political strength (which is at its peak just after having been elected) to resist to the (temporary) unpopularity. Obviously, other explanations of this behavior can complement the explanation that we suggest here.

There is a second issue treated in the paper which is related to the preceding point and has not yet been modeled—to our knowledge--by others. It has to do with the conceptual difficulty arising when the welfare criterion adopted by the policy maker rests on individual preferences that are influenced by its own actions.[10] This applies to those situations where the performance of the policy maker is measured with respect to a metric which is defined on the basis of the individual preferences that the policy influences. With regard to this issue, on the one hand, we maintain that a rational decision maker should select its policy in the awareness that individual preferences are not invariant with respect to its actions. In this context, indeed, a policy is not optimal with respect to an exogenously specified preference ordering, but rather with respect to the preference ordering that it induces. On the other hand, we suggest that the impact of the decision maker's actions on the metric cannot enter as a benefit or a cost in the calculus whereby alternative courses of actions are evaluated in order to choose the optimal policy. Even in this context, indeed, an optimal policy is the best reflection of some (induced) profile of individual preferences, rather than of some set of meta-preferences according to which the policy's effects on people's preferences can be judged.[11]

Also the third related issue treated in the paper has not yet been modeled—to our knowledge--by others. It concerns the possibility for the policy maker to purposefully manipulate the preferences of some individuals in order to achieve its own objectives. This possibility arises when these preferences can be affected by the actions of the policy maker and when the criterion that it adopts for ranking its performance does not rest on the preferences of these individuals. Under these circumstances, an optimal policy is selected by assessing also the benefits and the costs that alternative courses of action bring about because of their influence on these individuals' preferences. In other words, the awareness on the part of the policy maker that its policies can affect the preferences of some individuals is not used for selecting policies that can better reflect the changed

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[10] Von Weizsacker recognizes the essence of this difficulty: "The efficiency or Pareto optimality properties of general equilibrium models rest on the assumption of fixed tastes. Are these efficiency theorems relevant to a world with changing tastes? Surely, purely exogenous changes of tastes (from the point of view of the economist) will essentially not alter these theorems…But what about Pareto optimality if endogenous variables of the economic system influence tastes?" (Von Weizsacker, 1971, p. 346).

[11] On the conflict between the idea that society "may have to opt for a metapreference in favor of challenging the prevailing preferences of its members and to ask if and how these preferences can perhaps be improved" and the idea that

preferences of these individuals, but rather as an instrument for pursuing other aims: the policy maker may reflect the preferences and represent the interests of some special groups of individuals, or it may be motivated by an ideological agenda aiming at "changing" people's minds.

The paper is organized as follows. Section 2 presents the basic model; section 3 derives the general equilibrium of the economy for given individual preferences and public policy; section 4 discusses the public policies when the private agents are myopic and when they are rational; section 5 treats the government's manipulation of preferences; section 6 concludes.

2 THE BASIC MODEL

Let us consider a one-period economy populated by a continuum (of measure one) of households which consume both a good x and a service which may differ with respect to its quality q. The good x is homogeneous and is produced by a continuum (of measure one) of perfectly competitive firms which maximize their profits. Similarly, there is a continuum (of measure one) of non-profit organizations that produce the service.[12] The quality of the service depends on the level of effort and care of those working in the non-profit organizations.

2.1 The profit-maximizing firms

The profit-maximizing firms produce the consumer good x according to the technology

$$x = S^{\xi}, \ 0 < \xi < 1, \tag{1}$$

where S are the workers employed by the representative firm producing the consumer good. Since production is standardized, it requires a fixed level of effort e=ê to any single worker. The representative firm chooses its labor input in order to maximize its profit π:

$$\max_{S} \ \pi \tag{2}$$

subject to

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there should be no "person or group of persons who from their 'superior' point of view dictate the values of society" see Von Weizsacker (1971).

[12] The non-profit organizations operating in the health, in the education and social services industries can be considered examples of the organizations modeled in the paper. In most countries, as a matter of fact, the nonprofits are concentrated in the sector producing personal, social and community care services.

$$\pi = \pi(\mathrm{S}, \mathrm{w}) = \mathrm{S}^{\xi} - \mathrm{Sw}, \tag{3}$$

where w is the real wage paid to the firm's employees. Note that x is taken to be the numéraire of this economy and that the price of x is arbitrarily set to be one.

2.2 The non-profit organizations

The non-profit organizations produce the consumer service. The units of the service that an organization delivers, N, depend on the number of workers that it employs, L:

$$\mathrm{N} = \mathrm{L}^{\zeta}, \ 0 < \zeta < 1, \tag{4}$$

The quality of the service provided by the organization, q, depends on the effort level e of those working for it:

$$q = e, \ e \geq 0. \tag{5}$$

Since the workers' effort is perfectly observable, the non-profit organization makes pay contingent on the effort level:

$$v = v(e), \tag{6}$$

where v is the wage paid by the representative organization to those working for it if their effort level is e. At the beginning of the period, the organization hires a certain number of workers and signs with each of them a contract establishing the worker's effort level and his/her pay, which remain fixed for the rest of the period (one may think that it is prohibitively costly to revise the wage contract).

A household buys the service that it wants to consume from one single producer, which amounts to saying that the consumer selects a unique quality level for the service that s/he wants to buy. The price that a service-producing unit can charge for each unit of service depends on the quality of its service:

$$p = p(q), \tag{7}$$

where the "hedonic" function $p(q)$ is given to any single organization.

A plausible objective of a non-profit organization is to maximize the utility $g(\mathrm{N}, q)$, $g_N > 0$ and $g_q > 0$, that a typical household can obtain by consuming its service. Furthermore, the organization must balance its budget if it wants to avoid bankruptcy: the non-profit unit must be able to finance its operations in the marketplace

without making losses.[13] Thus, the problem faced by the representative service-producing unit at the beginning of the period can be formulated as

$$\max_{v,\,L} \; g(N,q) \qquad (8)$$

subject to (4)-(7) and to the budget constraint

$$p(q)L^{\zeta} - vL \geq 0 . \qquad (9)$$

By attributing to the non-profit organizations the objective of maximizing the utility that their representative customer can get from their service, we assume implicitly that such organizations maximize some mix of quantity and quality of the service produced. This is consistent with the remark that in a non-profit organization profit maximization is not replaced by an unique alternative aim but rather by a mix of objectives (see Borzaga, 2003b).[14] One should also consider that the objective of maximizing the utility that the consumers can get from the service delivered by the organization coincides with the managers' interest of increasing the economic value of the organization's activities: they can exert control on a larger amount of resources by providing more units of the service and improving its quality without jeopardizing the survival of the organization.

The presence of competition among nonprofits enables consumers to choose the most favorable combination of quality and prices, inducing the service-producing units to optimize their operations in order to survive. Indeed, also a non-profit organization has an incentive to raise its revenues for increasing the quantity and improve the quality of the service that it delivers. In particular, a quality improvement entails a cost increase, which conflicts with the organization's interests in producing more units of the service and in balancing its budget.

Note that in order to simplify the analysis we ignore the presence of (physical and human) capital as a factor of production in both sectors. This is motivated by the fact that our focus is on how employment, output quality and individual welfare are affected by government policies towards those service sectors that are

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[13] Thus, the organization that we are modeling is a commercial non-profit firm, i.e., namely a nonprofit that collects the resources needed for its functioning in the marketplace by selling its services.

[14] In the literature, different objectives are attributed to non-profit organizations. One may contrast the hypothesis that those managing a non-profit organization have a higher preference for the quality of the good it produces (see Hansmann, 1980) with the assumption that a non-profit organization simply maximizes the quantity produced or the output (see Ben-Ner et al., 1993).

typically labor intensive and where quality depends mainly on the care and attention of the workers. In this framework, inserting (physical and human) capital would have complicated the analysis without adding any particular hint for a better understanding of the issue that we are focusing on.

2.3 Evolution of individual preferences

The non-profit organizations have a non-monetary objective and their "mission" is to maximize the satisfaction that a typical individual can obtain by consuming their services. Therefore, they may be able to motivate their employees also by means of non-monetary incentives, namely by--at least partly--sharing their "altruistic" mission with them. Hence, a non-profit organization may enjoy a comparative advantage in motivating its workers relatively to a for-profit firm: the same effort level may cause more disutility to a worker employed in a for-profit firm than to a worker employed in a non-profit organization. However, we assume that the attitudes toward working in a non-profit organization depend on the degree of cohesion, generalized trust and altruism existing in the social environment, namely on the stock of "social capital" existing in the society. In its turn, the endowment of social capital is positively affected by the aggregate volume of activities undertaken by the non-profit organizations, although any single non-profit organization has only a negligible impact on the formation of social capital. Similarly, the evolution of the subjective attitude toward working in a non-profit organization is not controlled by any single household, since it is governed by the change in cultural values and ethical codes taking place in the social environment and influencing individual preferences and mentality.

We capture the essence of what is discussed above by assuming that the disutility of working is given by the function $f(e, \eta_j)$, j=0,1, where

$$f(.) = \begin{cases} 0 \text{ if the household is not employed } (e = 0) \\ \hat{\omega}\hat{e}^{\gamma} \text{ if it works in a profit - maximizing firm } (\hat{\omega} > 0, e = \hat{e}) \\ \eta_j e^{\gamma} \text{ if it works with effort e in a non - profit organization, } \gamma \geq 1. \end{cases} \quad (10)$$

Note that $\gamma>1$ is consistent with a decreasing marginal utility of leisure (as $\gamma=1$, one may think that leisure decreases linearly with e). The variable η_j ($\eta_j>0$) reflects the subjective attitude toward working in a non-profit organization and decreases with the stock of "social capital" existing in the society. Hence, its value may change within the period in response to the volume of activities undertaken by the non-profit organizations. In particular, we assume that at the beginning of the period (i.e., at j=0, when the stock of social capital has not yet evolved in response to the volume of activities undertaken by the non-profit organizations

and the households have to make their decisions) the value of η_j is given by history ($\eta_0 = \bar{\eta} > 0$), while in the midst of the period (i.e., at j=1, when the stock of social capital is evolved in response to the volume of activities undertaken by the non-profit organizations and the households work at the effort level decided at j=0) it is given by:

$$\eta_1 = \bar{\eta}m(N,q), \ m(.) > 0, m_N < 0, \ m_q < 0 .\qquad(11)$$

In (11), the aggregate volume of activities undertaken by the non-profit organizations is approximated by the units of service produced (N) and the average quality of the service (q). Finally, we assume for simplicity that the individual attitudes toward working in a profit-maximizing firm remain constant ($\omega_0 = \omega_1 = \hat{\omega} > 0$). We focus, indeed, on the possible evolution of the *relative* attitude toward working, namely on the possible change in time of the attitude toward working in a non-profit organization relative to the attitude toward working in a for-profit firm.

2.4 <u>Households as workers and consumers</u>

The individual's budget constraint is:

$$y - T \geq x + (1-\tau)p(q)N, \ \tau<1,\qquad(12)$$

where y is the household's income, T are government transfers and $\tau p(q)N$ is the subsidy (if $\tau>0$) or the tax (if $\tau<0$) on consumers' purchase of the service. Note that the hedonic function $p(q)$ is given to any single consumer.

The household's income is given by

$$y=h+\pi,\qquad(13)$$

where h is the household's labor income, and--for simplicity and without loss of generality—it is assumed that all households receive an equal share of the profits generated by the firms producing the good x. The household's labor income is given by:

$$h = \begin{cases} 0 & \text{if the household is not employed} \\ w & \text{if the household works in a profit - maximizing firm} \\ v = v(e) & \text{if it works with effort e in a non - profit organization.} \end{cases}\qquad(14)$$

The utility that a household obtains by consuming the service is separable between the units N and the quality q of the service that it buys:

$$g(N,q) = N^\alpha + q^\beta, \ 0 < \alpha < 1, 0 < \beta < 1 .\qquad(15)$$

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Separability is assumed in (15) in order to simplify the analysis, in the light of the fact that both opposite cases can be plausible: the case in which a small improvement of the service quality increases the marginal utility of the service quantity and the case in which a small improvement of the service quality decreases the marginal utility of the service quantity.

The problem that the households solve at the beginning of the period (i.e., at j=0) is the following:

$$\max_{x,N,q,e} u_j \tag{16}$$

subject to the budget constraint (12), where

$$u_j = x + g(N,q) - f(e,\eta_j). \tag{17}$$

It is worth to emphasize that we consider both cases: the case in which the representative household solves (16) with respect to the preferences that it has at the moment of choosing (i.e., at j=0), and the case in which the representative household is so sophisticated to solve (16) with respect to the preferences that it expects to have at the moment of working (i.e., at j=1). In the former case ("myopic households"), we may think that a household is not aware of the possibility that its preferences may evolve in response to changes in the social environment. In the latter case ("rational households"), we assume that--even if a household has no control on the evolution of its preferences—it has perfect foresight of its future preferences. Note also that the utility function given by (17) is quasi-linear, implying that the service satisfies a basic need. Even if some household is unemployed, it receives a share of the firms' profits and its demand for the service is never rationed: for all households, the demand for the service is independent of the level of disposable income and the consumption of x is strictly positive.

2.5 Government

We assume that the government chooses τ at the beginning of the period (at j=0) in order to maximize the summation of the individual utilities $U_j = \int_0^1 u_j di$ (utilitarian welfare function):

$$\max_{\tau} U_j \tag{18}$$

subject to the balanced budget constraint

$$T = \tau p(q) N \tag{19}$$

and treating individual preferences as given.

We consider the case in which the government maximizes (18) with respect to the households' current preferences (U_0), or alternatively the case in which it maximizes (18) with respect to the households' future preferences (U_1). In the former case, one may think either that the government ignores the evolution of individual preferences, or that the government is aware of this evolution but is inclined—knowing that the households are myopic--to maximize its current popularity (as it is measured by U_0) rather than its future popularity. In the latter case, we need both that the government is aware of the evolution of individual preferences and that—in the presence of myopic households--it is inclined to maximize its future popularity (as it is measured by U_1) rather than its current popularity. A possible reason for admitting that even a government aware of the fact that the households' preferences evolve in time may maximize U_0 rather than U_1 in the presence of myopic households is that a plausible government's objective is its re-election, and the election may take place at j=0. Another possible reason for this behavior is the government's inability to resist to the pressure of the public opinion and to implement policies that are (temporary) unpopular, namely its tendency to conform to the voters' revealed preferences (as they are registered by opinion polls). In contrast, a possible explanation for the fact that a government aware of the evolution of individual preferences can be willing to maximize its future popularity even at the expenses of its current popularity is that the election may take place at t=1.

3 MARKET EQUILIBRIUM

3.1 Labor-market equilibrium conditions

It is straightforward from (10)-(17) that the necessary conditions for inducing an individual to work in a profit-maximizing firm or in a service-producing unit with an effort level e are, respectively,

$$w - \hat{\omega}\hat{e}^{\gamma} \geq 0 , \tag{20a}$$

$$v(e) - \eta_j e^{\gamma} \geq 0 . \tag{20b}$$

Assuming perfect labor mobility between the for-profit and non-profit segments of the labor market, equilibrium requires that:

$$w - \hat{\omega}\hat{e}^{\gamma} = v(e) - \eta_j e^{\gamma} . \tag{21}$$

If $w - \hat{\omega}\hat{e}^\gamma = v(e) - \eta_j e^\gamma > 0$, each household strictly prefers working rather than remaining at home and the equilibrium is necessarily characterized by full employment. Indeed, if there are unemployed workers, they exert downward pressure on wages in both segments of the labor market, and they raise the effort that the workers are willing to make in the service sector for any given pay level, up to the point where $w - \hat{\omega}\hat{e}^\gamma = v(e) - \eta_j e^\gamma = 0$. Thus, the presence of unemployment implies that at equilibrium $w - \hat{\omega}\hat{e}^\gamma = v(e) - \eta_j e^\gamma = 0$: an unemployment equilibrium ($S+L<1$) is a situation in which the employers do not create enough jobs to employ the entire workforce, even if the employed workers do not enjoy any rent.

3.2 Product-markets equilibrium conditions

An equilibrium quantity of the manufactured good is such that

$$x^s = x^d . \tag{22}$$

The equilibrium price of the service $p = p(q)$ must be such that at that price both the units of the service supplied are equal to the units demanded and the quality of the service supplied by the representative non-profit organization is equal to the quality level demanded by the representative consumer:

$$N^s = N^d, \tag{23a}$$

$$q^s = q^d . \tag{23b}$$

3.3 Households' optimizing behavior

Solving (16), we get the conditions that the consumers' demand for the service must satisfy for optimality:

$$(1 - \tau) p(q) = \alpha N^{\alpha-1}, \tag{24a}$$

$$(1 - \tau) p'(q) N = \beta q^{\beta-1}, \tag{24b}$$

and the condition that the effort level of an individual must satisfy if s/he works in a service-producing unit:

$$v'(e) = \gamma \eta_j e^{\gamma-1} . \tag{24c}$$

It is evident that the rule applied by an optimizing household to decide whether to work and–possibly--in what type of firm to work produces the conditions (20).

3.4 For-profit firms' optimizing behavior

The optimality condition of the profit-maximizing firms is

$$\xi S^{\xi-1} = w \,, \tag{25a}$$

from which one can easily obtain their optimal demand for labor:

$$S = S(w) = \left(\frac{\xi}{w}\right)^{1/(1-\xi)}. \tag{25b}$$

3.5 Non-profit organizations' optimizing behavior

For an interior solution to (8), a non-profit organization operating in the marketplace must satisfy:

$$\zeta p(e)L^{\zeta-1} = v(e) - \frac{\alpha\zeta L^{\alpha\zeta-1}}{\lambda} \,, \tag{26a}$$

$$L_t^{\zeta} p'(e) = L v'(e) - \frac{\beta e^{\beta-1}}{\lambda} \,, \tag{26b}$$

$$p(e)L^{\zeta} = v(e)L \,, \tag{26c}$$

where λ is a multiplier measuring the marginal benefit that a non-profit organization obtains by a small improvement in its budget.[15]

Note that the non-profit organization does not equalize the value of the marginal productivity of labor at the optimal effort level to the wage that must be paid to generate the optimal effort level, since it also cares about the additional benefit that the representative household can obtain from a marginal increase in the units of the service. This benefit has more weight in the optimal decision-making of the organization when in its optimal plan it attributes a smaller value to a marginal improvement in its budget. In other words, the smaller λ is, the more the organization's employment policy differs from the policy that would be optimal for a profit-maximizing firm.

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[15] Alternatively, one can use (9) to write $L = \left[\dfrac{p(e)}{v(e)}\right]^{\frac{1}{(1-\zeta)}}$ and solve the optimization problem by substitution, thus obtaining the following necessary condition for a maximum: $d(e)=0$, where

$d(e) = \dfrac{\alpha\zeta}{(1-\zeta)}\left\{\dfrac{v(e)p'(e) - v'(e)p(e)}{[v(e)]^2}\right\}\left[\dfrac{p(e)}{v(e)}\right]^{\frac{\alpha\zeta}{(1-\zeta)}-1} + \beta e^{\beta-1}$. Hence, a value of e that maximizes the objective function of

the non-profit organization must satisfy both $d(e)=0$ and $d'(e)<0$.

Furthermore, the non-profit organization does not equalize the additional labor cost necessary to obtain a marginal improvement in quality to the increment in revenues due to the higher price that it can charge on all the units of its service thanks to the improved quality of its service. Indeed, the organization's optimal plan must also take account of the beneficial impact on the consumers' welfare due to the improvement in the quality of its service. Again, the smaller λ is, the more the organization's policy on quality differs from the policy that would be optimal for a profit-maximizing firm. In other words, the non-profit organization equalizes the additional labor cost that it must incur in order to achieve a marginal improvement in the quality of all the units produced to the additional revenues that it can obtain by a marginal improvement in the quality of its service <u>plus</u> the marginal benefit accruing to the consumers because of the better quality of the service (weighted by the inverse of λ).

3.6 <u>General equilibrium for given preferences and government policy</u>

To save space, we focus on the situation that is more relevant from a practical point of view, namely on the situation in which the parameter values are such that the equilibrium is characterized by unemployment.

In the presence of unemployment, the equilibrium wages are:

$$w = \hat{\omega}\hat{e}^{\gamma}, \tag{27a}$$

$$v = \eta_j e^{\gamma}. \tag{27b}$$

Given (4)-(7) and (23)-(27), one can compute the general equilibrium values of L, e and S in the presence of unemployment as functions of the households' attitudes toward working in a non-profit organization and of the government policy:

$$L = L(\eta_j, \tau) = \left[\left(\frac{\alpha}{\eta_j(1-\tau)} \right)^{\beta} \left(\frac{\beta}{\alpha\gamma\zeta} \right)^{\gamma} \right]^{\frac{1}{\alpha\gamma\zeta+(1-\alpha\zeta)\beta}}, \tag{28a}$$

$$e = z(\eta_j, \tau) = \left[\frac{\alpha\gamma\zeta}{\beta} \left(\frac{\beta}{\gamma\zeta\eta_j(1-\tau)} \right)^{\alpha\zeta} \right]^{\frac{1}{\alpha\gamma\zeta+(1-\alpha\zeta)\beta}}, \tag{28b}$$

$$S = \left(\frac{\xi}{\hat{\omega}\hat{e}^{\gamma}} \right)^{1/(1-\xi)}, \tag{28c}$$

where $L(\eta_j,\tau)+S<1$. Note that the presence of unemployment implies that the wage at which the profit-maximizing firms would employ all the workers who do not work in a service-producing unit is strictly below

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the minimum wage at which a worker is willing to work in a profit-maximizing firm: even at $w = \hat{\omega}\hat{e}^{\gamma}$ some worker remains unemployed. Moreover, it is easy to check that both $\dfrac{\partial L}{\partial \tau} > 0$ $\left(\text{entailing } \dfrac{\partial(L+S)}{\partial \tau} > 0\right)$ and

$\dfrac{\partial e}{\partial \tau} > 0$: an increase in the government subsidy on the purchase of the service leads to higher employment and effort levels in the non-profit sector (hence, to an increase in the quantity and quality of the service and to the wage of the workers employed in the non-profit organizations). Finally, one has that both $\dfrac{\partial L}{\partial \eta_j} < 0$

$\left(\text{entailing } \dfrac{\partial(L+S)}{\partial \eta_j} < 0\right)$ and $\dfrac{\partial e}{\partial \eta_j} < 0$: when working in a non-profit organization becomes less attractive, the employment and effort levels fall in the service sector.

4   GOVERNMENT POLICIES

4.1 <u>Myopic households</u>

As the households are not aware of the evolution of their preferences, the government's optimal policy differs depending on whether the government's choice of τ rests on society's preferences at j=0 or at j=1.

The government's choice of τ rests on society's preferences at j=0 if the government is not aware of the evolution of the households' preferences, or if it is aware of this evolution but intends to maximize its current popularity vis-à-vis its myopic constituency. Under these circumstances, one can use (3), (4), (10), (12)-(15), (17), (19), (24a) (27) and (28) to write the government's problem as:

$$\max_{\tau} \; (1-\xi)\left(\frac{\xi}{\hat{\omega}\hat{e}^{\gamma}}\right)^{\frac{\xi}{(1-\xi)}} + \left[1 - \frac{\alpha}{(1-\tau)}\right]\left[L(\overline{\eta},\tau)\right]^{\alpha\zeta} + \left[z(\overline{\eta},\tau)\right]^{\beta}. \tag{29}$$

The first-order condition for an interior solution to (29) is

$$\psi(\overline{\eta},\tau) = 0, \tag{30}$$

where $\psi(\overline{\eta},\tau) = \dfrac{-\alpha\left[L(\overline{\eta},\tau)\right]^{\alpha\zeta}}{(1-\tau)^2} + \dfrac{\alpha\beta\zeta\left\{\left[1 - \dfrac{\alpha}{(1-\tau)}\right]\left[L(\overline{\eta},\tau)\right]^{\alpha\zeta} + \left[z(\overline{\eta},\tau)\right]^{\beta}\right\}}{(1-\tau)[\alpha\gamma\zeta + (1-\alpha\zeta)\beta]}$. The value of τ satisfying (30) is the

optimal policy of a government which behaves myopically either because it ignores the evolution of the households' preferences or because it adapts its behavior to the current desires of the myopic households:

$$\tau^* = 1 - \dfrac{(\alpha\zeta\gamma + \beta)\left[\dfrac{\alpha^\beta}{(\alpha\zeta\gamma)^\gamma}\right]^{\frac{\alpha\zeta}{\alpha\zeta\gamma+(1-\alpha\zeta)\beta}}}{\zeta\beta\left[\dfrac{\alpha\zeta\gamma}{(\zeta\gamma)^{\alpha\zeta}}\right]^{\frac{\beta}{\alpha\zeta\gamma+(1-\alpha\zeta)\beta}} + \zeta\left[\dfrac{\alpha^\beta}{(\alpha\zeta\gamma)^\gamma}\right]^{\frac{\alpha\zeta}{\alpha\zeta\gamma+(1-\alpha\zeta)\beta}}}. \tag{31}$$

Given (28) and (31), the equilibrium levels of employment and quality in the service sector are:

$$L = L(\overline{\eta}, \tau^*), \tag{32a}$$

$$q = e = z(\overline{\eta}, \tau^*). \tag{32b}$$

In the case in which a government facing myopic households maximizes the social welfare with respect to the individual preferences at j=1, one can use again (3), (4), (10), (12)-(15), (17), (19), (24a) (27) and (28) to write the government's problem as:

$$\max_{\tau}(1-\xi)\left(\dfrac{\xi}{\hat{\omega}\hat{e}^\gamma}\right)^{\frac{\xi}{(1-\xi)}} + \left[1 - \dfrac{\alpha}{(1-\tau)}\right]\left[L(\overline{\eta},\tau)\right]^{\alpha\zeta} + \left[z(\overline{\eta},\tau)\right]^\beta - (\eta_1 - \overline{\eta})L(\overline{\eta},\tau)\left[z(\overline{\eta},\tau)\right]^\gamma, \tag{33}$$

taking η_1 as given.

By treating η_1 as given, one does not consider the impact that a change of policy has on η_1 in the assessment of the marginal benefits and the marginal costs (in terms of social welfare) brought about by an increment in τ. This is because the government measures its performance with respect to a metric which is defined on the basis of the individual preferences at j=1: the impact of a policy on the metric cannot enter the calculus whereby the relative merits of alternative courses of action are evaluated in order to choose an optimal policy. However, the value of η_1 entering (33) must be consistent with the process whereby individual preferences evolve in time: the government knows that η_1 is not invariant with respect to its policies and has perfect foresight of it. Hence, the first-order condition for an interior solution to (33) is

$$\psi(\overline{\eta},\tau) - (\eta_1 - \overline{\eta})\dfrac{\partial\left\{L(\overline{\eta},\tau)\left[z(\overline{\eta},\tau)\right]^\gamma\right\}}{\partial\tau} = 0, \tag{34}$$

where $\eta_1 = \overline{\eta}m\left(\left[L(\overline{\eta},\tau)\right]^\zeta, z(\overline{\eta},\tau)\right)$ (see equation (11)).

If τ^{**} is the unique value of τ that satisfies (34), one can state the following proposition:

Proposition 1. *As the households are myopic, the policy of a government which maximizes its future popularity in the awareness of the possible change in individual preferences is in general unpopular at the moment of its implementation. In particular, such a government chooses a subsidy that is larger (smaller) than the value*

which would have maximized its current popularity, namely $\tau^{**} > \tau^*$ *($\tau^{**} < \tau^*$), if the households' disutility of working in a non-profit organization tends to decrease (to increase) whenever* $\tau = \tau^*$.

Proof. Proposition 1 can be proved by checking that the following is true:[16]

$$\tau^{**} \begin{Bmatrix} > \\ = \\ < \end{Bmatrix} \tau^* \text{ if } m([L(\bar{\eta}, \tau^*)]^{\zeta}, z(\bar{\eta}, \tau^*)) \begin{Bmatrix} < \\ = \\ > \end{Bmatrix} 1 . \tag{35}$$

Proposition 1 states that a government caring more about its future than about its current popularity tends to choose unpopular policies when its constituency is myopic. This is because the policy that would have been popular at j=0 (i.e., $\tau = \tau^*$) is not the best taking into account the evolution of individual preferences. Indeed, myopic agents make choices which turn out to be suboptimal once that their preferences have changed. This justifies the implementation of a policy which is not optimal on the basis of the households' initial preferences but it is the best given their new preferences. Clearly, this policy is actually implemented only if the government is aware of the evolution of individual preferences and has the proper incentive for choosing it.

Furthermore, Proposition 1 implies--together with $\dfrac{\partial L}{\partial \tau} > 0$ and $\dfrac{\partial e}{\partial \tau} > 0$ --that if the households make their decisions on the basis of their current preferences and their disutility of working in a non-profit organization tends to decrease whenever $\tau = \tau^*$, then both employment and service quality are higher when the government's choice reflects the future individual preferences rather than the current ones.

4.2 <u>Rational households</u>

Even in the presence of households whose current choices rest on the preferences that they expect to have in the future, a government which is not aware that individual preferences evolve in time solves (29), thus

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[16] Multiplying both sides of (30) by $(1-\tau)^{\frac{\alpha\beta\zeta}{\alpha\gamma\zeta+(1-\alpha\zeta)\beta}}$, the condition (30) becomes $\chi(\bar{\eta}, \tau) = 0$, where

$\chi(\bar{\eta}, \tau) \equiv \psi(\bar{\eta}, \tau)(1-\tau)^{\frac{\alpha\beta\zeta}{\alpha\gamma\zeta+(1-\alpha\zeta)\beta}}$ and $\dfrac{d\chi(\bar{\eta}, \tau)}{d\tau} < 0$, which is satisfied by $\tau = \tau^*$. Multiplying both sides of (34) by

$(1-\tau)^{\frac{\alpha\beta\zeta}{\alpha\gamma\zeta+(1-\alpha\zeta)\beta}}$, the condition (34) becomes $\chi(\bar{\eta}, \tau) - (\eta_1 - \bar{\eta})(1-\tau)^{\frac{\alpha\beta\zeta}{\alpha\gamma\zeta+(1-\alpha\zeta)\beta}} \dfrac{\partial\{L(\bar{\eta}, \tau)[z(\bar{\eta}, \tau)]^{\gamma}\}}{\partial \tau} = 0$, which is

satisfied by $\tau = \tau^{**}$. Since $\dfrac{\partial\{L(\bar{\eta}, \tau)[z(\bar{\eta}, \tau)]^{\gamma}\}}{\partial \tau} > 0$ and $\dfrac{\partial m([L(\bar{\eta}, \tau)]^{\zeta}, z(\bar{\eta}, \tau))}{\partial \tau} < 0$, it is straightforward that $\dfrac{d\chi(\bar{\eta}, \tau)}{d\tau} < 0$

entails (35).

obtaining the optimal policy (31). However, in this case, the equilibrium levels of employment and quality in the service sector are:

$$L = L(\eta_1, \tau^*), \tag{36a}$$

$$q = e = z(\eta_1, \tau^*), \tag{36b}$$

where (see equation (11))

$$\eta_1 = \bar{\eta} m([L(\eta_1, \tau^*)]^\zeta, z(\eta_1, \tau^*)) . \tag{37}$$

By considering (36) and (37), one can see that when the households are rational, the government's choice of τ has not only a direct effect on the equilibrium levels of employment and quality in the service sector—as in the presence of myopic households—but also an indirect effect via its impact on individual preferences.

The existence of an equilibrium implies that there is at least a value of $\eta_1 > 0$, say η_1^*, satisfying (37). Therefore, an equilibrium is such that $L(\eta_1^*, \tau^*) \begin{Bmatrix} > \\ = \\ < \end{Bmatrix} L(\bar{\eta}, \tau^*)$ if $\eta_1^* \begin{Bmatrix} < \\ = \\ > \end{Bmatrix} \bar{\eta}$ and $z(\eta_1^*, \tau^*) \begin{Bmatrix} > \\ = \\ < \end{Bmatrix} z(\bar{\eta}, \tau^*)$ if $\eta_1^* \begin{Bmatrix} < \\ = \\ > \end{Bmatrix} \bar{\eta}$.

If more than one value of $\eta_1 > 0$ satisfies (37), the economy displays multiple equilibria and there is indeterminacy: given the self-fulfilling nature of the households' expectations, more than an one set of expectations regarding the households' preferences at j=1 has the potential to be validated. Under these circumstances, the selection of an equilibrium depends on what preferences the households expect to have in the future and there is uncertainty on the effects of the government policy.

A government which is aware that individual preferences evolve in time and that the households are rational solves

$$\max_{\tau} (1-\xi)\left(\frac{\xi}{\hat{\omega}\hat{e}^\gamma}\right)^{\frac{\xi}{(1-\xi)}} + \left[1 - \frac{\alpha}{(1-\tau)}\right]\left[L(\eta_1, \tau)\right]^{\alpha\zeta} + \left[z(\eta_1, \tau)\right]^\beta, \tag{38}$$

taking taking η_1 as given.

The first-order condition for an interior solution to (38) is

$$\psi(\eta_1, \tau) = 0, \tag{39}$$

where (see equation (11))

$$\eta_1 = \bar{\eta} m([L(\eta_1, \tau)]^\zeta, z(\eta_1, \tau)) . \tag{40}$$

Note again that the impact of a change in τ on η_1 is not considered in the assessment of the benefits and the costs in terms of social welfare due to a marginal increment in τ.

By solving (39) for τ, one obtains the optimal policy (31). Also in this case the equilibrium levels of employment and quality in the service sector are given by (36). Therefore, in this context the following proposition holds:

Proposition 2. *A government facing rational households adopts the same policy no matters whether it is aware of the fact that individual preferences evolve in time. Moreover, a government facing rational households adopts the same policy as a government facing myopic households and adapting its behavior to their current desires. However, it may be the case that with rational households the effects of the government policy are uncertain.*

Proof: Consider that the optimal policy of a government facing rational households is given by (31) both when the government is not aware that individual preferences evolve and when the government is aware of this fact. In addition, consider that also the optimal policy of a government facing myopic households and maximizing its current popularity is given by (31). Finally, by inspecting (36)-(37) or (38)-(39) one can verify that indeterminacy is possible.

Proposition 2 states that in the presence of rational agents, it is immaterial whether the government decides its policy on the basis of the current individual preferences or on the basis of the future individual preferences. Indeed, in both cases the households' choices turn out to be optimal once that their preferences have changed, and this does not leave any room for a difference in government policy in the two cases. However, the presence of rational agents may create a fundamental uncertainty with regard to the effects of public policies. One could also observe that a government deviates from the policy dictated by (31) only when i) it is aware that the households are myopic and decide without considering that their preferences evolve in time, and ii) it cares about its future rather than about its current popularity.

5 MANIPULATION OF PREFERENCES

In this section, we suppose that the government cares only about the welfare of the households employed in the for-profit sector and maximizes a welfare function V amounting to the summation of their individual utilities (one may think that the government's constituency consists of households working in profit-maximizing firms):

$$V = S[\pi - p(q)N + g(N,q) + w - \hat{\omega}\hat{e}^{\gamma}] \,. \tag{41}$$

This exercise allows us to focus on a situation in which it makes sense for the policy maker to manipulate purposefully the preferences of some individuals in order to favor somebody else.

5.1 Myopic households

If the households are myopic, the government's problem is the same no matters whether it maximizes its objective function with respect to the individual preferences at j=0 or at j=1. Indeed, even a government maximizing its objective function with respect to the individual preferences at j=1 has no interest in the fact that the households employed in the non-profit sector will realize at j=1 that their attitude toward their work activity has changed, since it does not care about their welfare and it knows that affecting their future preferences has no impact on their current behavior (and thus on the future well-being of those working in the for-profit sector). Hence, no matters whether the government maximizes its objective function with respect to the individual preferences at j=0 or at j=1, its problem is

$$\max_{\tau} \left(\frac{\xi}{\hat{\omega}\hat{e}^{\gamma}} \right)^{\frac{1}{(1-\xi)}} \left\{ (1-\xi) \left(\frac{\xi}{\hat{\omega}\hat{e}^{\gamma}} \right)^{\frac{\xi}{(1-\xi)}} + \left[1 - \frac{\alpha}{(1-\tau)} \right] \left[L(\bar{\eta},\tau) \right]^{\alpha\zeta} + \left[z(\bar{\eta},\tau) \right]^{\beta} \right\} \,. \tag{42}$$

The first-order condition for an interior solution to (42) is given by (30). Hence, the government's optimal policy is given again by (31).

5.2 Rational households

Even in the presence of rational households, a government which is not aware that individual preferences evolve in time solves (42), thus obtaining the optimal policy (31).

Assume now that both the households and the government have perfect foresight of future individual preferences. Under these circumstances, the government's problem is:

$$\max_{\tau} \left(\frac{\xi}{\hat{\omega}\hat{e}^{\gamma}} \right)^{\frac{1}{(1-\xi)}} \left\{ (1-\xi) \left(\frac{\xi}{\hat{\omega}\hat{e}^{\gamma}} \right)^{\frac{\xi}{(1-\xi)}} + \left[1 - \frac{\alpha}{(1-\tau)} \right] \left[L(\eta_1,\tau) \right]^{\alpha\zeta} + \left[z(\eta_1,\tau) \right]^{\beta} \right\} \,, \tag{43}$$

where η_1 is given by (40).

The first-order condition for an interior solution to (43) is

$$\psi(\eta_1,\tau) - \left(\frac{\xi}{\hat{\omega}\hat{e}^{\gamma}} \right)^{\frac{1}{(1-\xi)}} \left\{ \left[1 - \frac{\alpha}{(1-\tau)} \right] \left[L(\eta_1,\tau) \right]^{\alpha\zeta} + \left[z(\eta_1,\tau) \right]^{\beta} \right\} \frac{\alpha\beta\zeta}{[\alpha\gamma\zeta + (1-\alpha\zeta)\beta]\eta_1} \frac{\partial\eta_1}{\partial\tau} = 0 \,, \tag{44}$$

where $\dfrac{\partial \eta_1}{\partial \tau} = \dfrac{\overline{\eta}\,\dfrac{\partial m([L(\eta_1,\tau)]^\xi, z(\eta_1,\tau))}{\partial \tau}}{\left\{ 1 - \overline{\eta}\,\dfrac{\partial m([L(\eta_1,\tau)]^\xi, z(\eta_1,\tau))}{\partial \eta_1} \right\}}$. By inspecting (44), one can verify that the impact of a change in τ

on η_1 is now considered in the assessment of the benefits and the costs in terms of welfare of the government's constituency due to a marginal increment in τ. This is because the government measures its performance with respect to a metric which is not defined on the basis of the preferences in j=1 of those working in the non-profit sector, while the evolution of these workers' preferences has consequences for the government's objective. Thus, the following proposition holds:

Proposition 3. *i) If a policy can change the behavior of some individuals by affecting their preferences, and ii) if it does not alter the metric whereby the relative merits of the policy are evaluated, then the impact of the policy on the preferences of these individuals must be assessed in the selection of the optimal policy on the part of a policy maker which does not act myopically.*

Proof: By considering (10), (28a), (28b) and (40), one can verify that in the presence of rational agents the choice of τ changes the behavior of the households working in the non-profit sector by affecting their preferences. Moreover, by considering (41), one can verify that the choice of a value of τ which maximizes (43) does not alter the metric whereby the relative merits of different values of τ are evaluated. Thus, i) and ii) apply to the problem considered in (43). To demonstrate the necessity to assess the effect of the choice of τ on the preferences of the workers employed in the non-profit sector in order to solve (43), suppose that this effect is ignored. To ignore the impact of the choice of τ on the preferences of these households in solving this problem amounts to imposing $\dfrac{\partial \eta_1}{\partial \tau} = 0$ in (44). One can easily verify by comparing (39) to (44) that this imposition implies that $\tau=\tau^*$ solves (43). Thus, the fact that $\tau=\tau^*$ solves (43) entails $\dfrac{\partial \eta_1}{\partial \tau}\bigg|_{\tau = \tau^*} = 0$.

However, one can easily check that $\dfrac{\partial \eta_1}{\partial \tau}\bigg|_{\tau = \tau^*} = 0$ is not in general true. Hence, in solving (43), one cannot ignore the impact of the choice of τ on the preferences of the households employed in the non-profit sector.

Consistently with Proposition 3, one should conclude that the fact that a policy can change the behavior of some individuals by affecting their preferences is not sufficient for creating a situation in which a rational policy maker manipulates purposefully these preferences in order to pursue its objectives. Indeed, for creating

such a situation, one needs also that the policy maker's objectives are not evaluated according to a scale depending on the preferences affected by its policy.

6 CONCLUSIONS

Milton Friedman writes: "Despite qualifications, economic theory proceeds largely to take wants as fixed. This is primarily a case of division of labor. The economist has little to say about the formation of wants; this is the province of the psychologist. The economist's task is to trace the consequences of any given set of wants" (Friedman, 1962, p. 13). We may agree with Friedman that in many situations studied by economists preferences can be taken as fixed without losing anything relevant in terms of explanation and prediction. However, there are other situations to which the following applies: "If preferences are affected by the policies or institutional arrangements we study, we can neither accurately predict nor coherently evaluate the likely consequences of new policies or institutions without taking account of preference endogeneity" (Bowles, 1998, p.75). In this paper, we have presented an example that explores some of the implications of preference endogeneity for policy analysis. Further research is necessary for a better understanding of the complex relationship between the formation of preferences and economic policies or institutions.

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