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Status preferences and optimal corrective taxes: a note

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Abstract

We take issue with the argument expounded, among others, by Layard (2006, Economic Journal*) that status-seeking preferences justify heavier taxation of income because this serves to internalise the negative externality that the pursuit of status imposes on others. In a model where status depends on both income and effort, we show that the optimal corrective tax rate is smaller than if non-monetary status plays no role, and that a subsidy of work effort at the margin may be called for. Additionally, we demonstrate how the elasticity of labour supply depends on the parameters of the status production function in such a model, and discuss potential implications for optimal income taxation.*

JEL codes: D1, D3, H2.

1 A tale of Diogenes and Alexander

Legend has it that Alexander the Great once, while riding through a little Greek hamlet by the sea, happened upon the barrel in which the philosopher Diogenes lived. Alexander reputedly remarked to his chief of staff: "I would not want to live like this". To which Diogenes, having overheard the remark, just replied: "Neither would I, if I were Alexander".

This simple tale reflects an age-old fundamental problem of utilitarian optimal taxation: If both Diogenes and Alexander could have achieved the other's place in life, why tax Alexander (with his large market income) more heavily than the income-less Diogenes? After all, the reason why Diogenes

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has no income is *his own choice* to be a professor rather than a consultant.[1] This question cuts to the heart of optimal taxation theory (OT), and it is, of course, acknowledged in that OT takes the inability to condition tax rates on *unobservable potential income* (or leisure) as its point of departure [13, 10].

Still, OT usually follows standard economic practice in assuming that individuals only differ in wages, not in preferences – the Beckerian *de gustibus non est disputandum* [4]. But what if people with a penchant for the things that money can buy self-select into lucrative professions, while the equally capable Diogeneses go for careers with more independence and leisure? In this case, income taxation would tend, *ceteris paribus*, to fall comparatively more on those whom it hurts more. This is not what a utilitarian would advocate, and the argument would likely call for an *additional brake on redistributive taxation*, over and above the excess burden and principal-agent problems depicted in the standard models.[2]

2 Relative incomes and taxation: the object of this note

One of the most fruitful recent developments in economics is that we economists tend to listen to psychologists more, as witnessed by the recent economic research on "happiness" [6, 8]. A centrepiece of this research has been the relationship between income (command of resources) and "happiness", and it has been established [11][3] that people

1. tend to evaluate their quality of life relative to others,
2. become habituated to (changes in) their lifestyles over time and
3. judge their success against the benchmark of their expectations.

Utilitarians have built on the Veblian tradition [15, 5] and the importance of status preferences in the empirical literature on "happiness" to argue that conspicuous consumption (or work effort in general) ought to be discouraged

[1] Note that we are fully prepared to couch the discussion in utilitarian terms rather than in terms "horizontal equity". The potential conflict between the two has been well understood for quite some time [12].

[2] Unless these models were interpreted very broadly, encompassing career and other long-run choices. This, of course, would render empirical corroboration much more difficult als observed (current) labour supply elasticities would lose much of their normative significance. To put it differently, individuals with a small elasticity of labour supply would, other things being equal, be more likely to end up in professions with a higher leisure-wage schedule. Arguments of this ilk are also relevant for the recent batch of models on gender-based taxation [1].

[3] The authors present an evolutionary account of *why* human preferences are of the kind described in the text, which need not concern us here.

[9]. The main argument is simple:[4] People are caught in a rat race for status. Klaus' additional effort to increase his relative income entails a negative externality on Susan, whose relative income (status) is reduced for any given effort of hers. Consequently, Klaus' income ought to be taxed in order to internalise this externality – possibly in addition to whatever taxation the re-distribution of absolute incomes might demand.

Using a very simple formal example, *we show this argument to be flawed.* In parallel to the Alexander-Diogenes-problem outlined above, the literature on status-seeking errs by focusing *exclusively on status that money can buy.* If we allow for substitute (non-monetary) ways to obtain status by expending effort, the standard results change considerably – in particular, it can be optimal to *subsidise* work effort at the margin.

In addition to this, we also demonstrate an unsurprising tendency of people with a comparative advantage in monetary status-seeking to focus on this activity, while others with a comparative advantage in non-monetary status-seeking – such as sports, the publish-or-perish race, or politics – put their main effort into other channels. Considered on its own, this effect will in some instances *reduce* the elasticity of labour supply, urging us to tax the individual in question more heavily (in a model with heterogenous individuals).

3 The model

Assume a very simple model with a representative individual whose quasi-linear utility depends on the absolute level of consumption (net income), status, and leisure.[5] The individual supplies labour at a given wage rate w and is subject to a linear progressive income tax[6] with proportional taxation at rate t and a lump-sum transfer T. The representative individual, therefore, enjoys utility ("happiness")

$$u = y(1-t) + T + \alpha \ln S + \beta \ln(1 - l - e) \tag{1}$$

where S denotes an individual's status, l is work effort (such that $y = wl$) and e is effort devoted to non-monetary status seeking.

[4] As far as habituation is concerned, things turn out to be a trifle more difficult: *ex ante*, a tax on consumption prevents addiction, but *ex post*, redistribution harms the rich (who lose their accustomed level of well-being) more than it benefits the poor (who rapidly adapt to the pittance that is redistributed to them).

[5] The quasilinear utility function is a staple in much recent work on taxation – for instance, in [2]. One obvious drawback is that there are no income effects in such a model, and all demand changes are compensated. This does not pose a serious problem as long as one does not base the application of the model to policy questions on observed elasticities, which are Marshallian. Choosing a rather special (logarithmic) form for (1) affords closed-form solutions for individual choices, simplifying our task considerably,

[6] In the case where we have a marginal subsidy of work effort ($t < 0$), financed through lump-sum taxation ($T < 0$), the schedule is obviously regressive.

The latter variable is key in our account of status seeking. To fix ideas, let us consider the familiar case of a professor who can either impress his colleagues by embarking on the lecture circus and consulting, which lets him drive a Porsche and wear a Breguet watch, or by working harder on his research and publish a piece (an additional piece) in a top-ranking journal. We capture this idea by assuming that individuals gain status by combining net income and non-pecuniary effort in a Cobb-Douglas technology:

$$S = \frac{A(y(1-t))^{\gamma} e^{1-\gamma}}{\overline{A}(\overline{y}(1-t))^{\gamma}\overline{e}^{1-\gamma}} = \frac{A}{\overline{A}}\left(\frac{y}{\overline{y}}\right)^{\gamma}\left(\frac{e}{\overline{e}}\right)^{1-\gamma} \tag{2}$$

where an overbar denotes the average value in the individual's reference group. Note that this group – the peers whom a person compares herself with – may be much smaller than society at large, although there is little scope for modelling this explicitly in our representative agent setup. Inspection of (2) also reveals that we have excluded the lump sum transfer T from the computation of status. This is essentially a technicality that does not affect our results in a significant manner, but which simplifies the analysis considerably. We could also motivate it in a number of ways, for example by re-scaling net income in such a way that T serves as a common baseline from which status-relevant increases are appraised. Finally, the tax rate in (2) cancels out, implying that relative gross income matters for status and not net income or consumption.[7] With our simple utility function (1), however, this difference turns out to be immaterial.[8]

Compared to the standard OT model of income taxation, where individuals differ only in their productivity (w), we conceptually admit at least two other relevant dimensions:

1. Individuals may differ in their *basic ability* to acquire status, be it through nature, nurture or the inheritance of status in the family. We capture this effect using the level parameter A.

2. Some individuals may enjoy a *comparative advantage* in a particular type of status-seeking acitvity (such as being born with a knack for attracting the other sex), which is reflected in the partial elasticity of production $(1-\gamma)$.

Of course, we have little reason to believe tastes to be homogenous – for example, one might let the relative weights of consumption, status and leisure (α and β) vary, too. We will present a few comparative statics

[7] Alternatively, it could be read as meaning that individuals take the effect of tax changes on their benchmark into account.

[8] One could write $\overline{y}(1-\overline{t})$ in (2) to capture the idea that people ignore the effect of a change in the tax rate on net reference income, but the first-order conditions for a private optimum would be unaffected.

results below, but follow the received practice in OT to let the reader wonder whether, and how, optimal tax structures would change if people pursued different goals in life.

The above model is simple enough to ensure a closed-form solution for individual choices. Lemma 3.1 below summarises the results.

Lemma 3.1 *(Reaction of the private sector.) The individual's optimal choices of labour supply l and effort e are*

$$l^* = \frac{\alpha(1-\gamma)\left((1-t)w + \alpha + \beta - \xi\right)}{2(1-t)w(-\gamma\alpha + \alpha + \beta)}$$

$$e^* = \frac{(1-t)w - \alpha - \beta + \xi}{2(1-t)w}$$

where

$$\xi = \sqrt{((t-1)w + \alpha + \beta)^2 + 4(1-t)w\alpha\gamma}$$

Proof Substitute (2) into (1), then maximise with respect to l^* and e^*. The first-order conditions for a maximum are:

$$\frac{\beta}{1-e-l} - \frac{\alpha\gamma}{l} = (1-t)w$$

$$\frac{(1-\gamma)\alpha}{e} = \frac{\beta}{1-e-l}$$

Solving for the optimal pair (l^*, e^*) yields the above expressions. The second-order condition for a maximum is guaranteed to hold because the programme is convex. ∎

4 Results

We now derive our main results. Throughout the present short note, we will continue using the representative agent model, which, of course, abstracts away from any reason for re-distributive taxes altogether. While this allows us to focus on the allocational problem of correcting for status externalities (sub-section 4.2), we also work out a few comparative statics results that may be interpreted in a broader context (sub-section 4.1).

4.1 Comparative statics

Lemma 4.1 *(Comparative statics.) An increase in the tax rate t has the opposite effect on work effort and non-monetary status seeking, i.e. if it discourages the former, it drives up the latter. In particular, we have*

$$\frac{\partial e^*}{\partial t} = -\frac{\alpha(1-\gamma)}{(1-\gamma)\alpha+\beta}\frac{\partial l^*}{\partial t}$$

Proof We begin with the closed-form solution established in lemma 3.1. Taking partial derivatives with respect to the tax rate, we find

$$\frac{\partial e^*}{\partial t} = \frac{\alpha(1-\gamma)\left(-(\alpha+\beta)^2+\xi(\alpha+\beta)-(1-t)w(2\gamma\alpha-\alpha-\beta)\right)}{2(t-1)^2 w((1-\gamma)\alpha+\beta)\xi}$$

$$\frac{\partial l^*}{\partial t} = \frac{(\alpha+\beta)^2-\xi(\alpha+\beta)+(1-t)w(2\gamma\alpha-\alpha-\beta)}{2(t-1)^2 w\xi}$$

where as before (lemma 3.1)

$$\xi = \sqrt{((t-1)w+\alpha+\beta)^2+4(1-t)w\alpha\gamma} > 0$$

Because $0 \leq \gamma \leq 1$, the denominators in both partial derivatives taken above are positive. We also see that the numerators differ by a factor of $-\alpha(1-\gamma)$. The result claimed is immediate from these observations. ∎

Numerical experimentation reveals that for plausible parameter values, we have $\frac{\partial e^*}{\partial t} > 0 > \frac{\partial l^*}{\partial t}$, that is the intuitively plausible case where taxing one way of acquiring status increases the use of substitute channels.

Now let us turn to a central parameter for OT, the elasticity of labour supply with respect to an exogenous change in the net wage.[9] It is easy to demonstrate that the labour supply elasticity depends on the parameters of the model in ways summarised in proposition 4.2 below.

Proposition 4.2 *(Elasticity of labour supply.) Other things being equal, individuals with a comparative advantage in monetary status-seeking exhibit a lower elasticity of labour supply, while individuals who value status more (place a larger weight on the status component of utility) may react more or less elastically to changes in the wage rate.*

[9] In fact, what is relevant for OT purposes is the *compensated* elasticity, which does not contain any income effects, rather than the *uncompensated* one typically reported in empirical studies and widely used in arguing that women ought to be taxed less heavily than men. As we use a quasilinear utility function – as do Alesina, Ichino and Karabarbounis [2] –, there are no income effects in our framework and the two elasticities coincide.

Proof Begin by writing down the labour supply elasticity using the closed-form solution for l^* obtained above:

$$\eta = \frac{\partial l^*}{\partial w}\frac{w}{l^*} = \frac{(1-t)w(\alpha+\beta-2\gamma\alpha)+(\alpha+\beta)\left(-\alpha-\beta+\xi\right)}{\xi\left(-tw+w-\alpha-\beta+\xi\right)}$$

Taking first partials with respect to γ, we get

$$\frac{\partial\eta}{\partial\gamma} = \frac{(1-t)w\alpha((t-1)w-\alpha-\beta)}{\left(((t-1)w+\alpha+\beta)^2+4(1-t)w\alpha\gamma\right)^{3/2}} < 0$$

and with respect to α,

$$\frac{\partial\eta}{\partial\alpha} = \frac{(1-t)w((1-t)w(1-\gamma)-\alpha(1-\gamma)-\beta(1+\gamma))}{\left(((t-1)w+\alpha+\beta)^2+4(1-t)w\alpha\gamma\right)^{3/2}}$$

The first derivative is clearly positive. As for the second, we fail to sign the numerator unambiguously; it turns out to be positive iff $(1-t)(1-\gamma)w > (1-\gamma)\alpha+(1+\gamma)\beta$. Note that because w is the only parameter in the above expression that is not constrained to the interval $[0,1]$, it is always possible to construe an example where $\frac{\partial\eta}{\partial\alpha} > 0$ by making w arbitrarily large. Therefore, there exist some parameter combinations for which individuals who place higher emphasis on status supply labour *more* elastically, *ceteris paribus.* ∎

The intution behind this theorem is fairly simple: The higher γ, the less able the individual to substitute non-monetary status-seeking for work effort at any given relative price $w(1-t)$. In the case of α, however, there are countervailing forces at work, as a large weight α will make *both* ways of pursuing status more attractive, and the balance will hinge on the relative price as well as on the partial production elasticities in the status production function.

Even though we used a representative agent framework to develop them, these results concerning labour supply elasticities are of potential relevance for an OT treatment of status preferences. If status-minded individuals react less elastically to income taxation, standard OT wisdom would have us tax them more; also, if there are some classes of individuals who either weight status more heavily and/or have a higher marginal status productivity of income – such as, arguably, males[10] – we would expect them to have a lower elasticity of labour supply than the other classes, other things being equal.

[10] We do not pose as experts on evolution and anthropology, but let us remark that nature affords several instances of the male developing particular traits that enable him to assert his status relative to other males, the reason being that relative status seems to be more important in male than in female reproduction. However, male success may depend relatively more on comparative excellence in objectively futile exploits, analogous to the way in which male peacocks succeed by touting useless appendages (demonstrating their *other* abilities), than female success. Sporting activities come to mind. Arguments of this ilk are not unusual in social psychology, see [3].

It is far too early to say anything definite here, for a lot may depend on the simple structure of our model (such as the quasi-linear utility function and Cobb-Douglas production of status). More importantly, we need to bear in mind that theorem 4.2 establishes that the effect of α is indeterminate. The overall idea seems worth exploring, though, and it might complement some recent work on gender-based taxation [1, 2].

4.2 Optimal corrective taxation

For the present, let us turn our intention of what can *not* justify additional taxation of income in our model: the internalisation of external effects. We demonstrate this by looking at corrective taxation in our setup, i.e. without any redistributive policy motive nor the need to finance a public good. Throughout the following sub-section, we will also assume government to be benevolent, maximising the taxpayer's happiness u.

The government recognizes, however, that everybody faces the same status incentives and that it is impossible for the representative citizen to improve his relative status in a rat race. In our model, the taxpayer will end up with average status anyway, and as $\ln 1 = 0$, the government effectively maximises, by choice of the tax rate t, a "standard" utility function

$$u = lw(1-t) + T + \beta \ln(1-l-e) \tag{3}$$

without any relative component, taking its budget constraint

$$T = tlw$$

as well as the private-sector response from lemma 3.1 as given. Computing the optimal tax rate for this problem is straightforward, albeit tedious, and leads to proposition 4.3 below.

Proposition 4.3 *(Optimal corrective taxes)*

(a) If there is no status motive ($\alpha = 0$), no taxation is optimal in the representative agent model.

(b) If relative status depends only on net income ($\gamma = 1$), a positive income tax rate is optimal unless the wage is very low ($w < \beta$).

(c) In a representative agent model with status preferences, the optimal income tax rate is increasing in the partial status production elasticity (γ). If non-monetary status seeking contributes much to overall status (for values of γ below $\gamma^{\text{krit}} = \frac{w-\beta}{\beta}$), it is optimal to subsidise *work effort at the margin.*

Proof Substitute the constraints and the private reaction functions from lemma 3.1 into (3). Then solve the first-order condition for a maximum over t to obtain

$$t^* = \frac{\alpha\left(\beta - w\left(1-\gamma\right)\right)}{\beta\left(w-\beta\right)} \tag{4}$$

From (3) above, we see immediately that $t^* = 0$ if $\alpha = 0$. Also, by taking the limit as the partial production elasticity of income grows, we have

$$\lim_{\gamma \to 1} t^* = \frac{\alpha}{w-\beta}$$

which is positive for all $w > \beta$. Finally, differentiating (4) with respect to γ yields

$$\frac{\partial t^*}{\partial \gamma} = \frac{w\alpha}{w\beta - \beta^2}$$

This expression is also positive as long as $w > \beta$. Also, if we let $\gamma = 0$, we find t^* to be negative for all $\beta \neq w$. ∎

A marginal subsidy can, therefore, *be optimal regardless of whether the wage rate exceeds β or not.* Also, if there is no status-seeking motive, income taxation is obviously pointless in the representative agent model as it takes away money from the agent, distorting her labour-leisure-choice, and then reimburses her tax payments to herself. This is covered by part (a) of proposition 4.3.

For the remainder of our discussion, we focus on the plausible case $w > \beta$, noting that β is a parameter constrained to the unit interval. Part (b) of theorem 4.3 states that if the only way to acquire status is to make money – i.e., if $\gamma = 1$[11] – then a positive tax rate is in fact optimal. This tax optimally corrects for the externality that the representative citizen inflicts on, well, herself (or others just like herself). If $\gamma < 1$, on the other hand, a smaller correction will be called for because taxpayers substitute e for l, which has the effect of reducing absolute income that *the government values relatively more highly than the representative agent* at the margin. Below a critical value of the parameter γ, it becomes in fact optimal to subsidise work effort for this reason. Figure 1 below illustrates how t^* is a positive linear function of γ in our model. [12]

5 Diogenes revisited

How does this model relate to the Diogenes and Alexander fable told in the introduction? First, note that adding the Diogenes way of gaining status to

[11] Individual status in this case would boil down to $\frac{y_i}{\bar{y}}$, treating a framework à la Layard [7, 8] with purely income-dependent status as a special case of ours.

[12] The plot assumes that $\alpha = 0,5$, $\beta = 0,3$ and $w = 1$.

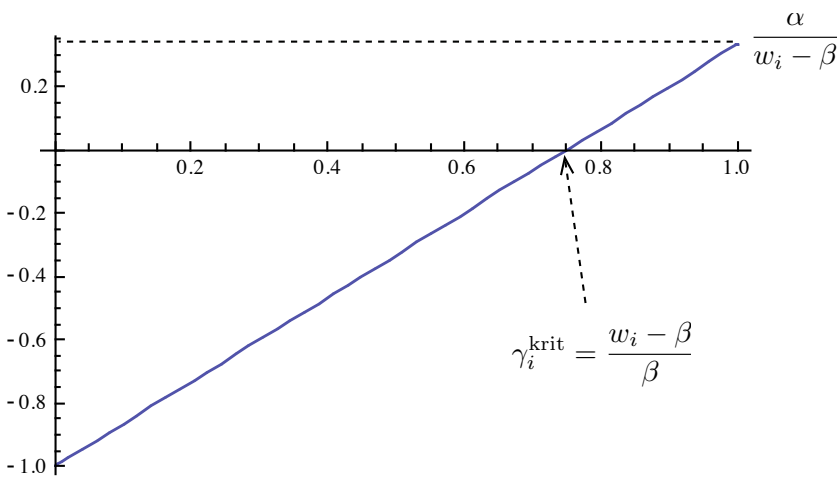

Figure 1: t^* as a function of γ

the Alexander way alters the conclusions considerably, weakening the case for taxing income over and above the income tax rate that standard OT model would find optimal (a case that is made by Layard [9]). Depending on parameters, we might even argue for subsidising – or, in a broader context, taxing less heavily – work effort (or conspicuous consumption). To the best of our knowledge, ours is the first formal justification for such a subsidy in a model where status enters the utility function.[13]

But this is assuming that all taxpayers are the same. In a population of Diogeneses and Alexanders, our model leads us to suspect that the Alexanders, having self-selected (on account of capability γ or preference α) into money-making, will exhibit a smaller elasticity of labour supply than the Diogeneses, which on all standard accounts would want us to increase their income tax rate,[14] possibly making them worse off than the overall just as happy Diogeneses.

This cannot come as a surprise, though. It is well understood that with perfect information and a utilitarian social welfare function, more able individuals are actually (all other things being the same) worse off than less able ones under optimal taxation, as they are forced to work harder for the common good (and marginal utilities of income are equalised, see [13]). We owe fact that the able do not fare quite as badly in standard OT models to the government's lack of information, which lets the able mimic the incompetent and thus ensures that no reversal occurs. The literature,

[13]A different strand of the literature views status as a signalling device. As a broad rule of thumb, this literature looks much more benignly on status-seeking and conspicuous consumption. On this, see Thomas [14].

[14]We implicitly assume that non-monetary status cannot be taxed, or at the very least cannot be taxed as effectively as income, which appears a plausible assumption.

however, is rife with attempts to overcome this problem by using extraneous indicators for ability or preference – such as sex, for instance.[15] In the kind of model we have discussed, monetary status (provided it can be measured reliably) may play the same role.

If so, the central point may turn out to be a distributional issue after all. The fat guy needs a career and money to get a girl in the end, while nature provides for Brad Pitt without him even trying. Efficiency might beckon us to tax the former, while justice calls to let him off.

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