Unemployment, Basic Income and Relative Income

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Abstract

There is evidence that relative income comparison can reduce well-being and lead to overwork, though it is difficult to distinguish the latter effect from competitive effort to gain promotion and job-security. Unpaid overtime is widespread, and surveys show that many workers would prefer shorter hours even with reduced pay. In a model with a universal benefit or basic income (BI) and involuntary unemployment there is a reservation or marginal wage below which workers choose voluntary non-employment. BI reduces labour supply and could reduce involuntary unemployment, while comparison or relative income has the opposite effect. In general equilibrium when benefits are funded by taxation, stronger comparison also increases labour supply and reduces unemployment and welfare when the tax is given. However, the maxi-min optimal linear tax and resulting marginal wage do not depend on comparison.

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1. Introduction

The importance of comparison and status for happiness or life satisfaction was emphasized by Adam Smith and other classical economists, and developed by Veblen (1899). There is extensive evidence for the role of relative income in the rapidly growing empirical literature on ‘happiness economics’ (Clark et al., 2008; Goerke and Pannenberg, 2015). The plausible positive effect of comparison on labour supply to ‘keep up with the Joneses’ is more difficult to identify, since hours and working conditions are usually set by employers in the medium term, while competitive promotion also provides incentives for extra effort. Many low earners are part time and ‘underemployed’ because they would prefer full time work but are unable to find such jobs, but others choose part time work with a partner in full time employment, and/or family caring responsibilities.

Nevertheless, careful studies have provided evidence that concern for relative income can raise effective labour supply (Bracha et al., 2015; Card et al., 2012; Clark et al., 2008; Goerke and Pannenberg, 2013; Perez, 2006). Furthermore, inequality at the national level reduces well-being and encourages longer working hours (Wilkinson and Pickett, 2009; Bowles and Park, 2005). In a large international sample, the income share of the top 1% universally depresses life satisfaction even after controlling for household relative income (Burkhauser et al., 2016). While reference groups depend on context, upward comparison or local area average income predominate in micro-studies (Ferrer-i-Carbonell, 2005), consistent with Veblen’s (1899) motivation to emulate the rich and their ‘conspicuous consumption’. ¹

With growing interest in basic income (BI), and pilot studies in Finland, the Netherlands and several other countries now under way or in preparation, we show how BI interacts with

¹ In contrast to the usual negative finding, peer comparison appears to indicate future opportunities to younger workers (who are generally the lowest paid), and has a robust positive effect on their well-being (FitzRoy et al., 2014).
comparison, labour supply and unemployment, particularly for low earners, most of whom are currently part-time employees. Evidence from lottery winners and various local BI trials suggests that few people stop working altogether, and a modest reduction of hours worked is the usual reaction. Our simple general equilibrium models confirm these effects and find that stronger comparison increases labour supply and reduces voluntary non-employment with a given tax, and may also reduce involuntary unemployment. However, the optimal maxi-min tax to maximise the well-being of the poorest does not depend on comparison in our example. For given employment, the equilibrium tax needed to fund BI increases with comparison, while well-being declines.

2. Voluntary and involuntary unemployment, basic income and comparison

While surveys show happiness or life satisfaction always increases with income after controlling for many individual characteristics, a theoretical model by Ulph (2014) with only voluntary unemployment shows that low wage workers who compare with peers earning the same wage\(^2\), and choosing optimal hours close to zero in Nash equilibrium (NE), are less happy than the voluntarily unemployed, with an unconditional basic income for all. NE holds when all choose identical, positive optimal hours for any wage above the reservation wage. However, those with a wage at or below the reservation wage do not work, receive BI, but only compare themselves with their unemployed peers, and hence do not suffer from ‘relative deprivation’.

Here we assume zero labour supply from households with zero wages and a continuous distribution of wages, \( w \in [0, b] \), with \( b \leq 1 \), distribution \( F(w) \), density \( f(w) \), and \( F(1) = 1 \).

The wage is identical with productivity, and the single output or consumption good has unit price. There may be a positive mass of individuals at zero who supply no work. Individual

\(^2\) As introduced in Beath and FitzRoy (2009), in an otherwise different model.
labour supply is \( x \geq 0 \). Well-being of the employed is \( U_{em} = U(C) - D(x) \) where \( U \) is concave increasing as usual, and the disutility of work, \( D \), is convex increasing, and \( D(0) = 0 \).

\[ C = wx(1-t) + B - Y \] is effective consumption with positive labour supply plus basic income, \( B \), a linear tax \( t \), and a negative effect of some comparison income, \( Y \). We assume \( Y = Y(w) \) is a non-decreasing function of the wage. The role of comparison is likely to be influenced by media and social norms, although it is a property of the subjective well-being or utility function, and in the example in section 3 below we consider some effects of changing strength of comparison.

The additive specification of relative income greatly simplifies the analysis. Utility of the involuntarily unemployed is \( U_{un} = U(B - Y) - \sigma - s \), where the last term is the cost of search, and \( \sigma > 0 \) represents the stigma of unemployment, motivated by well-known empirical survey results that unemployment has strong negative effects on well-being, in addition to loss of income, while moving from unemployment to retirement results in an immediate and substantial rise in SWB. Voluntary non-employment with BI has utility \( U(B - Y) \), plausibly avoiding the stigma of job loss, and may be higher for lower wage workers if their comparison income, \( Y(w) \) is related to their potential wage and is strictly lower. We assume that \( B > Y \) always holds.

We assume the probability of employment, \( p \), or the proportion of the time period spent working, increases with the wage, reflecting the better employment chances of more qualified workers (ignoring macroeconomic or cyclical effects). Since the employment probability for an individual worker is likely to depend on relative search effort compared to others with the same wage, we assume there is Nash equilibrium optimal search for all \( w \)-workers that generates a utility cost, say \( s(w, B) \), which increases with wages as employment becomes more rewarding, and declines with \( B \) as the cost of unemployment declines. This is not derived formally since it is not our main concern here. Because aggregate demand for labour is unlikely to be affected by
search effort we initially assume a probability of employment depending only wages, with
\[ p = p(w) < 1, \] continuous increasing, and \( p \) tends to zero as \( w \) tends to zero. Since there is no
zero-wage labour, \( p(0) = 0 \). Expected utility of being in the labour market is thus

1. \[ W = p \{U(C) - D(x)\} + (1 - p) \{U(B - Y) - \sigma - s\} = pU_{em} + (1 - p)U_{un} \]

The first order condition for optimal labour when employed, say \( \dot{x} \), is

2. \[ w(1-t)U'(\hat{C}) = D'(\dot{x}) \]

where equilibrium effective consumption with optimal labour supply is defined as

3. \[ \hat{C} = w\dot{x}(1-t) + B - Y \]

Clearly \( \dot{x} \) is a unique function of \( w \) and other variables, decreasing in \( B \), because basic income
reduces marginal utility, or by differentiating (2), and increasing in comparison income, \( Y \)
(keeping up with the Joneses). We assume that \( \dot{x} \) increases with the wage, as follows in simple
examples, so we exclude backward-bending labour supply.

Next we define the reservation- or marginal working - wage, say \( m \), at which workers are
indifferent between remaining in the labour market with a risk of involuntary unemployment,
and choosing voluntary non-employment. This is also the lowest wage at which people supply
positive labour (and is obviously distinct from the legal minimum wage). Then we have

**Proposition 1**

The expected utility of being in the labour market with optimal labour supply, search and given
\( B \) and \( t \) always increases with the wage, including when the derivative is taken at the marginal
wage.
Proof

From (1) we get the indifference condition to define the marginal or reservation wage:

4. \[ \hat{W} \equiv p(m)\left[U(\hat{C}) - D(\hat{x})\right] + \left\{1 - p(m)\right\}\left[U(B-Y) - \sigma - s\right] = U(B-Y) \]

Rearranging gives

4.1. \[ p\hat{U}_{em} = pU(B-Y) + (1-p)(\sigma + s). \]

The reservation wage must be positive because otherwise people would be working at arbitrarily small positive wages, so labour supply would tend to zero, but then the LHS of (4) would be less than the RHS due to search and the stigma effect, so being in the labour market would not pay. Furthermore, optimal labour supply is positive at the reservation wage, since otherwise (4) could not hold.

Next we show that the expected utility of being in the labour market with optimal labour supply and search always increases with the wage (including the marginal wage). By the Envelope Theorem we have

5. \[ \frac{d\hat{W}}{dw} = p'\left\{\hat{U}_{em} - U_{em}\right\} + p'U'(\hat{C})\left\{\hat{x}(1-t) - Y_w\right\} + U'(B-Y)Y_w + s_w < 0 \]

The first term in curly brackets is positive and equals \(\sigma + s\), the difference between working and involuntary unemployment in the labour market, and the second bracket is positive because \(U'(\hat{C}) < U'(B-Y)\) due to declining marginal utility (and \(s_w\) is the partial derivative of optimal search, assumed positive). This clearly holds at the marginal wage, so work at below \(m\) is inferior to voluntary non-employment, proving the first claim in the proposition. Recall also that utility of non-employment may be higher for lower wage workers if their comparison income is lower.
In the case with no stigma or search cost, it is easy to see that there may be no positive marginal wage, and labour supply then goes to zero with the wage. Realistically a legal minimum wage will prevent this, as will a fixed cost of work, say in the form of \( D'(0) > 0 \). Then the marginal wage satisfies \( m(1-t)U'(\hat{C}) = D'(0) > 0 \), but optimal labour supply is zero. On the other hand, some work may well provide positive utility, so optimal labour will be positive and (6) – see below – remains positive.

With involuntary unemployment, and search but no stigma, (5) still holds. With no involuntary unemployment, stigma and search, then at the marginal wage, from (4.1) we have

\[
U\left(m\hat{x}(1-t) + B - Y\right) - D(\hat{x}) = U(B - Y) \quad \text{or no gain from employment, and only if optimal labour is zero at } m \text{ do we find}\]

\[
d\hat{W}/dw \bigg|_{w=m} = U'(\hat{C})\left(\hat{x}(1-t) - Y\right) = -Y, U' , \]

but this is unlikely to be observed even in an economy with BI since the assumed absence of involuntary unemployment in the model is unrealistic.\(^3\)

Next, the budget constraint to close the model where tax revenues fund \( B \) for the unit population, and \( G \) represents other government expenditure, is:

6. \[
B + G = t \int_m^b p(w)w\hat{f}(w)dw .
\]

While the previous result was a partial equilibrium result, it remains valid in the following simple general equilibrium model, where \( B \) and \( t \) are derived as functions of \( m \).

Proposition 2

\(^3\)This generalizes Ulph (2014) by using a general comparison income that is only required to increase with \( w \).
Equations (4) and (6) determine budget equilibrium tax and benefit, say \( \hat{i}(m) \) and \( \hat{B}(m) \); where the tax always increases with \( m \), and there is an optimal \( m^* \) which maximises BI such that 
\[
\hat{i}'(m) > 0, \text{ and } \hat{B}'(m) > 0 \text{ for } m \in [0, m^*].
\]

**Proof**

With 3 variables and 2 equations, we use (4) and (6) to determine \( \hat{i} \) and \( \hat{B} \) in terms of \( m \) as independent or ‘policy’ variable, best understood as the tax and benefit which satisfy the budget and the condition for \( m \) to be the marginal working wage (4), and differentiating (4) and (6) using the Envelope Theorem gives the second result. (While \( t \) is the natural policy variable, which would then determine \( m \) and \( B \) from (4) and (6), this approach is less convenient as we see below).

It follows that \( m^* \) is the **maxi-min optimal marginal wage** that maximises non-employed wellbeing, and can be funded with an optimal linear tax \( \hat{i}(m^*) \), given \( G \), and \( Y \). Workers with wages just above the maxi-min will prefer slightly lower tax and marginal wage, while high earners benefit relatively more from a lower tax and benefit, and will prefer a much lower marginal wage. Comparison income is a parameter of the model, and increasing \( Y \) would plausibly also raise \( \hat{i} \) and \( \hat{B} \), as we develop with a solvable example and specific functional forms in section 4.

3. **Aggregate demand and work-sharing: how BI could reduce involuntary unemployment**

Our starting point here is that raising \( m \) and hence also the tax and benefit will reduce aggregate output and labour supply, both by those still working due to the tax and income effects, and by increasing voluntary non-employment. In general, lower labour supply by those in the labour market is likely to reduce involuntary unemployment as an example of work sharing. For a
simple formalisation, if we assume aggregate demand, \( A \) in units of output is fixed in the short run, then we have an additional constraint, \( A = \int_{m}^{b} p w \hat{x}(w, \hat{t}, \hat{B}) f(w) dw \). Thus an increase in the probability of employment becomes plausible, to compensate for a rise in \( m \) and to reduce involuntary unemployment through a form of work sharing, so \( p \) should be an increasing function of \( m \) as well as the wage. Tax and basic income remain (different) functions of \( m \) as before when \( A \) is given. Successful work sharing as in Germany after the financial crash in 2007/8 took the form of shorter weeks for most full-time workers, so a simple model (neglecting part-time work and assuming \( p \) depends only on \( m \) and \( \bar{x} \) ) might be to impose \( \bar{x} \leq \hat{x}(w, t, B) \), as a shorter standard week for all employed, so we have

\[
A = \int_{m}^{b} p w \bar{x} f(w) dw \quad \text{and then} \quad p(m, \bar{x}) = A / \int_{m}^{b} w \bar{x} f(w) dw \quad \text{provided the employment probability satisfies} \quad p(m, w, \bar{x}) \leq 1, \quad \text{which clearly increases with} \quad m \quad \text{and decreases as standard hours rise.} \quad 4
\]

It is also interesting to note that any diversion of other government expenditure \( G \) in (6) to raise \( B \), say by replacing categorical unemployment benefits with basic income, as often discussed as a way of reducing the poverty trap (but not requiring a higher tax), would still reduce labour supply and hence could also reduce involuntary unemployment.

Alternatively, we could assume aggregate demand for each class of labour, say \( A(m, w) \) which increases with \( m \) because higher earners will have to substitute for lower earners who stop working when \( m \) increases. Then we can specify reduced hours for each wage class to ensure full employment, say with \( \bar{x}(w, t, B) f(w) = p(w) \hat{x}(w, t, B) f(w) = A(m, w) \).

\quad 4 \text{Shorter work weeks averted any increase in unemployment after 2008/9 in Germany, despite a 6\% decline in GDP, in striking contrast to US experience (Arico and Stein, 2012).}
4. A solvable GE example with specific functional forms

The empirical evidence shows that individual life satisfaction actually always increases with earnings, holding other factors constant. However, people are less satisfied and work longer hours in a more unequal economy with higher average earnings relative to the lowest (Goerke and Pannenberg, 2015; Bowles and Park, 2005), consistent with egalitarian Nordic countries having higher life satisfaction and shorter working time than highly unequal US and UK.

To obtain more insight with a ‘solvable’ model we drop the stigma effect and search costs, and choose a simple functional form. Empirical evidence suggests that a variety of comparisons may be relevant, dependent on context, and here we consider comparison with (endogenous) average (arithmetic mean) income in the economy, which increases relative to the median with growing income inequality in the distribution, and clarifies the effects of varying strength of comparison. Then with a basic income and zero labour supply at the reservation wage, we obtain explicit GE solutions for tax, labour supply and well-being.

We assume utility is quasi-linear in leisure, and comparison is with average income. Since this is empirically higher than median income, it implies upward comparison for most. The type of growth which benefits mainly those on top incomes, as in recent decades in the UK and US, also increases average income, so this comparison could be relevant for international comparison. Labour supply increases with concern for comparison in partial equilibrium; the unemployed suffer from relative deprivation; most people’s happiness declines with inequality of the wage distribution; and happiness is a concave increasing function of income. We show that labour supply and unemployment in GE depends crucially on the interaction between employment, tax and comparison. Utility for the employed and unemployed is respectively:
7. \[ U_{em}(w) = \frac{\gamma}{\gamma-1} \left( wx(1-t) + B - \beta y \right)^{\frac{1}{\gamma}} - x \quad U_{un} = \frac{\gamma}{\gamma-1} \left( B - \beta y \right)^{\frac{1}{\gamma}} \]

Here, \( \gamma > 1 \), (and \( \gamma - 1 \) is the elasticity of labour supply in the standard case, when \( B = \beta = 0 \)), \( t \) is the tax rate on earnings, \( wx \) is output with linear technology, equal to earnings, \( wx(1-t) + B \) is total net income of the employed, which is consumed, and \( y \) is the comparison income, which will be defined in equilibrium as total output or output per capita with our unit population, in (10) below. Expected utility with employment probability \( p \) as in the previous section is now \( W = pU_{em} + (1-p)U_{un} \). For simplicity we have a unit marginal cost of separable labour supply.

The FOC for (7) now gives labour supply according to

8. \[ w^\gamma (1-t)^{\gamma} = w\hat{x}(1-t) + B - \beta y \]

However, differing from the previous model, we have \( pU_{em} + (1-p)U_{un} = U_{un} = U(B - Y) \) so \( U_{em} = U_{un} \) at the marginal wage, and employed utility is equal to unemployed utility (7) at \( m \). Thus labour supply from (8) must be zero at \( m \) because otherwise at a slightly lower wage, labour supply would still be positive, contradicting the definition of marginal wage. Note that, with other variables constant in partial equilibrium, a stronger comparison effect increases labour supply (in order) to keep up with the ‘average Joneses’, but this will change in GE. The marginal wage \( m \) from (8) with \( \hat{x} = 0 \) is given by

9. \[ m^\gamma (1-t)^{\gamma} = B - \beta y \]
The number (or share) of voluntarily non-employed in the unit population is thus $F(m)$. Then from (8) and (9) we have wage earnings and labour supply for worker $w>m$ in terms of $m$ and the tax rate:

10. $$w\hat{x} = (w^r - m^r)(1-t)^{y-1}$$

The utility of the employed follows easily as:

11. $$U_{en} = (w^{\gamma-1} + \frac{m^\gamma}{w}) \frac{(1-t)^{y-1}}{\gamma-1}$$

The derivative is

12. $$\frac{\partial U_{en}}{\partial w} = \left(\frac{w^{\gamma-2} - \frac{m^\gamma}{w^2}}{w^{\gamma-1}}\right)(1-t)^{y-1}$$

which is zero for $w=m$ and positive for larger $w$. Thus, employed well-being increases with the wage as expected.

Next we introduce the government budget to complete the GE model. All tax revenue is spent on basic income for the unit population (though we could include a fixed share of revenue for other public expenditure), and our main result is

**Proposition 3**

For given $m$ defined by (9), the GE tax needed to fund $B$ consistent with (9) is an increasing function of $m$ and the importance of comparison.

**Proof**

The government budget is $ty = B$ and from (9) we have
13. \((t - \beta)y = m^\gamma (1-t)^\gamma\)

From (10) we find the value of total output, say \(y^o\), with optimal labour supply as

\[
y^o = \int_m^b p(w)w^d dF = \int_m^b p(w)(w^\gamma - m^\gamma)(1-t)^{-1}\ dF
\]

\[= (1-t)^{-1}\{G(m) - m^\gamma H(m)\}\]

with \(G = \int_m^b p(w)w f(w) dw\) and \(H = \int_m^b p(w) f(w) dw\). Using (13) then gives the

‘equilibrium’ or budget balancing tax which is consistent with marginal wage \(m\) as

\[t = \frac{m^\gamma + \beta(G - m^\gamma H)}{m^\gamma + G - m^\gamma H}, \text{ and } 1-t = (1-\beta) \frac{G - m^\gamma H}{m^\gamma + G - m^\gamma H}\]

So \(t\) increases with the marginal wage (and unemployment), by straightforward
differentiation, and also with the importance of comparison, \(\beta\), as claimed, and tends to 1 as
\(m\) approaches the maximum wage, \(b\). Substituting (15) into (14) gives equilibrium total
output, say \(\hat{y}\) as a function of \(\beta\) and \(m\). Substituting the equilibrium tax term \(1-t\) from (15)
into (11) shows that equilibrium employed utility becomes a function of \(m\) and \(w\) multiplied
by \((1-\beta)\). So as the wage increases, the optimal marginal wage for worker with wage \(w\), say
\(\bar{m}(w)\) will not depend on comparison, and \(\bar{m}(w)\), and the corresponding tax, will decline,
since for high earners a lower tax is relatively more important than the reduced basic income
\(\hat{B} = \hat{t}\hat{y}\).

The increase of the equilibrium tax with \(\beta\) when \(m\) is given, partially offsets the negative
externality imposed by comparison. Since \(t\) is usually considered to be the actual policy
variable we can invert (15) to give the equilibrium reservation wage, and hence the marginal
wage, say \( \hat{m} = m(t, \beta) \), which is generated by \( t \) and increases with \( t \), and declines as \( \beta \) rises. Interestingly, as unemployment and \( m \) tend to zero, the tax tends to \( \beta \). However, it is convenient to use the specification (15) in most the following.

Utility of the unemployed in GE easily follows from (7), (13) and (14) and is zero when \( t \) equals \( \beta \) or 1 (and \( m \) ranges from zero to its maximum, \( b \)):

\[
\hat{U}_{un} = \frac{\gamma}{\gamma - 1} \left( (\hat{i} - \beta) \hat{y} \right)^{\gamma - 1} = \frac{\gamma}{\gamma - 1} m^{\gamma - 1} (1 - \hat{i})^{\gamma - 1}
\]

Next we summarise effects of comparison:

**Proposition 3 – Keeping up with the Joneses.**

With any fixed tax \( t \), the equilibrium marginal wage \( \hat{m} \) decreases when \( \beta \) rises, and individual labour supply at all wages \( w \geq \hat{m} \) increases, so aggregate labour supply (or ‘overwork’) increases with comparison. Furthermore the utility of both employed and unemployed individuals declines as \( \beta \) rises and \( \hat{m} \) falls, again as expected since comparison is essentially an externality.

**Proof**

The first claim follows directly from (10) and (15), while the second follows from (11) and (16).

Next we obtain an interesting contrast by starting again with the marginal wage as independent variable and considering changes in comparison:

**Proposition 4 –** With a given marginal wage, \( m \), stronger comparison reverses ‘keeping up with the Joneses’ by generating a higher equilibrium tax and lower labour supply by all of the
employed. Again, utility of both the employed and the unemployed declines with stronger comparison.

Proof
In contrast to the previous results, we now take the (perhaps less intuitive) approach of starting from a given marginal wage \( m \) and substituting the corresponding equilibrium tax \( \hat{t} \) from (15) into (10). Then individual (and hence aggregate) labour supply declines with stronger comparison, since \( \hat{t} \) increases with \( \beta \), so the ‘Joneses effect’ on labour supply is reversed by fixing the marginal wage and allowing the equilibrium tax to accommodate stronger comparison, while utility obviously declines again for all.

An interesting special case is the relationship between comparison and maximising unemployed utility with a maxi-min optimal tax or marginal wage.

Proposition 5
The maxi-min optimal marginal wage does not depend on comparison; however, the resulting equilibrium tax rises with strength of comparison, so individual and aggregate labour supply declines, as does the utility of both employed and unemployed.

Proof
We can write unemployed utility (16) in terms of \( m \) and \( \beta \) as depending on:

\[
17. \quad m \left( 1 - \hat{t}(\beta, m) \right) = (1 - \beta) m \left\{ \frac{G - m'H}{m' + G - m'H} \right\}
\]

which is an inverse U-shaped function of \( m \), and if \( m^* \) is the optimal marginal wage which maximises (17) and (16), it does not depend on comparison, \( \beta \), which is purely multiplicative in (17). If \( \bar{t}_{uu} = \hat{t}(\beta, m^*) \) is the resulting equilibrium tax from (15), it rises with \( \beta \). Thus
starting with the maxi-min optimal marginal wage, it follows again that stronger comparison raises the required equilibrium tax and hence lowers individual labour supply, as well as utility of employed (11) and unemployed (16).

5. Majority choice and Basic Income
A common critique of BI is that the required tax (rise) would penalise a majority by costing them more than they gain. To investigate, we write the equilibrium basic income as
\[ \hat{B} = \hat{B}(\beta, m) = \hat{i}(\beta, m) \hat{y}(\beta, m), \]
which equals total tax revenue in our unit population, and neglecting other government expenditure. With equilibrium tax in labour supply (10), equilibrium labour supply for worker \( w \) is \( \hat{x}(\hat{i}, \hat{w}_w) \). Then the equilibrium average-wage, say \( \hat{w}_a(\beta, m) \) in the unit population is defined in the obvious way by \( \hat{w}_a \hat{x}(\hat{i}, \hat{w}_a) = \hat{y}(\beta, m) \)
since total output is also average output per capita, and it follows that
\[ \hat{i}(\beta, m) \hat{w}_a \hat{x}(\hat{i}, \hat{w}_a) = \hat{i}(\beta, m) \hat{y}(\beta, m) = \hat{B}(\beta, m) \]
Thus at the average wage, tax paid on earnings equals \( \hat{B} \), so lower wage workers enjoy a net benefit from this tax and basic income, and higher earners lose out. Since the median wage is less than the average with realistically unequal distributions, it follows that the poorest majority benefits from a basic income. Notice that this result follows with our flat tax, less favourable for redistribution, while a progressive tax could obviously benefit a majority.
Furthermore, it does not depend on our specific function for utility, but holds quite generally.

One would expect the average wage to depend on comparison, but we actually find another independence result.
**Proposition 6**

With a given marginal wage, $m$, the equilibrium average wage increases with $m$ but does not depend on comparison, according to:

19.  
$$\hat{w}_a = G(m) + m \left(1 - H(m)\right).$$

**Proof**

By substituting from (10), (13) and (15) into (18); and of course, higher $\beta$ does imply a larger equilibrium tax for given $m$. As long as $m$ is less than the maxi-min optimum from Proposition 5, then higher $m$, and hence greater non-employment imply higher average wages and earnings for those in work, and greater well-being for the unemployed. Again, if we start with a fixed tax, $t$, since the equilibrium marginal wage $\hat{m}(t, \beta)$ decreases when $\beta$ rises, then so will the average wage, and non-employed utility.

The contrast between majority gains from a universal benefit and the opposite case for categorical benefits is obvious but worth emphasising. As long as the unemployed, or recipients of any categorical benefit, are in a minority, then a majority will bear the cost of the required tax, with only immaterial or empathetic gains in compensation. This is consistent with low public support for redistribution to the poor, though the decline in such support has probably been driven by demonization of welfare recipients and widespread misperceptions of the problems under neoliberal policies in many countries.

6. **Conclusions**

In our simple GE example we showed that stronger comparison increases aggregate labour supply with a given tax. However at a given level of voluntary non-employment, we find comparison raises the equilibrium tax and reduces labour supply, thus reversing the ‘Joneses’
effect. Surprisingly, we find that optimal employment to maximise unemployed well-being does not depend on comparison. Our finding that stronger comparison could reduce involuntary unemployment by a form of work sharing does not seem to have been discussed previously.

Apart from this last, all our results of course depend on optimal choice of hours worked, and there is much evidence of disequilibrium in labour markets, including widespread underemployment and unpaid overtime. The often cited benefit of basic income that low earners would have much greater bargaining power and freedom to search for better jobs could also help to align actual and desired hours with major welfare gains. Thus the reservation wage would probably be lower than standard minimum wages with a modest BI, and avoid the distortions imposed by employers trying to compensate by increasing intensity of work or unpaid overtime.

References


