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Means testing versus basic income: the (lack of) political support for a universal allowance*

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Abstract

This paper studies the political economy of a basic income (BI) versus a means tested welfare scheme. We show in a very simple setting that if society votes on the type of system, its generosity as well as the "severity" of means testing (if any), a BI system could only emerge in the political equilibrium under very strong and empirically implausible conditions. Instead, the political process leads to a means tested system. The necessity to draw political support does affect the design of the system, but it only implies that means testing becomes less severe so that benefits are extended also to the middle classes. However, a fully universal system is rejected by a majority.

Keywords: D3, D7, H2, H5

JEL Classification: Basic income, means testing, political support

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1 Introduction

The replacement of some or all welfare payments with a "basic income" or universal allowance represents one of the oldest debates, both in the public finance literature and in the political arena; see, e.g., Atkinson (1996). At first, this appears to be an "ideal" solution, which would avoid the problems associated with means tested programs like limited take up, poverty traps created by high effective marginal tax rates, and stigmatization; see, e.g., Van Parijs (2004). Yet, while it has been consistently advocated by many prominent economists, other social scientists and politicians, a basic income scheme has never been implemented on a significant scale in reality.

A recent article in *The Economist* entitled "Basically unaffordable" concludes by stating: "Basic income: the clue is in the name".[1] And the article is best summarized by saying "... the clue is in the title". Though journalistic in style, the article brings across the main point in a pretty forceful and rigorous way. Howsoever, wonderful, fair and simple the idea of a basic income may appear, it has just one catch, namely that it is ... basically unaffordable; see, e.g., Horstschräer, Clauss and Schnabel (2010).

While we do not disagree with this argument, it probably tells only part of the "true story", and any (public) economist knows that the simple fact that a policy is "too expensive" does not necessarily prevent it from being implemented. In this paper we leave the realm of normative public economics, and show that there is a purely positive explanation for the failure to implement a basic income scheme, namely the lack of political support.[2] This may at first sound surprising because universality of a system is often justified by the necessity to draw political support; see, e.g., Casamatta, Cremer and Pestieau (2000). We show in a very simple setting that if society votes on the type of system, its generosity as well as the "severity" of means testing (if any), a basic income system could only emerge in the political equilibrium under very strong and empirically implausible conditions. Instead, the political process leads to a means tested system.

[1] See http://www.economist.com/news/finance-and-economics/21651897-replacing-welfare-payments-basic-income-all-alluring.

[2] A normative analysis of a universal schemes versus a means tested welfare scheme is undertaken by Besley (1990).

The necessity to draw political support does affect the design of the system, but it only implies that means testing becomes less severe so that benefits are extended also to the middle classes. However, a fully universal system is rejected by a majority.

2 The model

Consider a continuum of individuals who differ in their income $y_i \in \mathbb{R}_0^+$ with $i \in \{0, 1, 2\}$. Income levels satisfy $y_0 = 0 < y_1 < y_2$. Population size is normalized to one and the proportion of type-i individuals is given by $\theta_i \in (0, 1/2)$ where $1/2 < \theta_0 + \theta_1$, implying that y_1 is the median income, y_m. Assume $y_2 > y_1(1-\theta_1)/\theta_2$ which implies that median income is below average income: $y_m = y_1 < \bar{y} \equiv \sum_i \theta_i y_i$. Utilities are given by $u(c_i)$, with $u' > 0$ and $u'' < 0$, where c_i is consumption of a numeraire commodity.

The welfare scheme, if any, can be either means tested (MT) or a pay a basic income (BI) to everyone. A MT scheme pays solely to type-0 and type-1 individuals a transfer of $\max\{0; (M - \alpha y_i)\}$ where $\alpha \in [0, \alpha^{\max}]$ measures the degree of crowding out of welfare benefits. We can think of α as representing the degree of severity at which means testing is enforced. When $\alpha = 0$, means testing is "soft" and full benefits are paid to the middle class. On the other hand, when $\alpha \geq M/y_1$, means testing is strict and benefits are paid only to the poorest individuals. Under the BI scheme, all individuals receive a lump-sum transfer B. Compared to the BI scheme, the MT scheme has a targeting advantage, but this advantage comes at costs. First, since benefits are claimed only by a share of the population, beneficiaries suffer from stigmatization. These stigma costs reduce the monetary value of the transfer to $\sigma(M - \alpha y_i)$ where $\sigma \in [0, 1]$. Second, as long as $\alpha > 0$, crowding out increases the marginal tax rates of beneficiaries which exacerbates labor disincentives. Both transfers M and B are financed by a proportional income tax at a uniform nominal rate of t.

Under a BI scheme, individual utilities are given by

$$U_i^B = u((1-t)y_i + B) \quad \text{for} \quad i = 0, 1, 2. \tag{1}$$

And a MT scheme yields the following utility levels

$$U_0^M = u\left(\sigma M\right), \tag{2}$$

$$U_1^M = u\left((1-t)y_1 + \sigma(M - \alpha y_1)\right), \tag{3}$$

$$U_2^M = u\left((1-t)y_2\right). \tag{4}$$

Following for instance, Galasso and Profeta (2007) and Conde-Ruiz and Profeta (2007), we capture the distortions due to income taxation by correcting the tax base with the distortionary factor $1-t$ and $1-t-\sigma\alpha$ (*i.e.* 1 minus the effective marginal tax rate) for beneficiaries in the MT scheme. This reduced form reflects the adverse impact of each welfare scheme on the labor supply decision (which we do not explicitly model). The government budget constraints with the BI and the MT welfare scheme are represented by

$$t(1-t)\bar{y} = B \qquad \Rightarrow B(t), \tag{5}$$

$$\theta_2 t(1-t)y_2 + \theta_1(t+\sigma\alpha)(1-t-\sigma\alpha)y_1 = (\theta_0+\theta_1)M \quad \Rightarrow M(t,\alpha). \tag{6}$$

Both transfers B and M exhibit a "Laffer curve" relationship with respect to the income tax rate, *i.e.*

$$\frac{\partial B(t)}{\partial t} = (1-2t)\bar{y} \gtreqless 0 \quad \Leftrightarrow \quad t \lesseqgtr 0.5, \tag{7}$$

$$\frac{\partial M(t,\alpha)}{\partial t} = \frac{(1-2t)\bar{y} - 2\alpha\sigma\theta_1 y_1}{\theta_0+\theta_1} \gtreqless 0 \quad \Leftrightarrow \quad t \lesseqgtr 0.5 - \alpha\sigma\theta_1\upsilon_1, \tag{8}$$

where $\upsilon_1 \equiv y_1/\bar{y}$ is the ratio of median to average income.

We assume that society votes on the income tax rate t, and additionally on α when a MT is in place. The transfers B and M are then determined by equation (5) and (6) respectively. Substituting from (5) and (6) into (1) and (2)–(4), utility levels achieved by type-i individuals under the two welfare schemes can be expressed by their indirect utility functions:

$$V_i^B(t) = u\big((1-t)y_i + B(t)\big) \quad \forall\, i, \tag{9}$$

$$V_0^M(t,\alpha) = u\left(\sigma M(t,\alpha)\right), \tag{10}$$
$$V_1^M(t,\alpha) = u\left((1-t)y_1 + \sigma(M(t,\alpha) - \alpha y_1)\right), \tag{11}$$
$$V_2^M(t,\alpha) = u\big((1-t)y_2\big). \tag{12}$$

3 Voting procedure

We consider the following sequence of events. In a first stage, individuals vote on their preferred welfare scheme. If a majority emerges, the corresponding program is adopted, otherwise we have the *status quo*, 0, with no welfare scheme and no subsequent voting.

When BI is implemented, individuals vote on the generosity of the system as represented by the tax rate t^B. When MT is chosen, individuals vote sequentially, first on the crowding out fact α and then on the nominal tax rate t^M.

In either case we study the subgame perfect majority voting equilibrium under which individuals at any stage anticipate the induced equilibrium in subsequent stages, if any. As usual, the game is solved by backward induction.

3.1 Political equilibrium with a basic income scheme

First, we assume the BI has been chosen in the first stage and study the determination of the equilibrium tax rate, t_m^B. The preferred income tax rate of type-i individual's, t_i, maximizes their indirect utility, equation (9), *i.e.*,

$$\max_t \quad V_i^B(t) \quad \text{s.t.} \quad t \geq 0.$$

The first-order condition (FOC) of this problem is

$$\frac{\partial V_i^B(t)}{\partial t} = u'(c_i)\left[-y_i + (1-2t)\bar{y}\right] \leq 0.$$

The first expression in brackets reflects the direct costs of higher income taxes which are increasing in income and the second term represents the increase in the lump-sum transfer B. As the indirect utility function of a type-i agent is concave in t, preferences are single-peaked.[3] Solving equation (3.1) for the income tax rate yields

$$t_i^B = \max\left\{0; \frac{1-\upsilon_i}{2}\right\}. \tag{13}$$

Not surprisingly, type-2 agents oppose a positive income tax rate as they are net contributors to the welfare scheme. Type-0 and type-1 agents, by contrast, gain from the income redistribution that the BI scheme achieves through a combination of a proportional income tax rate and a lump-sum transfer, B. These agents always vote for positive taxation.

Equation (13) implies the following ranking of individuals' most preferred income tax rates

$$t_2^B = 0 < t_1^B < t_0^B.$$

Since type-0 and 1 agents constitute a majority, the median voter is a type-1 individual, implying

$$t_m^B \equiv t_1^B = \frac{1-\upsilon_1}{2} > 0 \tag{14}$$

as $\upsilon_1 \equiv y_1/\bar{y} < 1$. In other words, the median voter always votes for positive income taxation. As type-1 individuals have below-average income, they contribute less to the *BI* scheme than they get out of it. Their preferred tax rate is thus always positive but below the maximum of the Laffer curve because benefits from redistribution are traded off against larger tax distortions. Summing up, we have established the following lemma.

Lemma 1 *When BI is adopted in the first stage, the induced voting equilibrium tax rate is the most preferred choice of type 1 individuals and given by equation (14).*

3.2 Political equilibrium with a means-tested welfare scheme

Now, we assume that a *MT* scheme is in place and determine the voting equilibrium levels t_m^M and α_m^M. Since the vote is sequential we start by the last stage, and study the

[3] We have

$$\frac{\partial^2 V_i^B(t)}{\partial t^2} = u''(c_i)\left[-y_i + (1-2t)\bar{y}\right]^2 - u'(c_i)2\bar{y} < 0 \quad \forall\, i,$$

determination of t given α. Most-preferred income tax rates are obtained by maximizing indirect utility as given by (10)–(11), *i.e.*

$$\max_t \quad V_i^M(t,\alpha) \quad \text{s.t.} \quad t \geq 0.$$

The FOC for type-2 agents is $-u'(c_2)y_2 < 0$ so that their most-preferred income tax rate is $t_2^M = 0$. They contribute to the welfare scheme without receiving any benefits. For type-0 and 1 individuals the FOC is

$$\frac{\partial V_i^M(t,\alpha)}{\partial t} = u'(c_i)\left[-y_i + \sigma\left(\frac{(1-2t)\bar{y} - 2\alpha\sigma\theta_1 y_1}{\theta_0+\theta_1}\right)\right] \leq 0. \tag{15}$$

The first expression in brackets reflects the direct costs of higher income taxes which are nil for type-0 individuals, and the second term represents the increase in the means-tested benefit M adjusted by the costs of stigma. Again, as the indirect utility function of a type-i agent is concave in t preferences are single-peaked.[4] Solving equation (15) for the income tax rate yields for $i = 0, 1$

$$t_i^M(\alpha) = \max\left\{0; \frac{1}{2} - \alpha\sigma\theta_i\upsilon_i - \frac{\theta_0+\theta_1}{2\sigma}\upsilon_i\right\}. \tag{16}$$

Since expression (16) is decreasing in υ_i and thus in income, the median voter is again a type-1 individual:

$$t_m^M \equiv t_1^M(\alpha) = \max\left\{0; \frac{1}{2} - \alpha\sigma\theta_1\upsilon_1 - \frac{\theta_0+\theta_1}{2\sigma}\upsilon_1\right\}. \tag{17}$$

The median voter's income tax rate has the following properties

$$\frac{\partial t_m^M}{\partial\alpha} = -\sigma\theta_1\upsilon_1 < 0, \tag{18}$$

$$\frac{\partial(t_m^M + \sigma\alpha)}{\partial\alpha} = \sigma\left(1 - \theta_1\upsilon_1\right) > 0. \tag{19}$$

In other words, while the nominal tax rate increases, the effective tax rate faced by the median voter increases as α increases.

[4] The second order condition is given by

$$\frac{\partial^2 V_i^M(t,\alpha)}{\partial t^2} = u''(c_i)\left[-y_i + \sigma\left(\frac{(1-2t)\bar{y} - 2\alpha\sigma\theta_1 y_1}{\theta_0+\theta_1}\right)\right]^2 - u'(c_i)\frac{\sigma 2\bar{y}}{\theta_0+\theta_1} < 0$$

.

To study voters preferences over α we differentiate $M\left(t_m^M(\alpha),\alpha\right)$, which yields[5]

$$\frac{\partial M\left(t_m^M(\alpha),\alpha\right)}{\partial\alpha}=\frac{-2\sigma^2\alpha\theta_1 y_1(1-\theta_1\upsilon_1)}{\theta_0+\theta_1}<0. \tag{20}$$

When α increases welfare benefits for type-1 individuals are reduced, but at the same time t_m^M and thus contributions of type-2 individuals decrease. Given the inverse u-shaped Laffer curve this negative effect outweighs the positive effect.

An individual's most preferred level of α is determined by maximizing $V_i^M(t_m^M(\alpha),\alpha)$; since the vote on α precedes the one on t, individuals account for the induced change in the equilibrium level of t, $t_m^M(\alpha)$. We have

$$\frac{\partial V_2^M(t_m^M,\alpha)}{\partial\alpha}=-\frac{\partial t_m^M}{\partial\alpha}y_2>0, \tag{21}$$

$$\frac{\partial V_1^M(t_m^M,\alpha)}{\partial\alpha}=-\frac{\partial(t_m^M+\sigma\alpha)}{\partial\alpha}y_1+\sigma\frac{\partial M(t_m^M,\alpha)}{\partial\alpha}<0, \tag{22}$$

$$\frac{\partial V_0^M(t_m^M,\alpha)}{\partial\alpha}=\sigma\frac{\partial M(t_m^M,\alpha)}{\partial\alpha}>0. \tag{23}$$

so that individuals of types 0 and 1 most-prefer $\alpha=0$, while type-2 individuals want the level of α to be as large as possible. The median voter is then of type 1:

$$\alpha_m^M=\alpha_0^M=\alpha_1^M=0<\alpha_2^M=\alpha^{max}$$

Substituting $\alpha=0$ into (17) then completes the proof of the following lemma.

Lemma 2 *When MT is adopted in the first stage, the induced voting equilibrium is given by* $\alpha_m^M=0$ *and*

$$t_m^M=\max\left\{0,\frac{1}{2}-\frac{\theta_0+\theta_1}{2\sigma}\upsilon_1\right\}. \tag{24}$$

[5] We have

$$\frac{\partial M\left(t_m^M(\alpha),\alpha\right)}{\partial\alpha}=\frac{\theta_2 y_2(1-2t_m^M)\frac{\partial t_m^M}{\partial\alpha}+\theta_1 y_1(1-2(t_m^M+\sigma\alpha))\frac{\partial(t_m^M+\sigma\alpha)}{\partial\alpha}}{\theta_0+\theta_1}.$$

Using the properties of t_m^M and rearranging yields (20).

3.3 Basic income versus means-testing

We now turn to the first stage in which society decides which welfare scheme, if any, to implement. For doing this we have to rank each individual's utilities with a *BI*, a *MT* and no welfare scheme. The former two possibilities must be evaluated at the second stage voting outcome(s), namely t_m^B and (t_m^M, α_m^M).

Some of these rankings are obvious. First, it is plain that "no system" is type 2's most-preferred choice. These individuals lose under both systems. Second, individuals of type-0 always (weakly) prefer the *BI* or *MT* scheme to no welfare scheme; their contribution is zero and since the benefit is nonnegative, they cannot be made worse off by a welfare system. Third, the same ranking applies to type-1 individuals because for the median voter, $t_m^B = 0$ or $t_m^M = 0$ is always an option.

We are thus left with the comparison of *BI* and *MT* from the perspective of type-1 and type-0 individuals. Intuitively, we expect this comparison to depend on σ. Clearly with $\sigma = 0$, *MI* can never be optimal, but it becomes more attractive as σ increases. To make this comparison as easy as possible, first use (14) and (24) to show that when $\sigma = \theta_0 + \theta_1 \equiv \hat{\sigma}$ we have

$$t_m^B = t_m^M = \frac{1 - \upsilon_1}{2},$$

which along with the budget constraints (5) and (6) and $\alpha_m^M = 0$ implies that for $\sigma = \hat{\sigma}$ we have

$$B(t_m^M) = (\theta_0 + \theta_1) M(t_m^M, \alpha_m^M) = \sigma M(t_m^M, \alpha_m^M).$$

Consequently, when $\sigma = \hat{\sigma} = \theta_0 + \theta_1$ individuals of types 0 and 1 are indifferent between *BI* and *MT*; taxes are the same and so are benefits net of stigma ($B = \sigma M$). To complete the comparison it is then sufficient to show that V_1^M and V_0^M are monotonically increasing in σ. For individuals of type 1 this follows immediately from the definition of V_1^M, equation (11), along with the envelope theorem. Recall that t_m^M and α_m^M are the levels that maximize V_1^M, the utility of the median voter. To show that V_0^M increases in σ, it is sufficient to use its definition, equation (10) along with the property that t_m^M, as specified by (24), increases in σ and so does M.

Putting these elements together we obtain the following individual rankings of *BI*,

MT and 0.[6]

	$0 \leq \sigma < \theta_0 + \theta_1$	$\sigma \geq \theta_0 + \theta_1$
types 0 and 1	$BI > MT > 0$	$MT > BI > 0$
type 2	$0 > BI > MT$	$0 > BI, MT$

A simple inspection of these expression shows that when $\sigma \geq \theta_0 + \theta_1$, there is a majority in favor of MT, while a BI is adopted when $\sigma < \theta_0 + \theta_1$.[7] Recall that $\theta_0 + \theta_1 > 1/2$. Together with Lemmas 1 and 2 these results establish the following proposition, which summarizes our main findings and provides a full characterization of the political equilibrium.

Proposition 1 *(i) When $\sigma \geq \theta_0 + \theta_1$, the political equilibrium implies a means tested scheme with $\alpha = 0$, and a tax rate of*

$$t_m^M = \frac{1}{2} - \frac{\theta_0 + \theta_1}{2\sigma} \upsilon_1.$$

(ii) When $\sigma < \theta_0 + \theta_1$, the political equilibrium implies a basic income scheme with a tax rate of

$$t_m^B = \frac{1 - \upsilon_1}{2}.$$

In other words, unless the stigma is "very large", a means tested system prevails. The system is more generous than a basic income scheme would have been. Indeed, for the relevant levels of σ, we have $t_m^M > t_m^B$. This does not come as a surprise. One can think of $(\theta_0 + \theta_1)/\sigma$ as the cost in terms of tax revenue of a 1 Euro or Dollar net of stigma means tested transfer. When $\sigma \geq \theta_0 + \theta_1$ this cost is lower than 1—the cost of a unitary universal transfer (again in terms of tax revenue).

[6] As a tie breaking rule we assume that when individuals are indifferent between BI and MT, they will vote for MT. This is important for the case where $\sigma = \theta_0 + \theta_1$. If indifferent individuals of type 0 and 1 were to allocate their vote randomly, we may end up with an outcome where neither system received a majority so that the *status quo* prevails, which is the worst outcome for individuals of these types.

[7] Note that the ranking of type-2 individuals is irrelevant for our purpose. For $\sigma = \theta_0 + \theta_1$, type 2 prefers BI because it implies the higher benefit.

4 Concluding comments

The main practical question is of course to know what a "large" stigma means and how empirically relevant the considered levels are. Our model is very stylized, and the results therefore have to be interpreted with care and seen as mainly illustrative. This being said, σ, in our model is not just a parameter of the utility function; it is expressed in monetary terms and thus well defined. It measures the net of stigma benefit of a unitary means tested transfer. Our condition $\sigma \geq \theta_0 + \theta_1$ says that this net benefit must be at least as large as the fraction of the population which receives the transfer. In other words, the stigma cost of the transfer must not exceed the fraction of the population which does not receive it. Intuitively, this appears to be a plausible assumption. In fact, one wouldn't expect the stigma associated with a transfer, which in equilibrium is received but a majority of the population, to be that large. But this is ultimately an empirical question. Ranney and Kushman (1987) estimate a concept which is closest to our σ appears to be who estimate the net of stigma cash equivalent of food stamps. They find an average level of 96%, which is quite in line with our intuition.

To sum up, under "plausible" levels of σ, political economy considerations do not appear to justify a universal system. To draw political support, the crowding out implied by the means testing rule is reduced to extend the benefits to the middle class. However, political support is not enhanced any further by making the benefits universal.

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