Endogenous social norms - implications for optimal welfare state programs

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2009

Endogenous social norms – implications for optimal welfare state programs ♣

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Abstract

This paper investigates the implications of an endogenous social work norm for the optimal welfare state program. Assuming that individual productivity is observable, the analysis finds that restrictions on program participation, implying a larger benefit to a smaller group of recipients, may be welfare improving. However, the effect of the norm is indeterminate. The disutility of non-compliance suggests a higher benefit; the endogeneity of the norm suggests a lower benefit. Assuming that individual productivity is not observable, the analysis finds that the social norm unambiguously contributes to increased program generosity. However, for sufficiently generous policies, the norm contributes to program retrenchment.

JEL classification: I38; H53; H23; H11
Key words: Welfare state; Social norm; Welfare analysis

1. Introduction

Unemployment insurance, disability insurance and other welfare state programs offer financial protection when the individual is unable to work and earn her living. Due to imperfect control mechanisms, however, individual behaviour is influenced in more ways than intended. The disincentive effects of welfare state programs have important implications for the optimal design (e.g. Diamond & Mirrlees, 1978; Whinston, 1983; Lindbeck & Persson, 2008).

There are also strong social norms that encourage the individual to work and save (Elster, 1989). A social norm is a shared understanding among a group of individuals about what type of behaviour is forbidden or permitted. By means of sanctions, the social norm makes the individual internalize the positive externalities generated by her decision to work (Coleman, 1990). The social and psychological costs that the individual experiences from non-compliant behaviour, for example by becoming unemployed (Clark, 2003; Stutzer & Lalive, 2004), function as a check on moral hazard. Thus, the deterring effect of the social norm contributes to sustaining generous welfare state programs. However, as more individuals respond to generous policies, fewer comply with the norm, thereby undermining its strength. Because individual behaviour is influenced by the actions of others, the social norm amplifies the effects of economic incentives. Empirical studies show that such social interaction effects matter for program take-up (Bertrand et al., 2000; Hedström et al., 2003; Rege et al., 2007).

How does the social norm affect the optimal design of social insurances and transfer programs? This paper explores the implications of an endogenous social work norm for the optimal welfare state program. The paper extends the model of Lindbeck et al. (1999), who

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♣ This paper is an extension of an earlier version presented in Ekbladh (2007).

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study the consequences of the social norm for the individual's 'economic choice' of labour market activity and her 'political choice' of benefit size. Besley & Coate (1992) and Lindbeck & Persson (2008) also explore the behavioural effects of an endogenous social norm in welfare state contexts. Besley & Coate (1992) identify a role for social controls in lieu of costly administrative instruments. Similarly, Lindbeck & Persson (2008) observe that the norm contributes to a lower rate of benefit dependency, but to larger changes in the dependency rate in case of policy adjustments. Neither study, however, analyses the implications for social welfare.

This paper analyses the influence of an endogenous social norm on the optimal policy, tax and transfer, in a general welfare state program. It considers both variations in the observability of individual productivity and variations in social preferences. In a first scenario, the social planner observes individual productivity and controls the share of transfer recipients of the welfare state program directly. In the 'first-best' optimum, restricting the group of recipients and increasing the transfer level is welfare improving. However, the analysis cannot determine the direction in which the social norm affects the optimal policy. In contrast, in a second scenario, where individual productivity is non-observable, the social norm contributes to increased generosity. The analysis of the 'second-best' optimum also shows that for sufficiently generous policies, the social norm contributes to program retrenchment.

The paper is organized as follows. The next section makes a short presentation of the model. Section 3 illustrates the social influences on equilibrium policies and population shares of transfer recipients. Section 4 presents the welfare analysis, which considers, in practice, two different programs with and without a social norm. Section 5 concludes.

2. The model

Following Lindbeck et al. (1999), the model assumes that there is a continuum of individuals, distributed according to wage earnings. All individuals earn strictly positive wages. The continuously differentiable cumulative probability distribution is called Φ and the probability density function is called ϕ. The welfare program consists of a policy pair, the tax rate t, excised on wage earnings, and the transfer level T, which is exempt from taxation and granted to everyone who does not work. The population share of transfer recipients is denoted x. The individual experiences disutility from accepting the transfer, since such behaviour is non-compliant with a social work norm. Thus, the norm is internalized by the individual. However, when more individuals decide not to work, the discomfort wanes. That is, the disutility of breaking the social work norm is a function of the share of transfer recipients, v(x). When deciding whether or not to work, the individual considers her after-tax wage, the transfer level and the strength of the social work norm.

Utility is additively separable and all individuals have identical preferences over consumption and leisure. The utility function is strictly concave in consumption. Furthermore, it is assumed that $u(c) \to -\infty$ as $c \to 0$ and $u(c) \to +\infty$ as $c \to +\infty$. With respect to the social stigma, v is non-increasing in the share of transfer recipients. For every tax rate $t < 1$, transfer level $T \geq 0$ and expected share of transfer recipients $x \in [0,1)$, there exists a unique critical wage rate w^*, such that all individuals with lower wages decide to live on public transfer and all individuals with higher wages decide to work. For the individual earning the critical wage w^* it is the case that

$$u((1-t)w^*) = u(T) + \mu - v(x), \qquad (1)$$

where $\mu \in R$ is the utility difference between enjoying leisure time and the intrinsic utility an individual may experience by working. The unique solution w^* is increasing in the tax rate and in the transfer level and non-decreasing in the share of transfer recipients. If expectations are correct, the population share of transfer recipients equals the share of individuals with wages lower than the critical wage w^*:

$$x = \Phi(w^*) = \Phi\left(\frac{1}{1-t} u^{-1}(u(T) + \mu - v(x))\right). \tag{2}$$

There exists at least one population share x which satisfies the fixed-point equation, Eq. (2). Henceforth, the paper refers to the equilibrium share of transfer recipients as a function of the critical wage, $\Phi(w^*)$. Together with the associated policy (t, T), a share of transfer recipients that solves Eq. (2) constitute a equilibrium state $(t, T, \Phi(w^*))$.

A balanced program budget requires that revenues equal expenditures. In a balanced equilibrium state it is the case that

$$t\Psi(w^*) = T\Phi(w^*), \tag{3}$$

where the truncated expected value function $\Psi(w) = \int_w^\infty a\phi(a)da$ determines the tax base. Eq. (2) and Eq. (3) imply that $t \to 1$ and $T \to 0$ as $\Phi(w^*) \to 1$ and that $t \to 0$ and $T \to 0$ as $\Phi(w^*) \to 0$. Lindbeck et al (1999) show that for every share of transfer recipients there exists a unique policy, such that a balanced equilibrium is attained. They also show that there exists at most one balanced equilibrium share of transfer recipients for every policy. Figures 1 and 2 in the next section illustrate these relationships graphically.

3. Social influences[1]

This paper illustrates the deterring and amplifying effects of the social norm by comparing a 'non-social' case with a 'social' case. In the social case, the individual considers the intensity of the social norm in addition to the tax rate and transfer level when deciding whether or not to work.

Figure 1 shows the balanced equilibrium transfer level T for a given share of transfer recipients $\Phi(w^*)$ for the social case (the thick curve T1) and non-social case (the thin curve T2). The pecuniary compensation required to 'make' individuals exit the labour market when work behaviour is influenced by a social norm, leads to a larger maximum transfer at a smaller share of recipients $\Phi(w^*)$ compared to the non-social case. Larger transfers require increased tax rates. Figure 2 presents the balanced equilibrium tax rate t in the social case (the thick curve t1) and the non-social case (the thin curve t2) for a given share of transfer recipients. Because of the deterring effect of the social norm, the balanced equilibrium policy

[1] Figures 1 and 2 are based on slight modifications of the parametric specifications used in Lindbeck et al. (1999). Permission from the authors is gratefully acknowledged.

(t, T) is more generous for a given share of transfer recipients $\Phi(w^*)$ compared to the non-social situation. The amplifying effect is reflected in the curvature of curves T1 and t1 (Figures 1 and 2). As a larger share of the 'socially influenced' population decides not to work, the compensation demanded for non-compliance decreases.

As the share of transfer recipients approaches one, the social norm collapses. The point at which its strength is depleted is easiest to discern in Figure 2 (when approximately three fourths of the population receive the transfer).

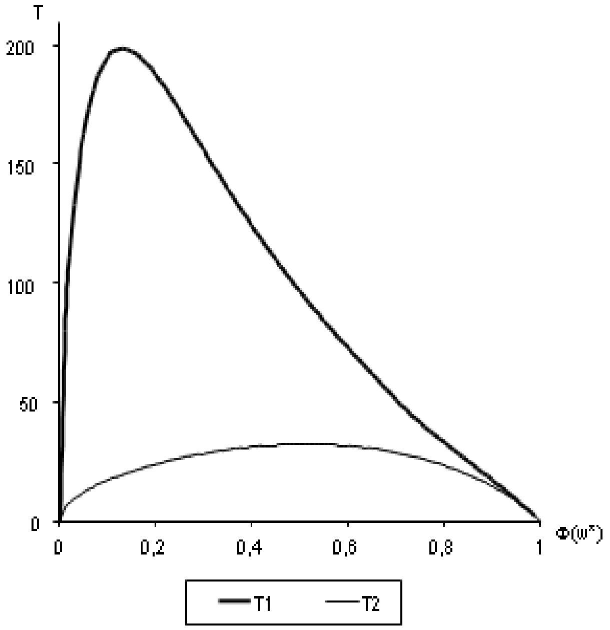

Fig. 1. Transfer levels T and population shares of transfer recipients Φ(w*)

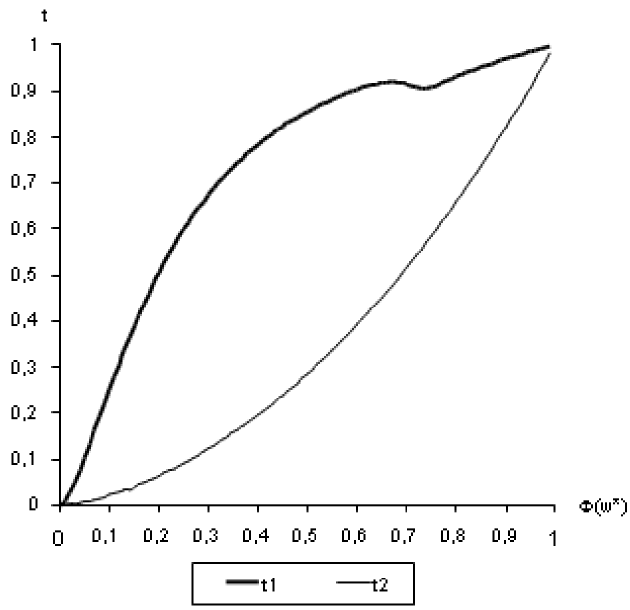

Fig. 2. Tax rates t and population shares of transfer recipients Φ(w*).

4.1 Individual productivity observable

Assuming that individual productivity is observable, the social planner is able to separate individuals into tax payers and transfer recipients by determining the critical wage directly. Thus, there are three parameters, t, T and w^*, for the social planner to consider. It is not certain that individuals earning higher wages than the (assigned) critical individual would like to work. Nor is it certain that individuals earning lower wages are keen on accepting the transfer, depending on the generosity of the policy.

The analysis continues to contrast a non-social case with a social case.

4.1.1 Non-social case

In the case where individual work decision is not influenced by a social norm, the social planner maximizes the welfare function W with respect to the tax rate t, the transfer level T and the critical wage w^*,

$$W = \int_{w^*}^{w^{max}} u((1-t)w)\phi(w)dw + \int_{w^{min}}^{w^*} (u(T)+\mu)\phi(w)dw, \tag{4}$$

where w^{max} is the higher boundary and w^{min} the lower boundary of the wage interval. As the individual decision whether or not to work is in the social planner's control, social welfare is maximized under the sole restriction of a balanced budget,

$$t\Psi(w^*) - T\Phi(w^*) \geq 0 .$$

The first-order conditions generated by Lagrangean optimization are

$$\frac{\partial L}{\partial t} = -\int_{w*}^{w^{max}} u'((1-t)w)w\phi(w)dw + \lambda\Psi(w^*) = 0, \tag{5}$$

$$\frac{\partial L}{\partial T} = \int_{w^{min}}^{w^*} u'(T)\phi(w)dw - \lambda\Phi(w^*) = 0, \tag{6}$$

$$\frac{\partial L}{\partial w^*} = -u((1-t)w^*)\phi(w^*) + (u(T)+\mu)\phi(w^*) + \lambda(t\Psi'(w^*) - T\Phi'(w^*)) = 0 \tag{7}$$

and

$$\frac{\partial L}{\partial \lambda} = t\Psi(w^*) - T\Phi(w^*) = 0 , \tag{8}$$

given that the multiplier $\lambda > 0$. Solving for λ produces

$$\frac{\int_{w*}^{w^{max}} u'((1-t)w)w\phi(w)dw}{\Psi(w^*)} = \frac{\int_{w^{min}}^{w*} u'(T)\phi(w)dw}{\Phi(w^*)} . \tag{9}$$

The assumptions made in the model rule out corner solutions; 1>t>0, T>0 and $w^{max} > w^* > w^{min}$ in optimum. Furthermore, Eq. (9) shows that if the share of transfer recipients, $\Phi(w^*)$, would increase exogenously, the weighted marginal utility of receiving the transfer must also increase, implying a smaller transfer in optimum. In the case of an exogenous increase in the tax base, $\Psi(w^*)$, a compensating raise in the optimal tax rate is required.

Eq. (7) concerns the incentives of the critical individual. The rearrangement of Eq. (7), using $\Phi'(w^*) = \phi(w^*)$ and $\Psi'(w^*) = -w^*\phi(w^*)$, generates an expression of the utility difference between not working and working,

$$u(T) + \mu - u((1-t)w^*) = \lambda(w^*t + T) . \tag{10}$$

Eq. (10) shows that the utility difference is positive, implying that the assigned critical individual would rather refrain from working. Thus, if allowed to directly affect the critical wage, the optimal policy would generate a larger share of transfer recipients than the share arrived at by maximizing the social welfare function, Eq. (4). If budgetary considerations allow it, the transfer distributed to the restricted share of non-workers could be quite high. The result suggests that it may be welfare enhancing to use administrative control mechanisms, such as the requirement of a physician's 'sickness certificate' in (temporary) disability insurance or the requirement of search effort in unemployment insurance (see e.g. Boone et al., 2002; Fredriksson & Holmlund, 2005).

4.1.2 Social case

In the social case the individual experiences disutility $v(\Phi(w^*))$ when deviating from norm-compliant behaviour. The social planner maximizes the welfare function W,

$$W = \int_{w^*}^{w^{max}} u((1-t)w)\phi(w)dw + \int_{w^{min}}^{w^*} (u(T) + \mu - v(\Phi(w^*)))\phi(w)dw \,, \tag{11}$$

over t, T and w^*, subject to

$$t\Psi(w^*) - T\Phi(w^*) \geq 0 \,.$$

The maximization yields the following the first-order condition with respect to the critical wage w^*,

$$\begin{aligned} \frac{\partial L}{\partial w^*} &= -u((1-t)w^*)\phi(w^*) - v'(\Phi(w^*))\Phi'(w^*) \int_{w^{min}}^{w^*} \phi(w)dw + \\ &(u(T) + \mu - v(\Phi(w^*)))\phi(w^*) + \lambda(t\Psi'(w^*) - T\Phi'(w^*)) = 0 \end{aligned} \tag{12}$$

where λ is the Lagrangean multiplier.

In optimum,

$$\begin{aligned} &(u(T) + \mu - v(\Phi(w^*))) - u((1-t)w^*)\phi(w^*) = \\ &\lambda(t\Psi'(w^*) - T\Phi'(w^*)) + v'(\Phi(w^*))\Phi'(w^*) \int_{w^{min}}^{w^*} \phi(w)dw. \end{aligned} \tag{13}$$

Eq. (13) shows that the social norm influences the optimal welfare policy in two ways. The left-hand side contains a direct effect of the norm; the disutility from non-compliance reduces the utility of receiving the transfer. The right hand side contains an indirect effect pertaining to the negative effect on the norm of a marginal increase in the critical wage. Whereas the direct effect implies an increase in the optimal transfer level, the indirect effect implies a decrease. Thus, the total effect of the social norm on the optimal policy and, thereby, on the critical individual's willingness to work is indeterminate. The social planner considers policy and program participation in a 'first-best' context. The smaller the group of transfer recipients, the stronger is the norm, which in turn implies a larger compensation for norm-inflicted discomfort.

4.2 Individual productivity non-observable

4.2.1 Non-social case

On the (more realistic) assumption that individual productivity is non-observable, the critical wage, and consequently, the population share of transfer recipients, is a function of the policy, $w^*(t,T)$. The social planner maximizes the following social welfare function with respect to the tax rate t and the transfer level T,

$$W = \int_{w^*(t,T)}^{w^{max}} u((1-t)w)\phi(w)dw + \int_{w^{min}}^{w^*(t,T)} (u(T)+\mu)\phi(w)dw \tag{14}$$

s.t.

$$B(t,T) = t\Psi(w^*(t,T)) - T\Phi(w^*(t,T)) \geq 0\,,$$

where the constraint states that the budget, $B(t,T)$, must be positive. The condition that the critical individual is indifferent between working and accepting the transfer is fulfilled by assumption, and determines the critical wage, w^*,

$$u((1-t)w^*(t,T)) - \left(u(T)+\mu\right) = 0\,. \tag{15}$$

Owing to Eq. (15), the effects of w^* through the integrals disappear in the first-order conditions. Thus, the first-order condition with respect to the tax rate t is

$$\frac{\partial L}{\partial t} = -\int_{w^*(t,T)}^{w^{max}} u'((1-t)w)w\phi(w)dw + \lambda\frac{\partial B(t,T)}{\partial t} = 0, \tag{16}$$

where λ is the Lagrangean multiplier. The last term in Eq. (16) is

$$\frac{\partial B(t,T)}{\partial t} = \Psi(w^*) - (tw^* + T)\phi(w^*)\frac{\partial w^*}{\partial t} >< 0\,,$$

where

$$\frac{\partial w^*}{\partial t} = -\frac{-u'((1-t)w^*)w^*}{u'((1-t)w^*)(1-t)} > 0\,.$$

The first-order condition with respect to the transfer level T is

$$\frac{\partial L}{\partial T} = \int_{w^{min}}^{w^*(t,T)} u'(T)\phi(w)dw - \lambda\frac{\partial \Phi(w^*)}{\partial T} = 0, \tag{17}$$

where

$$\frac{\partial B(t,T)}{\partial T} = -\left(\Phi(w^*) + (tw^* + T)\phi(w^*)\frac{\partial w^*}{\partial T}\right) < 0$$

and

$$\frac{\partial w^*}{\partial T} = -\frac{-u'(T)}{u'((1-t)w^*)(1-t)} > 0 .$$

Solving for λ produces

$$-\frac{\int_{w^*(t,T)}^{w^{max}} u'((1-t)w)w\phi(w)dw}{\frac{\partial B(t,T)}{\partial t}} = \frac{\int_{w^{min}}^{w^*(t,T)} u'(T)\phi(w)dw}{\frac{\partial B(t,T)}{\partial T}} . \quad (18)$$

To fulfil Eq. (18), a marginal raise in the tax rate must contribute positively to public revenues, that is, $\frac{\partial B(t,T)}{\partial t} > 0$. This is the case since spending another dollar on transfer recipients implies a budgetary cost, $\frac{\partial B(t,T)}{\partial T} < 0$. Thus, the optimal tax rate generates revenues that position the policy to the left of the maximum of a hypothetical Laffer curve.

4.2.2 Social case

The social planner maximizes the welfare function W over tax rate t and transfer level T,

$$W = \int_{w^*(t,T)}^{w^{max}} u((1-t)w)\phi(w)dw + \int_{w^{min}}^{w^*(t,T)} (u(T) + \mu - v(\Phi(w^*)))\phi(w)dw . \quad (19)$$

s.t.

$$B(t,T) = t\Psi(w^*(t,T)) - T\Phi(w^*(t,T)) \geq 0 .$$

Again, the critical wage w^* is defined by the condition that critical individual is indifferent to working,

$$u((1-t)w^*) - (u(T) + \mu - v(\Phi(w^*))) = 0 . \quad (20)$$

The first-order condition with regard to the tax rate t is

$$\frac{\partial L}{\partial t} = -\int_{w^*(t,T)}^{w^{max}} u'((1-t)w)w\phi(w)dw - \frac{\partial v(\Phi(w^*))}{\partial t}\int_{w^{min}}^{w^*(t,T)} \phi(w^*)dw + \lambda\frac{\partial B(t,T)}{\partial t} = 0, \quad (21)$$

where

$$\frac{\partial v(\Phi(w^*))}{\partial t} = v'(\Phi(w^*))\phi(w^*)\frac{\partial w^*}{\partial t} \quad (22)$$

and

$$\frac{\partial w^*}{\partial t} = -\frac{-u'((1-t)w^*)w^*}{u'((1-t)w^*)(1-t) + v'(\Phi(w^*))\phi(w^*)}. \tag{23}$$

Eq. (23) is positive, as the derivative with respect to the wage, found in the denominator, is positive in the relevant equilibrium states. A positive marginal effect on the critical wage from the tax rate implies in turn that a marginal increase in the tax rate affects the norm negatively. Thus, Eq. (22) is negative, because $v'(\Phi(w^*))\phi(w^*) < 0$ by assumption.

Given that Eq. (23) is positive, the marginal effect on the program budget is indeterminate,

$$\frac{\partial B(t,T)}{\partial t} = \Psi(w^*) - (tw^* + T)\varphi(w^*)\frac{\partial w^*}{\partial t} >< 0. \tag{24}$$

The first-order condition with respect to the transfer level T is

$$\frac{\partial L}{\partial T} = \left(u'(T) - \frac{\partial v(\Phi(w^*))}{\partial T} \right) \int_{w^{min}}^{w^*(t,T)} \phi(w)dw + \lambda \frac{\partial B(t,T)}{\partial T} = 0. \tag{25}$$

Following the same arguments as for the marginal tax effect, a marginal increase in the transfer T implies a higher critical wage and a weaker social norm:

$$\frac{\partial v(\Phi(w^*))}{\partial T} = v'(\Phi(w^*))\phi(w^*)\frac{\partial w^*}{\partial T} < 0, \tag{26}$$

where

$$\frac{\partial w^*}{\partial T} = -\frac{-u'(T)}{u'((1-t)w^*)(1-t) + v'(\Phi(w^*))\phi(w^*)} > 0. \tag{27}$$

If Eq. (27) is positive, the marginal effect of the transfer on the budget is negative,

$$\frac{\partial B(t,T)}{\partial T} = -\left(\Phi(w^*) + (tw^* + T)\phi(w^*)\frac{\partial w^*}{\partial T} \right) < 0. \tag{28}$$

Solving for λ produces

$$-\frac{\int_{w^*(t,T)}^{w^{max}} u'((1-t)w)w\phi(w)dw + \frac{\partial v(\Phi(w^*))}{\partial t}\int_{w^{min}}^{w^*(t,T)} \phi(w)dw}{\frac{\partial B(t,T)}{\partial t}} = \frac{\left(u'(T) - \frac{\partial v(\Phi(w^*))}{\partial T} \right)\int_{w^{min}}^{w^*(t,T)} \phi(w)dw}{\frac{\partial B(t,T)}{\partial T}}. \tag{29}$$

On the assumption that Eq. (23) and Eq. (26) are negative, Eq. (29) implies that $\frac{\partial B(t,T)}{\partial t} > 0$, since $\frac{\partial B(t,T)}{\partial T} < 0$ in optimum. Compared to its non-social counterpart, Eq. (18), Eq. (29) shows that in optimum, the marginal utility of working decreases due to the stigma-reducing effect of the tax rate (the numerator on the left hand side of Eq. (29)), while the marginal utility of not working increases due to the stigma-reducing effect of the transfer (the numerator on the right hand side of Eq. (29)). The assumption of a concave utility function implies that a higher tax rate and a higher transfer level are required for the equality to hold. Thus, when individual productivity is not observable, the social norm contributes to a more generous optimal policy (t, T).

When the tax rate approaches one, however, the social norm has a generosity-reducing effect (the effect is associated with the balanced equilibrium states $(t, T, \Phi(w^*)) = (1,0,1)$ and $(t, T, \Phi(w^*)) = (1,0,0)$). Then, marginal increases in tax rate and transfer affect the critical wage negatively (Eq. (23)<0 and Eq. (26)<0) and, as a consequence, affect the social norm positively (Eq. (22)>0 and Eq. (25)>0). The norm-strengthening effect of the policy in turn contribute to an increase in the marginal utility of working and a decrease in the marginal utility of not working in Eq. (29). Thus, the optimal policy is lower compared to the non-social case. In other words, for sufficiently generous policies, the social norm speeds up the process towards the collapse of the welfare state program.

5. Concluding discussion

Extending the model of Lindbeck et al. (1999), this paper explores the social welfare implications of an endogenous social work norm in the context of a universal welfare state program. By encouraging the individual to work (and punishing her for deciding not to), the social norm alleviates the disincentive effects of the welfare state program. In the case where individual productivity is non-observable, the analysis shows that the deterring effect of the social norm enables the social planner to increase program generosity. However, the paper also observes that (too) generous policies undermine the strength of the social norm, leading to an increased inflow to the program and to an eventual retrenchment. In the case of observability, the norm has inconclusive implications for the optimal policy. Whereas the deterring effect justifies a larger benefit, the amplifying effect justifies a smaller benefit.

The social controls on individual behaviour offer an opportunity to increase benefit levels, which in turn change the restrictive impact of the norm due to its endogeneity. If the disincentive effects of the welfare state are severe, a retrenchment may be necessary to restore the social norms that originally made it possible to introduce generous arrangements, Lindbeck argues (1995). Söderström (1997) also identifies a possible need to increase the role of social norms in alleviating the problem of moral hazard.[2] However, administrative controls and economic penalties are other efficient instruments (ibid.). By means of stricter

[2] The underlying assumption in both cases is that the social norm will revive after spending cuts and entitlement withdrawal etc. However, using an evolutionary model, Janssen & Mendys-Kamphorst (2004) find that "intrinsic" incentives do not recover even after "extrinsic" incentives are removed. In addition, note that a strong norm may not be an objective per se. If the stigma of participating in the program is too strong, the take-up rate may be smaller than what is desirable from a social welfare perspective (see Besley & Coate, 1992). Social norms may also be costly in the sense that individuals invest too much effort in gaining reputational rewards (Dufwenberg & Lundholm, 2001; Bénabou & Tirole, 2006).

enforcement of entitlement criteria, by means of workfare etc., incentives of welfare state programs may improve without retrenchment, Andersen (2004) observes. The analysis of the 'first-best' scenario in this paper suggests that some (costly) administrative control may be necessary to sustain a generous welfare state program and a strong social norm. Thus, the crowding in or out of 'intrinsic' motivation depends on the context and the design of the 'extrinsic' intervention (Frey, 1994; Kreps, 1997; Bénabou & Tirole, 2006).

Acknowledgements

I would like to thank Fredrik Andersson, Andreas Bergh and Eric Rehn for constructive and insightful comments. Funding from the Swedish National Insurance Agency and the Swedish Council for Working Life and Social Research is gratefully acknowledged.

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