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Working Paper

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CESifo Working Paper, No. 1234

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Suggested Citation: van der Ploeg, Frederick (2004) : The welfare state redistribution and the economy : reciprocal altruism, consumer rivalry and second best, CESifo Working Paper, No. 1234, Center for Economic Studies and ifo Institute (CESifo), Munich

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THE WELFARE STATE REDISTRIBUTION AND THE ECONOMY: RECIPROCAL ALTRUISM, CONSUMER RIVALRY AN SECOND BEST

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CESIFO WORKING PAPER NO. 1234

CATEGORY 1: PUBLIC FINANCE

JULY 2004

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THE WELFARE STATE, REDISTRIBUTION AND THE ECONOMY: RECIPROCAL ALTRUISM, CONSUMER RIVALRY AND SECOND BEST

Abstract

Democratic countries with substantial inequality and where people believe that success depends on connections and luck induce political support for high tax rates and generous welfare states. Traditional wisdom is that such policies harm the economy, but there is not much evidence that countries with a large welfare state and substantial redistribution have worse economic performance and welfare. One important reason is that governments have been careful to invoke the principles of reciprocity and mutual obligations in the design of the welfare state. Unemployment benefits conditioned on work experience, no misconduct and search effort harm the economy less. Indeed, conditional benefits may even boost employment in an economy with efficiency wages. A second reason is that people care about relative incomes and become unhappy if others earn and consume much more than they do. This explains why people do not seem to get happier, even though societies grow richer and richer. With such consumer rivalry the government wishes to correct for the rat race, even if there is no need for redistribution, by taxing labour. A third reason is that in modern economies many distortions are present and removing one at a time may worsen economic performance. Conversely, increasing tax progression in economies with non-competitive labour markets induces wage moderation and boosts employment. A final reason is that countries with large welfare states typically introduce various progrowth policies as well.

Keywords: mutual obligations, altruism, relative incomes, happiness, redistributive taxation, demand management, second best, design of welfare state.

JEL Code: H2, H53, J5, J6.

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Based on my CRISS lecture at the Sienna Summer School, XVIth Workshop on 'Inequality and Economic Integration', 2-6 July 2003, and the First Annual Young Economists' Workshop, University of Rome 'La Sapienza', 31 May 2004. I thank Samuel Bowles for helpful discussions.

1. Introduction

The modern welfare state has taken centuries to develop. In early days the priest has played a crucial role to convince people to give to the poor. He had to overcome free-rider problems, since nobody likes looting and begging by the poor while each citizen would prefer others to take care of the poor (de Swaan, 1989). It is relatively easy to break down the welfare state and destroy the solidarity that may have taken centuries to build, but much harder to build up a welfare state. People are altruistic, particularly to next of kin and others closely related to them. The principle of mutual obligations underlying reciprocal altruism is important, even though people also display non-reciprocal altruism. People are more willing to help the poor if they make an effort and take risks to educate themselves and make a living. Happiness of people depends on material living standards, but also on what other people in their reference group earn and consume. This may induce a rat race in which people try to keep up with the Jones's and thus work excessively hard in order to keep up with consumption of their peers. What do these insights in and determinants of reciprocal altruism, willingness to co-operate and happiness imply for the support for redistributive taxation and the size and design of the welfare state? Are progressive taxes still a public bad? Are unemployment benefits necessarily harmful for economic activity? We attempt to investigate what these more sociological and psychological insights imply for the tax system and the welfare state and their consequences for economic performance. In particular, we are interested to examine in full political-economic equilibrium what this implies for unemployment and the purchasing power of people. We also investigate why the welfare state in Europe has evolved in a very different way from the welfare state in the US. The 'Washington consensus' maintains that liberalising markets and trimming down government is best for economic performance. We argue that this is may not be the case in societies with reciprocal altruism and rat races or when markets do not clear and unemployment is caused by trade unions, efficiency wage and/or search frictions. In that case, progressive taxes and conditional unemployment benefits may boost economic performance.

Section 2 discusses some empirical cross-country evidence that suggests that large welfare states do not necessarily imply worse economic performance. Section 3 reviews the empirical and experimental literature on altruism, reciprocity and mutual obligations and its relevance for the welfare state. Section 4 applies these ideas within the context of efficiency wages to explain why higher conditional unemployment benefits may boost employment. This example illustrates the importance of mutual obligations in the design of an efficient welfare state. Section 5 discusses the determinants of happiness and stresses the importance of relative income positions. The resulting rat races result from consumer rivalry. Section 6 extends the familiar model of redistributive taxation developed by Romer (1975) and Meltzer and Richard (1981) to allow for consumer rivalry. The main insight is that, if people care

about their relative income and consumption positions, taxation of labour is warranted even if there is no inequity. Since people are competing and thus working too hard in order to keep up with others, work adversely affects welfare of the others. The government corrects for this distortion by taxing labour (or subsidising labour). If there is inequality among talents and incomes, there is an additional motive for taxation. If the median voter is relatively untalented and poor, he has a selfish motive to vote for a common subsidy for all financed by a linear tax on labour. Hence, there is a Pigouvian as well as a redistributive motive for taxing labour. Section 7 discusses the consequences of consumer rivalry for intertemporal macroeconomics and how it might help to explain the need for counter-cyclical demand policies. Section 8 uses the theory of second best to give efficiency arguments for progressive taxation. It shows that with unemployment caused by trade unions, efficiency wages and/or search frictions progressive taxation induces wage moderation and can improve economic performance. Section 9 concludes with a summary and suggestions for further research.

2. International evidence on the welfare state

Taking an international perspective, Rodrik (1997) argues that markets and the state are complementary. He questions the supremacy of the idea that social policies are bad for the economy (the 'Washington consensus'). Both governments and markets have their failures but they must interact to grapple with the problems of conflicting information and offer the right incentives as first-best outcomes in the real world rarely occur. However, Dixit (1996) does not see this as proof of the inefficiency of government. Indeed, weak incentives and the various second-best constraints and prohibitions may even occur in a game equilibrium outcome. Rodrik (1997) thus stresses that the maintenance of social safety nets is not a luxury but an essential ingredient of a market economy. The welfare state has the benefit that it helps households to insure against uninsurable risks when markets fail due to moral hazard and/or moral hazard (e.g., Sinn, 1995; Boadway et al., 2004; Blanchard and Tirole, 2004). Markets produce many benefits, but they also make life riskier and more insecure for many people. A reliable welfare state thus contributes to a proper functioning of the market economy. Rodrik (1998) shows that countries that are more exposed to the risks of international trade have bigger governments, possibly because governments offer social insurance to cushion the effects of exposure to external risk. De Grauwe and Polan (2002) show that countries that spend most on social security rank highest, on average, in the competitiveness leagues of Lausanne's IMD or of the World Economic Forum. They argue that causation is very unlikely to run the other way round, so that the reverse link going from strong competitiveness to a stronger economy and more funds for the welfare state is weak.

In his path-breaking historical cross-country study Lindert (2004) points out that the growth in social spending started in the late nineteenth century after the right to vote was

extended to poorer men and women as well. This is in line with the median voter model discussed in section 6.1. It set the stage for Lloyd George's assault on Britain's rich just before World War I. Extending political voice led in addition to population aging and income growth to the emergence of comprehensive nation-wide social insurance programmes and more spending on public education. The growth in the post-war welfare states was particularly big in countries where the middle and bottom ranks changed places and where ethnically homogenous. Lindert also argues that there is almost no evidence of a negative effect of a substantial welfare state on gross domestic product. The net national costs of social transfers, and the taxes that finance them, are essentially zero. An important reason is that governments become more efficient as distortions of higher tax rates are proportionally much higher than lower rates. For example, countries with large welfare states tend to have a more pro-growth and regressive mix of taxes (think of high taxes on vices and low taxes on capital income). Another reason is that the unemployed caused by generous welfare states are, typically, less productive and thus the harm to national income is limited. A more fundamental reason is that in advanced market economies with developed welfare states the economics of second best apply. As we have seen in sections 4 and 8, the various distortions of the welfare state tend to wipe each other out so that the burden of the welfare state is much less than simply adding all the distortions one at a time.

The general picture that emerges from cross-country evidence is that 'laissez faire' advocates have something to explain, since neither theory nor empirical evidence suggests that social policies necessarily harm the economy. This seems particularly the case if the general public does not see redistribution as unfair. The World Values Survey suggests that people's attitudes to the rewards from effort and taking risks are quite different in the US than in Europe. Around 30 percent of Americans believe that the poor are trapped in poverty and cannot do anything to get out of their miserable situation. Also, 30 percent of Americans believe that luck, rather than effort or education, determines income. In contrast, these percentages are almost double in Europe. Americans are much more likely to think that the poor are lazy and that the rich have become so by hard work and effort. Europeans are much more likely to think that luck, family ties and other connections matter. Alesina and Angeletos (2003) and Bénabou and Tirole (2002) show, using different arguments, that two self-fulfilling equilibrium outcomes are possible. There is one equilibrium outcome in which there is a lot of redistribution and where people believe that people have become poor or rich by bad or good luck (Europe). There is another equilibrium in which there is little redistribution but where people firmly believe that effort, education, hard work and taking risks pay off (the US). This explains why government spending in the US is much lower (30 per cent of GDP) than in Europe (45 per cent). This difference is remarkable, because pre-tax

inequality is much higher in the US than in Europe, income mobility in the US is not much higher than in Europe and tax systems do not seem more efficient in Europe than in the US.

Alesina and Glaeser (2004) and Alesina, Glaeser and Sacerdote (2002) argue that the older welfare institutions of the US are more conservative and hostile to the welfare state whereas the proportional representation in much of Europe has led to an upsurge of communist and socialist parties. European countries are typically smaller and thus trade unions are more likely to establish powerful positions. They also argue that the US has much more racial diversity than Europe and many of the poor in the US are concentrated among non-whites. States or countries with racial diversity tend to have low government spending on poverty relief, even after correcting for differences in income per head. People are more willing to help next to kin and others that are close to them. The growing inflow of migrants in Europe will put pressure on the welfare state.

People are more prepared to sacrifice income by paying higher taxes if the proceeds go to people who are laid off, sick or disabled with no fault of their own rather than to people who are lazy or have cheated the system. Obviously, this is in line with the arguments in favour of high conditional benefits developed in section 4. To put it another way, it is much easier to build up support for a generous welfare state if the principle of reciprocity is respected, e.g., Fong, Bowles and Gintis (2003). Conversely, people do not mind taxing rich people as long as they got rich by luck or connections rather than by hard work.

It is important to investigate whether any of these propositions hold up empirically. Scandinavian and Dutch experience suggests it is possible to have a low unemployment rate and a generous welfare state, but this is not true for all countries. In empirical work it is worthwhile to contrast Anglo-Saxon Europe characterised by its emphasis on Beveridge social assistance of last resort for people of working age, weak unions and lots of wage dispersion with continental Europe. Continental Europe is characterised by its emphasis on extending the coverage of trade unions and the Bismarckian tradition of insurance-based non-employment benefits such as disability and old-age pensions. It may also be worthwhile to distinguish Nordic Europe with the highest levels of social protection, universal welfare provision, high tax wedges and active labour market policy with Mediterranean Europe. Mediterranean Europe has, in contrast, strong wage compression, strong unions supported by extended coverage, employment protection and early retirement provisions (Bertola and Boeri, 2001). It is no good to look for cross-country correlations between spending on social policies and unemployment rates, but one should see whether there exist correlations between the generosity of various welfare state provisions with wages and unemployment rates. To investigate this for the OECD countries is a future challenge.

3. Altruism, reciprocity and mutual obligations

The welfare state in many countries transfers large amounts of resources from the better off to the poorer members of society. Remarkable is that politicians have been able to do that with the support of even the better off. The theories in favour of redistributive taxation developed by economists (e.g., Romer, 1975; Meltzer and Richard, 1981) are, however, based on selfish arguments. If there is income inequality, the median voter is likely to be relatively poor and vote for populist policies of taxing the rich and subsidising the poor. However, the median voter is not necessarily selfish and many societies favour more altruistic forms of redistribution. Indeed, many of the rich support income redistribution in favour of the poor whereas a substantial number of poor people oppose redistribution. In fact, people are less willing to support the poor if they perceive that the poor are lazy and cheat the system or do not try hard enough to generate income for themselves. Conversely, people are more willing to help the poor if they have been unlucky (cf., Piketty, 1995; Fong, Bowles and Gintis, 2003; Bénabou and Tirole, 2002; Alesina and Angeletos, 2003). This is related to the idea of procedural fairness and that not only *what*, but also *how* matters for utility and fairness (e.g., Lind and Tyler, 1988; Frey, Benz and Stutzer, 2003). Non-instrumental determinants of utility and a sense of self are thus relevant for making welfare judgements. It is thus relevant how people perceive themselves as human beings and how others perceive them.

If people are poor due to bad luck rather than being lazy, society is more likely to support government redistribution. If people believe, as they do in the US, that willingness to take risks and work hard are important for improving one's economic conditions, electoral support for government redistribution is much less. If people believe that one's economic success is caused by inheritances, corruption, luck and (family) connections, as people do in Europe, support for the welfare state is much larger. As mentioned in section 2, there will be two equilibrium outcomes: one where people believe that effort pays off and redistribution is rather less (the US) and another one where people believe that success depends on luck and redistribution is more substantial (Europe). Which equilibrium one ends up, depends on history. The fact that the US was built by immigrants, who sacrificed a lot and took great risks to build up a new life, may explain why people in the US believe that taking risks and hard work does and should pay off. To move from the inferior high-redistribution equilibrium is not easy and requires large changes in both beliefs and the welfare state. The point is that reciprocity matters in the sense that charity depends on the recipient trying to get out of welfare by searching hard, retraining if necessary, and taking risks.

The literature on giving and charity has stressed (impure) altruism or 'warm glow', i.e., the internal satisfaction that arises from helping other people (e.g., Andreoni, 1989). However, the donors are also motivated by gift exchange considerations. Indeed, List and Lucking-Reiley (2001) illustrated that increasing seed money or introducing a refund policy

led to a corresponding increase in donations to a university. Falk (2004) finds that, when a charity accompanies a request for a donation with a gift (postcards drawn by children), donations increase significantly. Numerous experiments demonstrate the importance of gift exchange and mutual obligations. Fehr and Falk (1999), Gächter and Falk (2002) and Bewley (2004) use experimental evidence to suggest the relevance of reciprocity for the labour market. This principle has important implications for the design of the welfare state as well.

If the welfare state is based on mutual obligations and the principle of reciprocal altruism, there may be more support for a generous, yet tough welfare state (e.g., Atkinson, 1996, 2002; van der Ploeg, 2003). If welfare benefits are temporary and conditional on searching hard enough for a job, not rejecting job offers, and not having been fired for misconduct, the adverse unemployment consequences may be much less – see section 4. Hence, testing welfare benefits and other forms of mutual obligations reduce the dead-weight burden of the welfare state. It is tough to be kind, but also kind to be tough. Welfare state institutions that support and strengthen reciprocal altruism go a lot further than kin altruism. Europe has tried to build up a welfare state based on reciprocal altruism, whereas in the US kin altruism and help from the family has traditionally been more important. It is important to realise, however, that the human race has a millennium old tradition of sharing food among non-kin. Indeed, people have always held deeply held norms of reciprocity and mutual obligations to each other. In fact, strong reciprocity may hold which means an urge to co-operate and share with others even at cost to one self.

Experimental evidence based on, for example, dictator games and survey evidence suggests that many strangers willingly give to strangers, reward good deeds, and punish violations of fairness norms by others even in anonymous one-shot encounters at significant cost to themselves (e.g., Ridley, 1997; Fong, Bowles and Gintis, 2003; Layard, 2003). This form of ‘true’ altruism with neither present nor future economic rewards for the reciprocator is called strong reciprocity and has strong implications for the way modern societies function (Fehr and Gächter, 2000; Fehr, Fishbacher and Gächter, 2002). Strong reciprocity cannot be explained from an evolutionary perspective by kin selection, reciprocal altruism, costly signalling or indirect reciprocity. These arguments can only explain strong reciprocity by maladaptive behaviour. In modern anonymous societies strong reciprocity does not make sense, but in small societies with repeated interactions it did. People make ‘mistakes’ in modern times, since they are still genetically geared up to the gathering societies of old time. However, Fehr and Henrich (2003) provide a host of anthropological, biological and experimental evidence that counters the maladaptive view of strong reciprocity.

People display true altruism and/or strong reciprocity, but also favour members of the own group over others. People are thus altruistic even to members that are not part of their own group at great cost to them selves. This is much stronger than reciprocal altruism. People

are also parochial in the sense that they behave more favourably to those people closer to them than to strangers. Although altruism and parochialism each on their own do not seem to make sense from an evolutionary perspective, altruism and parochialism or alternatively love for members of the own group and hostility to outsiders may have co-evolved. This symbiotic evolution of love and hate has been demonstrated with extensive simulations (Bowles, Choi and Hopfensitz, 2003; Bowles and Choi, 2003). Hence, smaller group sizes, strong institutions for a group and high frequencies of conflict between groups make it more likely that altruistic modes of behaviour within the own group survive. These insights have profound consequences for the welfare state. It suggests that fighting foreign enemies and curtailing immigration of foreigners go hand in hand with altruistic behaviour to unrelated members of one's own people and institutions such as 'food sharing' and the welfare state. This view on co-evolution of love and hate seems an essentially human phenomenon. Cognition, language and other capacities play an essential role in explaining the distinctive levels of co-operation among non-kin practised by humans, but one should realise that ants also display within-group co-operation at the same time as brood raiding and hostility towards neighbouring colonies (e.g., Ridley, 1997, Chapter 9).

4. Conditional unemployment benefits may boost employment

To illustrate the point that mutual obligations matter, we demonstrate within the context of a labour market with efficiency wages that conditional unemployment benefits induce wage moderation and boost employment. In contrast, unconditional benefits always harm employment. Atkinson (2002) stresses the importance of dealing properly with the institutional details of the welfare state. It is not realistic to model unemployment benefits merely as 'leisure pay'. Benefits are neither indefinite nor unconditional 'income during unemployment'. Most countries require workers to have worked a certain period in order to qualify for benefit and do not offer benefits to people who have become unemployed after voluntary quits or misconduct. Furthermore, a claimant is only eligible for unemployment benefit if he makes a serious effort to search. Typically, one can reject job offers a number of times but eventually one must accept a job offer. The duration of unemployment benefits is often limited to a number of years. Afterwards, unemployed people may get welfare assistance, which is unrelated to the wage one once earned as an employee. In practice, most low-skilled workers benefit from welfare more or less indefinitely as eligibility conditions are seldom policed. This is especially the case in deep recessions when the chance of finding a job is very low. If eligibility conditions can be policed, conditional benefits and active labour market policies imply substantial administrative costs.

If one treats benefits as indefinite and unconditional income during unemployment, one is likely to over-estimate the adverse effects of benefits on unemployment. To understand

why *conditional* rather than *unconditional* unemployment benefits may boost employment; we modify the no-shirking theory of unemployment and moral hazard developed by Shapiro and Stiglitz (1984). Workers who have been fired for misconduct (shirking) are not entitled to an unemployment benefit, but people who get laid off without fault of their own do qualify. We ignore taxes, since our focus is on demonstrating the importance of conditional unemployment benefits and the no-shirking model is ill suited for addressing the effects of changes in the marginal tax rate. Unemployment arises, because the imprecise monitoring implies workers have a potential incentive to shirk (moral hazard). Firms avoid shirking by paying more than the market-clearing wage. Let s be the exogenous probability of a worker leaving job without fault of its own and h the endogenous probability of an unemployed person finding a job. Let q be the additional probability of a worker being fired if caught shirking. We focus on steady state, so ignore dynamics of unemployment and capital gains in the value of non-shirking and shirking workers. Inflow into the pool of unemployed thus equals outflow, so that $s(1-U)=hU$ where U is the unemployment rate. The unemployment rate $U=s/(s+h)$ increases in the separation rate s and decreases with the probability of finding a job h . The (expected) value of a worker who does not shirk is given by:

$$V_W = [W - d + (1-s) V_W + s V_B]/(1+R) = (W - d + s V_B)/(R+s)$$

where R is the interest (discount) rate and V_B is the value of an unemployed person who is entitled to a conditional benefit. The value of a worker equals the present value of his earnings W *minus* the disutility of work d *plus* his expected value next period. Next period he is employed with probability $1-s$ and value V_W and unemployed with probability s and value V_B . On the one hand, the value of a shirker V_S is higher than that of a non-shirker because he does not suffer the disutility of work. On the other hand, the value of a shirker is lower as he has an additional probability q of being caught and dismissed and is then not entitled to the conditional unemployment benefit. The value of a shirker can thus be written as:

$$V_S = [W + (1-s-q) V_S + s V_B + q V_U]/(1+R) = (W + s V_B + q V_U)/(R+s+q)$$

where V_U denotes the value of an unemployed person who has been dismissed for misconduct and is not entitled to a conditional benefit. To make sure that employees have on average no incentive to shirk, $V_W \geq V_S$, firms pay workers just enough to prevent them from shirking:

$$W \geq R V_U + (R+s+q) d/q - s (V_B - V_U).$$

The last term on the right-hand side does not appear in Shapiro and Stiglitz (1984). It shows that firms need to pay workers less to prevent them from shirking. Effectively, denying dismissed shirkers a conditional unemployment benefit raises the penalty of misconduct. The value of somebody sacked through no fault of his own is:

$$V_B = [B + v + h V_W + (1-h) V_B]/(1+R) = (B + v + h V_W)/(R+h),$$

where v is utility of leisure and B the conditional unemployment benefit. This equals the present value of utility of leisure plus the benefit plus with probability h the value when he finds a job and with probability $1-h$ the value when he remains unemployed next period. The value of a dismissed shirker V_U is lower than the value of other unemployed, since he is not entitled to an unemployment benefit:

$$V_U = [v + A + h V_W + (1-h) V_U]/(1+R) = (v + A + h V_W)/(R+h) < V_B < V_S \leq V_W.$$

where A is the level of unconditional welfare assistance. We use the expressions for V_W , V_B and V_U and substitute them into the wage condition. If we also substitute $h=s(1-U)/U$ from the labour-market equilibrium condition, we finally obtain the no-shirking condition:

$$W \geq v + A + d + (R + s/U) d/q - s (B-A)/[R + s (1-U)/U].$$

The first three terms on the right-hand side show that the wage a firm needs to pay to prevent its workers shirking is higher if utility of leisure v , welfare assistance A and disutility of work d are high. The fourth term shows that the firm has to pay workers more to prevent them from shirking if the job destruction rate is high, the unemployment rate is low, and the additional probability of being detected and dismissed q is small. Hence, if the chance of being caught shirking is small or the probability of finding another job is large, the firm has to pay more in order to discipline workers. The fourth term explains why the no-shirking condition (NSC) in Figure 1 slopes down. Effectively, a lower wage needs to be paid if unemployment is high. The final term on the right-hand side is not in Shapiro and Stiglitz (1984). It shows that a firm pays less to prevent its employees from shirking if the conditional unemployment benefit B is high relative to the unconditional welfare payment A . The unemployment benefit is granted only if the worker has lost his job without fault of his own. A higher sanction for misconduct, i.e., a bigger gap between the conditional and the unconditional benefit $B-A$, raises the effective penalty of shirking, so firms can afford to pay workers less. Hence, a higher level of the conditional unemployment benefit B boosts employment and output. Figure 1 shows that

a higher conditional benefit B shifts the no-shirking condition (NSC) down and thus reduces the wage, boosts employment and lowers unemployment (move from E to E'). In contrast, a higher unconditional welfare payment A shifts up the no-shirking condition and depresses employment. Equilibrium wages are higher than in the competitive outcome C , where wages are driven down to the unconditional welfare payment plus utility of leisure plus disutility of work. Equilibrium unemployment is thus higher than in the competitive outcome. Unemployment here is akin to the Marxist idea of the need to have a reserve army of unemployed in order to discipline workers.

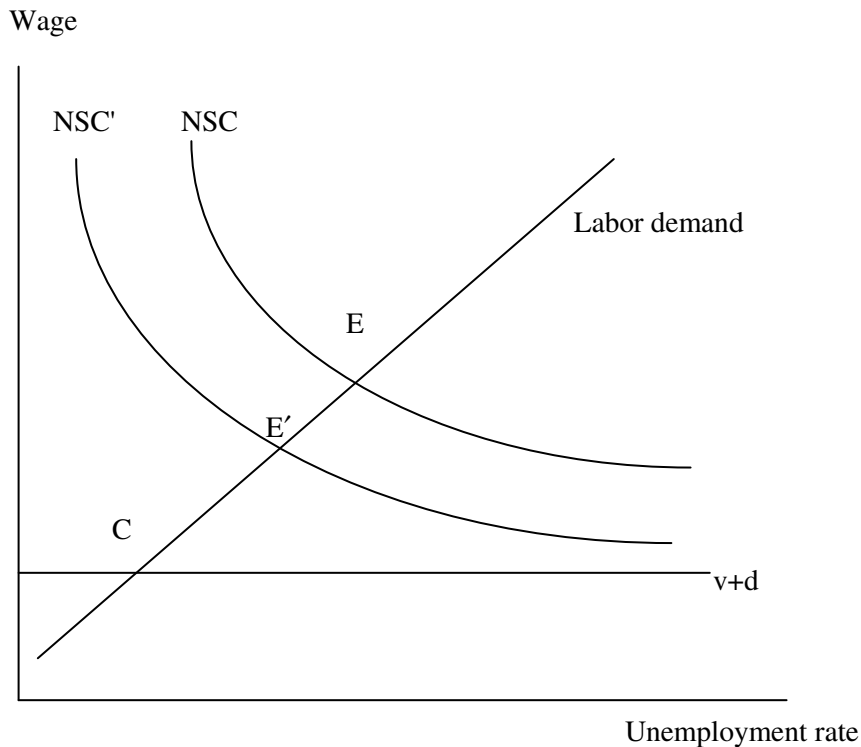


Figure 1: Higher conditional benefits B reduce shirking and boost employment

A shift from conditional earnings-related benefit to unconditional flat-sum welfare assistance ($dB = -dA > 0$) leads to an even bigger drop in the unemployment rate. The penalty for shirking increases for two reasons now. First, dismissed shirkers do not get the conditional benefit. Second, the unconditional welfare assistance falls and thus stimulates the incentive to work. This last incentive to work also increases for people who are unemployed without fault of their own. These extra two effects make that the fall in wages and unemployment is much greater than with a straight increase in unemployment benefit. If the benefit is financed by distortionary taxes there will be offsetting adverse effects on employment and output.

Unemployment benefits are conditional in other ways as well. They typically last for a limited period and unemployed are only eligible if available for work and actively seeking a

job. A 'rough-and-ready' way to capture this is to terminate with probability $p > 0$ unemployment benefits. If there is no sanction for misconduct, the benefit is the same benefit irrespective of whether people have been fired for industrial misconduct or not, $B=A$. The no-shirking condition becomes:

$$W \geq [(R+h)/(R+h+p)] B + d + v + (R + s/U) d/q.$$

Since the unemployment benefit no longer lasts forever, the penalty for shirking and misconduct is *increased* and thus firms have to *pay less* to prevent workers shirking. Consequently, employment is higher and the unemployment rate lower. Alternatively, if there is a sanction and with probability $p > 0$ the conditional benefit B is terminated and replaced by the ever lasting, lump-sum welfare assistance A , the no-shirking condition becomes:

$$W \geq v + d + A + (R + s/U) d/q - s (B-A)/[R + p + s (1-U)/U].$$

Limiting the duration of a conditional benefit *reduces* the penalty for shirking and misconduct and firms must *pay more* to ensure workers' discipline, hence the unemployment rate rises. Another modification is that dismissed workers have a smaller probability of finding a job than other unemployed. Since this raises the shirking penalty, firms pay less to prevent shirking and equilibrium unemployment is lower.

In equilibrium nobody shirks, so all unemployed receive *conditional* unemployment benefits. However, with a continuum of heterogeneous workers $i \in [0,1]$ that differ in their disutility of work d_i , firms set a wage high enough to attract the least 'lazy' workers and more 'lazy' workers do not work:

$$d_i \leq \{W-A-v+s(B-A)/[R+s(1-U)/U]\}/[1+(R+s/U)/q] \equiv d^*(W,v,A,B,U;Rq,s).$$

Firms set the wage to discipline just enough workers, so that $1-U=F[d^*(W,v,A,B,U;Rq,s)]$ where $F[.]$ is the cumulative probability density function of d_i . This yields a similar (NSC)-schedule as in Figure 1, so the comparative statics are qualitatively the same. However, if workers (who are not caught shirking) enjoy protection against firing, a negative shock to labour demand after hiring has taken place induces workers with the highest disutility of work to stay on the job and shirk rather than quit. Some of them may be caught and end up on welfare rather than benefit, so the unemployment pool consists of dismissed shirkers and other unemployed who are entitled to a high benefit. A higher conditional benefit or replacement rate still reduces unemployment.

One critique of this result is that the government is unable to monitor perfectly whether the employee has been fired for misconduct or the employer and employee are using it as an attractive way to stop their relationship. If the government runs the unemployment insurance scheme, there are additional problems of moral hazard and incentives to abuse the social insurance scheme. If the firm runs the unemployment insurance scheme itself, these problems would not arise.

The result that higher conditional benefits boost employment may carry over to other settings of non-competitive labour markets (Atkinson, 2002, Chapter 4). Also, redundancy payments in a dynamic no-shirking model induce firms to fire less. This internalises the externality arising from foregone rents imposed by firms on fired workers (Fella, 2000). More generally, conditional benefits hurt employment less than unconditional benefits. With search frictions a higher benefit harms employment, since those who search for a job are less likely to accept lower-wage jobs. In dividing up the surplus of a job match a bigger part of it goes to the worker, so wages are higher and employment lower. However, if unemployment benefits are of limited duration, unemployed are more likely to accept a job for fear of not finding a job and having to fall back on the lower welfare payment. Similarly, the harmful effects on employment are attenuated in a search context if the unemployed who want to be eligible for a conditional benefit face a work test and can only reject a job offer a maximum of, say, two or three times. In fact, with search in both labour and product markets, a higher unemployment benefit induces firms to offer more high-wage jobs and may lower unemployment even if the benefit is unconditional in general equilibrium (Axell and Lang, 1990).

5. Rivalry and happiness: abundance and discontent

Most of neoclassical economics assumes that people are selfish and only care about income and consumption in absolute terms. Increasingly, economists have come to realise that people's happiness does not depend on money and absolute levels of consumption alone (e.g., van de Stadt, Kapteyn and van de Geer, 1985; van Praag, 1993; Oswald, 1983, 1997; Frey and Stutzer, 2002). For example, job satisfaction of a sample of 5,000 British workers is only weakly correlated with absolute income, but decreases if reference wages of other comparable workers increase (e.g., Clark and Oswald, 1996). People care about fairness and the degree of relative deprivation. Also, a higher level of education requires a higher income to maintain the same level of job satisfaction. People feel better if they do better than their peers. For example, Oscar winners live four years longer than other nominees who did not win the Oscar. Conversely, people that do not score well, feel less happy. This may argue against publishing league tables or individual results of school people and students, despite the gains from competition that may result from them. There is also evidence to suggest that external

rewards destroy intrinsic interest of workers so that they work less when pay stops (e.g., Frey and Oberholzer-Gee, 1997). Putting a money value to everything may diminish intrinsic motivation to do well and to help others or make sacrifices for the community.

Recently, trends in and causes of happiness in the US and Britain have been studied (Blanchflower and Oswald, 2003). Money buys happiness, but well being of people depends on relative income as well and is badly affected by unemployment and divorce. For example, a lasting marriage rather than widowhood is estimated to be worth \$100,000 a year. Well being declines up to the age of forty and then rises again. Happiness also depends on how friends, partners and family members assess one's well-being and biological factors such as responses to stress, headaches, digestive disorders, duration of Duchenne smiles, etc. Although happiness in Britain has been relatively stable, empirical work shows that during the last quarter century some people in the US, especially white women, have become unhappier and others, American men and blacks, have become happier. Abundance resulting from economic growth evidently makes some people unhappier and others more content. For neoclassical economics with its emphasis on selfishness it is a puzzle why abundance breeds discontent (also see Lane, 2000).

Understanding this puzzle requires one to consider habituation and the importance of relative positions for happiness (Layard, 2003). Habituation implies that people quickly adjust to higher living standards and find it difficult to adjust downwards. Hence, improvements in material living standards make people happy for a while but the effect quickly fades off. Extra money does not necessarily make people better off either, because people tend to compare their lot with others. For example, Harvard students would rather have \$50,000 a year when others get half than \$100,000 a year when others get double. People do not seem to mind having less, as long as others do not do better than themselves. If everybody works hard to get more income and spend more, they do not necessarily become happier. The extra income one earns makes other people unhappy, so this adverse externality should be corrected for by a tax on labour income. Perhaps, the more so as the same Harvard students do not display leisure rivalry. Developed societies thus have a tendency to work too hard, consume too much and enjoy too little leisure. Chasing material comforts thus does not necessarily lead to happiness (cf., Scitovsky, 1976). Humans are social creatures and are happy if relationships with their nearest and dearest are good, they live in secure communities that value trust, and they are valued by the rest of society (Putnam, 2000). Moving too much in search of a (better) job may make people unhappier, since they lose a sense of belonging. A too strong emphasis on individualism and material comforts in a society with a lot of uncertainty, geographical mobility and little job security (the 'hedonistic treadmill') destroys happiness.

The last fifty years or so much of the developing world has seen a decline in the belief in God and in religion. The associated moral code from the bible or whatever seems to

have been replaced by promoting unfettered individualism and selfishness. This together with invisible hand type of arguments that self-interest is good for society has destroyed the trust and more generally the fabric of society and has led to more anxiety among ordinary people. In fact, telling people that they should behave in their self-interest seems to destroy their willingness to co-operate (Layard, 2003).

6. Consumer rivalry, taxation and selfish redistribution

6.1. Constant marginal utility of income: Labour is a public bad

We first assume constant marginal utility of income and abstract from income effects in labour supply. Utility of individual i is thus linear in consumption. Since people care about their consumption relative to others, utility of individual i is given by:

$$U_i \equiv C_i - \lambda C + u(V_i), \quad 0 < \lambda < 1, \quad u' > 0 \quad \text{and} \quad u'' < 0,$$

where C_i , C and V_i denote consumption of individual i , average consumption across the population and leisure of individual i , respectively. Layard (2003) suggests that λ is about 0.3, so that people feel worse off if others are able to consume more. People differ. Some are quicker at finishing a job and enjoying leisure than others. Total time available to individuals, $1 + \theta_i$, varies across the population and can be used for leisure or labour L_i . The parameter θ_i stands for innate talent of individual i . We normalise by setting mean time available to 1. Time available to the median voter equals $1 + \theta_M$, so that $\theta_M > 0$ measures inequality in talents of different people. The government uses a linear income tax schedule to redistribute income from rich to poor individuals. The proportional tax rate is t and the uniform tax credit is denoted by A . Individual i thus chooses consumption, leisure and labour supply L_i to maximise U_i subject to its budget constraint, $C_i = (1-t) W L_i + A$, and time constraint, $L_i + V_i = 1 + \theta_i$. The marginal rate of substitution between leisure and consumption must equal the after-tax wage, $u'(V_i) = (1-t)W$. Leisure thus falls and labour supply increases if the after-tax wage goes up: $V_i = v((1-t)W)$ and $L_i = 1 + \theta_i - v((1-t)W)$ with $v' = 1/u'' < 0$. More talented people work more hours, earn more and consume more, but they enjoy the same amount of leisure as less talented people. This follows from $L_i = L + \theta_i$, $V_i = V$ and $C_i = C + (1-t)W\theta_i$, where L , V and C denote mean labour supply, mean leisure and mean consumption.

The government balances its books, so the tax rate must be high enough to cover tax credits and government spending G . Since $t WL = A + G$, mean consumption can be written as $C = WL - G = W [1 - v((1-t)W)] - G$ and the utility of individual i as:

$$U_i = (1-t) W \theta_i + (1-\lambda) \{ W [1 - v((1-t)W)] - G \} + u(v(1-t)W).$$

The median voter maximises utility by setting the tax rate equal to:

$$t = (\theta_M/v'W) + \lambda.$$

The level of tax credits follows residually from the government budget constraint. Any increase in government spending is fully offset by the decrease in tax credits. With constant marginal utility of money income, public goods and tax credits are thus perfect substitutes. If the distribution of talents is unequal, i.e., $\theta_M > \theta = 0$, the median voter is less talented than the voter with average ability. It is thus in the interest of the median voter to redistribute income from more talented, richer people to less talented, poorer people. The median voter engages in selfish redistribution and votes for a tax schedule with a positive tax credit for all financed by a simple proportional tax on wage income. If labour supply is very inelastic, v' is small and the tax rate is high. This is the Ramsey motive and captured by the first term in the above expression for the tax rate (cf.. Romer, 1975; Meltzer and Richard, 1981).

The second term in the expression for the tax rate desired by the majority of the electorate says that, if people care about their relative consumption position, taxation of labour is a good thing even if talents are equally distributed, that is if $\theta_M = 0$ (cf. Layard, 2003). Since people compete with each other to consume more than their neighbours do ('keeping up with the Jones's'), they work too hard from a social perspective. It thus makes sense to correct for this externality and to tax labour to make room for a happier society with more leisure and less consumption. This suggests that the tax rate is at least 30 per cent and even higher if the median voter is relatively less well off and cares about selfish redistribution. The tax rate is thus the sum of a Pigouvian term to correct for the consumption race and a redistributive term to correct for talent and income inequality.

6.2. Non-constant marginal utility of income: the Veblen-effect

Many people seek status by trying to distinguish themselves from others and aspiring to consume as much as the rich (Veblen, 1899/1934; Bourdieu, 1979). The consumption of the rich thus affects marginal utility of consumption of the less well off (e.g., Bagwell and Bernheim, 1996; Corneo and Olivier, 1997). To allow non-constant marginal utility of income, we assume $U_i = U(C_i - \lambda C, V_i)$. Higher consumption by others in society reduces utility and increases the marginal utility of consumption. We assume homothetic preferences, so that leisure and consumption are complements ($U_{CV} > 0$). Since the marginal rate of substitution between relative consumption and leisure must equal the after-tax wage, we have $V_i = v((1-t)W) (C_i - \lambda C)$ where $v' = U_C/[U_{VV} - (1-t)WU_{CV}] < 0$. Together with the time constraint

and the household budget constraint, we obtain labour supply, leisure and consumption of individual i and mean labour supply L :

$$L_i = L + \omega((1-t)W) \theta_i, \quad V_i = 1 - L + [1 - \omega((1-t)W)] \theta_i$$

$$C_i = \omega((1-t)W) \{ (1-t)W [1 + \theta_i + \lambda v((1-t)W) C] + A \}$$

$$L = \omega((1-t)W) [1 + v((1-t)W) (\lambda C - A)]$$

where $0 < \omega((1-t)W) \equiv 1/[1 + (1-t)Wv((1-t)W)] < 1$ with $\omega' = (\sigma - 1)\omega^2$ and the elasticity of substitution between leisure and consumption is defined as $\sigma \equiv -(1-t)Wv'/v > 0$. More talented individuals work more hours, earn more and consume more than the average individual. They also have more leisure, so they work harder and have more fun. If average consumption rises, each individual wants to keep up and consumes more as well. A higher tax credit raises income, so induces more leisure, lower labour supply and higher consumption. A higher tax rate (or lower after-tax wage) has two effects: it reduces income and induces people to work harder and it makes leisure cheaper relative to goods consumption and thus lowers labour supply. If the second effect dominates the first effect, the substitution effect is more important than the income effect and conventional labour supply slopes upward ($\sigma > 1$ and $\omega' > 0$).

The government budget constraint, $tWL = G + A$, gives the reduced-form expressions for average consumption and average labour supply:

$$C = WL - G = (W - G)/[1 + (1-\lambda)Wv((1-t)W)]$$

$$L = [1 + (1-\lambda)v((1-t)W)G]/[1 + (1-\lambda)Wv((1-t)W)].$$

Higher public spending crowds out private consumption and induces people to take more leisure and work harder on average. Utility of the median voter is given by:

$$U_M = U[(1-\lambda)C + (1-t)W\omega((1-t)W)\theta_M, 1 - L + \{1 - \omega((1-t)W)\}\theta_M].$$

Society chooses the tax rate that maximises utility of the median voter.

The effect of aggregate consumption on hours worked is positive. People work harder in order to try to emulate the consumption standards of the rich. Hence, in a world of conspicuous consumption working hours are higher if the degree of income inequality is higher. This seems to be reflected in the data as hours worked have fallen steadily in Europe while consumption inequality has diminished (Bowles and Park, 2002). To reach a

social welfare optimum with such forms of consumer rivalry may require progressive consumption taxes or subsidising the leisure of the rich. One may wonder why people try to emulate the consumption standards of the better off rather than emulate the standards of people with more leisure. Veblen suggested that the cash one needs to buy consumption is a more visible display of distinction than enjoying more leisure than others do.

6.3. Sociological and economic views on redistribution

Another utility specification $U_i = s u(C_i - \lambda C) + (1-s) U(C_i) + v(V_i)$, with $u', v', U' > 0$ and $u'', U'' \leq 0$, nests the 'economic' model with $s=0$ and the 'sociological' model with $s=1$ as special cases (Clark and Oswald, 1998). Large values of s capture the idea that human beings have a deep wish to conform to others in their consumption patterns, but do not wish to emulate the leisure afforded by others. This sociological element suggests that humans constantly compare themselves to others and feel good when they out-perform their peers. With small values of s preferences are private and selfish and people do not look that much over their shoulders to see what others are up to. It can be shown that consumption of any individual goes up after a rise in the consumption of others if $v'' < 0$, that is if the utility function of relative consumption is concave. Hence, comparison-concave utility is required for people to mimic other people's consumption patterns. Conversely, if $v'' > 0$, consumption declines if consumption of others goes up. This obviously leads to deviant behaviour. If $v(\cdot)$ is linear, people's consumption patterns are independent of those of others. If utility is linear in own consumption, i.e., $U''=0$, consumption of any individual follows consumption of any other individual one for one.

7. Consumer rivalry in intertemporal macroeconomics

In dynamic economies it is important to be precise about the nature of consumer externalities. Typically, utility of any individual depends positively on its own consumption but also on some reference or aspiration level of consumption. This reference or aspiration level of consumption may simply be average consumption in the population (or consumption of 'other people') or, alternatively, may be a geometric average of past levels of average consumption. Dupor and Liu (2003) define two basis types of consumption externalities. The first one is based on jealousy effects, which requires that the utility of an individual drops if other people consume more. The second relates to keeping up or catching up with the Jones's and requires that the marginal utility of consumption of an individual increases if other people consume more. The latter is particularly important for asset price consideration and in theories of economic growth, while jealousy effects are crucial for consumption allocations. Many studies use utility functions that display both envy and keeping up with the Jones's. Most of

these studies show that such consumption externalities require the government to step in with the use of distortionary taxes in order to reach the first-best optimum (e.g., Boskin and Sheshinski, 1978; de la Croix and Michel, 1999; Ljungqvist and Uhlig, 2000; Abel, 2003).

7.1. Keynesian demand management and catching up with the Jones's

Consumer externalities are prevalent in the real world and have drastic implications for intertemporal macroeconomics. Since households fail to internalise the adverse effects of consuming more themselves on other households who have to engage in a rat race to keep up consumption, competitive markets fail to yield the first-best outcome and there is a need for government intervention. Consider an intertemporal macroeconomic model with consumption externalities and driven by technology shocks, but without capital accumulation. Ljungqvist and Uhlig (2000) show that, if consumer externalities take the form of catching up with the Jones's, counter-cyclical demand management is needed to restore the first-best outcome in competitive equilibrium. The instrument to correct for the consumer externality is a pro-cyclical tax on labour. The labour tax rate is increased to cool down an over-heated economy caused by a positive productivity shock. In a boom households chase each other into a rat race where they work and consume too much, so the government must step in to end this rat race. In contrast, in a depression the tax rate on labour should be cut in order to bolster consumption when households are caught together in a negative spiral. Despite a purely competitive, market-clearing general equilibrium framework, there is nevertheless a role for counter-cyclical Keynesian demand management to correct for the external effects caused by catching up with the Jones's. All households are assumed to be the same, so there is no need to consider redistributive taxation. Let expected utility of household i be given by

$$E_0 \sum_{t=0}^{\infty} \beta^t \{ [C_{it} - X_t]^{1-\gamma} - 1 \} / (1-\gamma) - \nu L_{it} \}$$

where $0 < \beta < 1$ is the discount factor and $\nu > 0$ stands for the disutility of work. The aspiration level of consumption X is a geometric average of past average consumption levels:

$$X_t = \lambda(1-\phi)C_{t-1} + \phi X_{t-1}$$

where $0 \leq \lambda < 1$ and $0 \leq \phi < 1$. Each household faces a tax rate on labour income of t and receives a lump-sum transfer A of the government. The government budget is balanced each period. In symmetric equilibrium $C_{it} = C_t$ and $L_{it} = L_t$. Output is proportional to average labour input, that is $Y_t = \theta_t L_t$, and productivity θ_t follows the stochastic process:

$$1/\theta_t = [(1-\psi)/\bar{\theta} + \psi/\theta_{t-1}] (1+\varepsilon_t)$$

where $0 \leq \psi < 1$ and ε_t is i.i.d. with zero mean and bounded below by $\varepsilon_t > -1$. The stochastic process is approximately the same as an AR(1) process for $\log(\theta_t)$. Households consume a lot if the aspiration level of consumption in society is high, the tax rate is low, productivity is high and their dislike of work is low:

$$C_t = X_t + [(1-\tau_t)\theta_t/\nu]^{1/\gamma}.$$

Ljungqvist and Uhlig (2000) show that the first-best allocation and consumption level

$$C_t^* = X_t + [\nu(1-\beta\phi)/\bar{\theta}(1-\delta) + \nu(\theta_t^{-1} - \bar{\theta}^{-1})(1-\beta\phi\psi)/(1-\delta\psi)]^{-1/\gamma}$$

can be achieved by the following tax rate:

$$\tau_t/(1-\tau_t) = [\beta\lambda(1-\phi)/(1-\delta\psi)] [\psi + (1-\psi)\theta_t/(1-\delta)\bar{\theta}], \quad \delta \equiv \beta[\phi + \lambda(1-\phi)] < 1$$

The steady-state tax rate is given by $\tau_\infty = \lambda\beta(1-\phi)/(1-\beta\phi)$. It follows that the optimal tax policy impacts the economy counter-cyclically via pro-cyclical taxes. The tax rate varies positively with productivity. This counter-cyclical form of Keynesian demand management corrects for the externalities induced by catching up with the Jones's.

Ljungqvist and Uhlig (2000) also study consequences of nonlinear forms of catching-up-with-the-Jones's effects as used by Campbell and Cochrane (1999). Since the surplus consumption ratio exhibits increasing returns to scale, the social planner can increase the well being of individuals by generating welfare-enhancing consumption cycles in otherwise stationary environments. They find that the parameter values of Campbell and Cochrane (1999) suggest very high tax rates on labour. Lettau and Uhlig (1995) show that introducing catching-up-with-the-Jones's in economies with capital accumulation has the implication that consumption is excessively smooth in competitive equilibrium.

7.2. PAYG and capital income taxes in OLG economies with consumer rivalry

Liu and Turnovsky (2002) show in a framework of neoclassical growth with infinitely-lived households and inelastic labour supply that the steady-state return on capital is unaffected by

consumption externalities. This result is not robust and does not hold in economies with overlapping generations and finitely-lived households. Abel (2003) therefore analyses a dynamic competitive economy with overlapping generations and capital formation and also introduces a benchmark level of consumption into the utility function of individuals. The socially optimal balanced growth path is characterised by the same modified golden rule as in standard neoclassical growth models. However, the concern for consumption relative to the benchmark or aspiration level of consumption imposes an optimality condition on the allocation of consumption across generations that are simultaneously alive. Without consumption externalities the first-best optimum in the standard neoclassical economies with overlapping generations can be obtained with a balanced-budget lump-sum intergenerational transfer scheme. A pay-as-you-go form of social security can thus be used to achieve the appropriate level of saving and the modified golden rule. If consumers also care about a benchmark level of consumption, the government needs an additional tool to achieve the first-best optimum. This requires a distortionary tax on capital income. When the social planner is more patient than individual households, the transfer scheme typically transfers from the current young to the current old (Abel, 2003). In that case, the optimal rate on capital income must be positive. This is surprising, since one would expect a more patient social planner to subsidise capital in order to raise the capital-labour ratio. However, a more patient social planner also favours later, i.e., younger, generations and can do this by taxing capital income at a positive rate.

7.3. Equity premium riddles explained by consumer rivalry

Catching up with the Jones's and various forms of consumer rivalry have been the focus of considerable attention in the asset pricing literature (e.g., Abel, 1990). Such envy effects may explain the equity premium puzzle of Mehra and Prescott (1985). The idea is to allow one's own marginal utility from an additional unit of consumption to be higher if one observes that other people consume more. This can happen immediately, i.e., keeping up with the Jones's (e.g., Gáli, 1994), after a lag, i.e., catching up with the Jones's (cf., Campbell and Cochrane, 1999), or using a variant based on habit formation (e.g., Constantinides, 1990). All variants rely on the by now familiar consumption externality, so that households do not take account of the unhappiness they cause to others if they themselves consume more. Through this route one can shed new light on the puzzle that equity seems to consistently demand a much higher rate of return than bonds than would be warranted by any reasonable degree of risk aversion.

8. Merits and costs of progressive taxation

Increasingly, economists have come to realise that people's happiness does not depend on money and absolute levels of consumption alone – see section 5. If everybody works hard to

get more income and spend more, they do not necessarily become happier. The extra income one earns makes other people unhappy, so this adverse externality should be corrected for by a progressive tax on labour income. People engage in wasteful rat races which leave less room for leisure and provide additional grounds for progressive taxes (Akerlof, 1976). Developed societies have a tendency to work too hard, display rat races, consume too much and enjoy too little leisure. Efficiency can be improved with a progressive tax system in second-best economies. This is interesting, because the neo-liberal agenda (the 'Washington Consensus') stresses the harmful effects of progressive taxes on incentives and economic activity.

8.1. Unemployment and progressive taxation

Economies experience 'real' unemployment, not leisure or holidays disguised as unemployment. Involuntary unemployment is prevalent in capitalist societies. Markets fail or disappear if there are legal restrictions, institutional rigidities, high transaction costs, external effects, adverse selection and moral hazard problems arising from asymmetric information, and/or imperfect competition. In the real world prices do not equal marginal costs and labour is paid more than its marginal product. Rents are shared between employers and employees. Wages are typically set by trade unions, by firms or in negotiations between workers and firms rather than as the outcome of clearing labour markets. In such a second-best world reducing one distortion does not necessarily improve welfare. The distortion arising from a more progressive tax system may offset the distortions from imperfect labour markets.

Substantial parts of the labour force are unionised. In some countries trade union agreements are legally extended to all workers, thus making the power of trade unions even stronger. Monopoly trade unions have sufficient monopoly power to set wages for its members given knowledge of the labour demand curve. Firms subsequently take the wage set by the monopoly union as given when maximising profits. With right to manage, unions bargain with firms over the wage, but not the employment level. This does not change results very much, because the outcome is still on the labour demand curve. We assume middle-sized trade unions, big enough to set wages but too small to internalise adverse effects of higher wages on prices and purchasing power of members. The unions are also too small to bargain with the government over taxation, benefits, childcare, pensions, training and other matters that may concern employees. Unions thus do not internalise the government budget constraint. Their welfare is captured by a utilitarian welfare function.

Firms face a concave production function $Y=F(L)$, where Y denotes output and L employment. Profit maximisation implies firms set marginal productivity of labour to the real producer wage, $F'(L)=(1+T_L)W$ where T_L is the employers' tax rate. Demand for labour decreases with the producer wage. The union operates under a Rawlsian 'veil of ignorance'

and maximises $L v(W_A) + (N-L) v(B)$, subject to the labour demand curve, where $v' > 0$, $v'' < 0$, B is the unemployment benefit, $N-L$ the number of unemployed and W_A the after-tax wage. This yields the union wage mark-up:

$$[v(W_A) - v(B)]/[W_A v'(W_A)] = S/\epsilon_D$$

where $S \equiv (1-T_M)/(1-T_A)$ is the measure of residual income progression, T_A the average income tax rate, T_M the marginal income tax rate and ϵ_D the wage elasticity of labour demand. The left-hand side gives the difference in utility of an employed and an unemployed union member, converted from utility into production units, and expressed as fraction of the after-tax wage. The right-hand side indicates that, given the unemployment benefit, the mark-up is particularly large and unemployment high if the wage elasticity of labour demand ϵ_D is low. Also, given the unemployment benefit, the mark-up falls and employment rises if the tax system becomes more progressive (lower S). With a unit coefficient of relative aversion the union mark-up is $W_A = \exp(S/\epsilon_D) B$. The unemployment benefit sets a 'floor' in the after-tax wage, so higher benefit immediately translates into a higher wage and lower employment. For a given degree of tax progression, a higher average income tax rate T_A leaves the after-tax wage unaffected and thus the pre-tax wage rises. The after-tax wage displays real wage rigidity, hence the full burden of the labour income tax is borne by firms. A higher payroll tax also leaves the after-tax wage unaffected, so labour costs rise and employment falls.

If unemployed union members do not rely on unemployment benefit, but have probability $1-U$ of finding a job and probability U of being on the dole with U the unemployment rate, then expected outside income, $W_O = (1-U)W_A + U(B+I)$, is the relevant alternative income and not the benefit B . Here I stands for (utility of leisure or) untaxed informal income. Since $W_A - W_O = U(W_A - B - I)$, the income differential of a union job increases if the differential between the after-tax wage and the benefit plus informal income is high and if the chance of falling back on the dole is high (i.e., if unemployment is high). With risk-neutral preferences we obtain the equilibrium unemployment rate:

$$U = (S/\epsilon_D) / [1 - (B/W_A) - (I/W_A)].$$

Equilibrium unemployment is high if replacement ratios for benefits $\rho \equiv B/W_A$ and informal incomes are high, the tax system is not so progressive and labour demand is fairly inelastic. If benefits are indexed to after-tax wages and informal incomes are indexed to before-tax wages, $\rho_I \equiv I/W$, the equilibrium unemployment rate $U = (S/\epsilon_D) / [1 - \rho - (\rho_I/(1-T_A))]$ rises if the replacement rates for benefits and informal incomes rise and the average tax rate rises. If

benefits or informal incomes are not indexed to after-tax wages, the above gives a wage setting equation in which the wage rises with both the level of employment and the benefit. Together with the labour demand curve, one can solve simultaneously for employment and the wage. Although cuts in payroll taxes do not affect the unemployment rate if benefits are indexed to after-tax wages and informal incomes are absent, they raise the wage, boost employment and reduce the unemployment rate if benefits are not indexed (cf. Bovenberg and van der Ploeg, 1994; Pissarides, 1998). Hence, if benefits are not indexed to after-tax wages or the unemployed enjoy untaxed, informal income, the wage setting equation is flatter and payroll taxes boost employment by cutting the replacement rate and increasing the incentive to work - see Figure 2. Another way of putting it is that the effects of a higher average labour tax depend on whether the unemployed escape the burden of taxation. There is no increase in unemployment if the unemployed share fully in the higher tax burden, i.e., if the outside option is fully taxed and the net replacement rate is not increased. Of course, it is then debatable whether this is a very social policy. In practice, it is unlikely that the unemployed share fully in the tax burden. Unemployed people enjoy untaxed leisure and income in the informal economy, so that a higher average tax rate on labour destroys jobs.

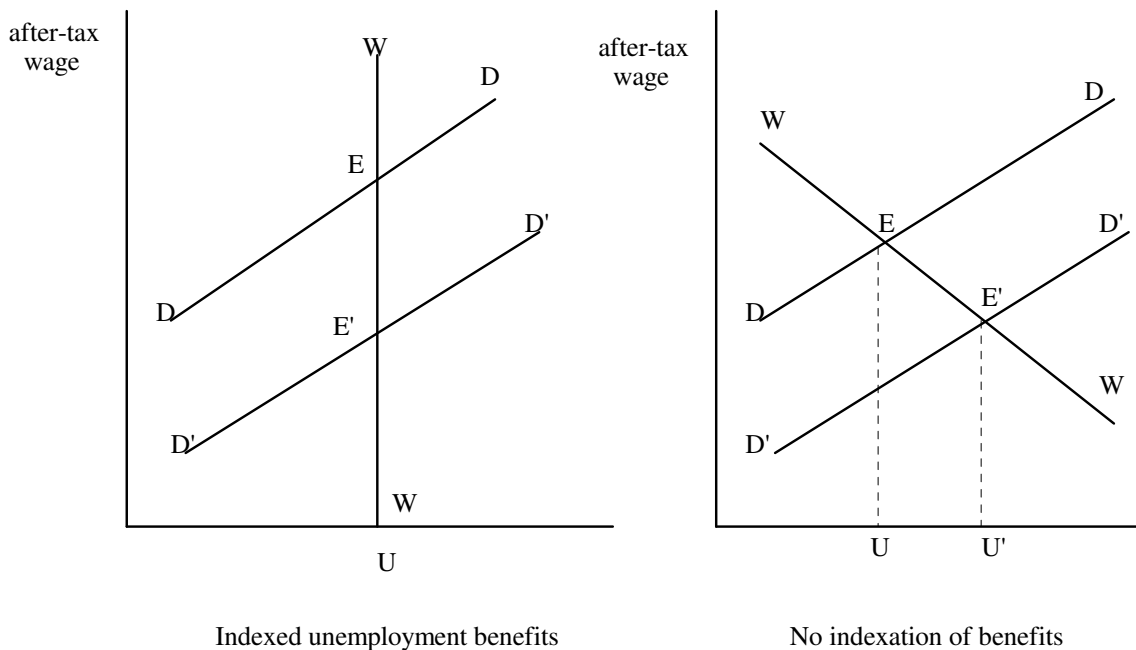


Figure 2: Indexation of benefits and incidence of taxes in non-competitive labor markets

The result that with a fixed after-tax replacement rate a more progressive tax system moderates wages and boosts employment and output also holds with 'right to manage' where the wage follows from a Nash bargain between unions and firms and employment is subsequently set by firms. The ratio of the wage bargaining outcome to outside income is

again high if labour demand is fairly inelastic and the degree of tax progression is small. In addition, the wage is high if the 'ability to pay' (as measured by the share of profits relative to that of wages) is high and the bargaining power of firms relative to that of unions is relatively weak. Also, imperfect competition in product markets lowers the wage elasticity of labour demand and bolsters the power of trade unions. Koskela and Vilmunen (2002) extend the results to efficient Nash bargaining between firms and unions.

If unemployment benefits are indexed to after-tax wages and unemployed people share fully in the tax burden, changes in labour taxes do not affect unemployment and are fully borne by workers. However, Graafland and Huizinga (1999) give evidence for the Netherlands that the tax rate adversely affects unemployment even after correcting for the effects of changes in the net replacement rate. Also, Daveri and Tabellini (2000) provide empirical evidence that changes in labour taxes are strongly correlated with changes in unemployment rates, particularly for European countries with substantial unionisation and less so for the Nordic European countries with centralised trade unions. One reason is that unemployed people also enjoy untaxed, informal incomes and enjoy utility of untaxed leisure. In that case, the *true* replacement rate is not constant and a higher tax wedge boosts unemployment even if productivity growth must be consistent with stationary unemployment (Bovenberg and van der Ploeg, 1994, 1998; Sørensen, 1997; Bovenberg, 2003). These insights also hold for an open economy with international capital mobility and constant returns to scale in production. With interest rates set on world markets the producer wage is pinned down by the factor price frontier. A higher replacement rate or less progressive tax system then reduces the demand for capital from abroad and the demand for labour but leaves the producer wage unaffected. The end result is the same: more unemployment.

With efficiency wages firms pay relatively high wages to recruit, retain and motivate workers. Abilities and effort of workers are hard to monitor for a firm. However, by paying a bit more than elsewhere, firms counteract adverse selection by improving the average quality of the workforce. Paying a 'fair' wage also reduces work disruption and raises morale and work effort. When effort by workers in firm i depends on differences in indirect utility in work and out of work,

$$E_i = [v(W_{Ai}) - v(W_O)]^\epsilon \quad \text{with} \quad W_O \equiv U(B+I) + (1-U) W_A = \{1 - [1-(B+I)/W_A] U\} W_A$$

where $\epsilon > 0$, W_{Ai} is the after-tax wage of a worker in firm i , relative wages matter. Effort increases if the chance of unemployment and a large drop in income is high, that is if the unemployment rate U is high and replacement rate low. Output of firm i , $Y_i = E_i L_i$, rises with

efficiency and volume of labour. Firm i sets its wage to maximise profits, $[E_i - (1+T_L) W_i] L_i$. This yields:

$$[v(W_{Ai}) - v(W_0)]/[W_{Ai} v'(W_{Ai})] = \varepsilon S.$$

Firm i sets relatively high wages if the efficiency wage or leapfrogging effect ε is strong and the tax system is not very progressive. Less risk-averse workers require firms to pay more to recruit, retain and motivate workers. Again, more tax progression reduces the wage mark-up. Firms have in the margin less incentive to offer higher wages if the government grabs a bigger slice of the wage rise. With risk-neutral preferences we obtain in symmetric equilibrium:

$$U = \varepsilon S/[1 - \rho - \rho_I/(1-T_A)].$$

$\rho \equiv B/W_A$ and $\rho_I \equiv I/W$. More leapfrogging (higher ε), a higher replacement rate, a less progressive tax system (higher S) and, with untaxed informal income, a higher average labour tax rate induce higher unemployment. More risk aversion among workers also lowers unemployment. More tax progression boosts employment and output and reduces unemployment, since it is less attractive to pay high wages and to leapfrog other firms and for workers to do their best. Hence, labour productivity and the pre-tax wage fall. This contrasts with competitive labour markets, where more progressive taxes destroy incentives to work more hours and lower employment and output. Indeed, if we allow for optimal choice of hours worked and efficiency wages, a more progressive tax system lowers labour supply per household (i.e., reduces hours worked per job) which generates upward wage pressure. Total demand for labour will not rise as much and may even fall. The number of jobs will rise albeit that each job has shorter working hours. Of course, the size of the national income need not necessarily rise.

If unemployment benefits are indexed to after-tax wages (ρ fixed) and informal income is absent, a higher average income tax rate T_A or payroll tax T_L does *not* affect unemployment again. However, if benefits or informal incomes are not indexed to after-tax wages, the unemployment rate decreases as after-tax wages rise and one needs

$$\log(W) = [1/(1-\varepsilon)] [\varepsilon \{\log(S) - T_A\} - T_L] \quad \text{and} \quad \log(W_A) = [1/(1-\varepsilon)] [\varepsilon \log(S) - T_A - T_L].$$

to assess the incidence of taxes and the effects on unemployment. A rise in taxation keeping the degree of tax progression unchanged, raises marginal and average tax rates together and lowers the pre-tax wage. After-tax wages fall by more than 100 per cent and thus workers bear more than 100 per cent of the tax burden. These results differ from under a monopoly

union, since there firms rather than workers carried the burden of labour income taxation as now firms rather than unions set wages. If unemployed benefits are not indexed to after-wages or the unemployed enjoy untaxed income, a higher average labour income or payroll tax depresses after-tax wages more than 100 per cent, raises the replacement rate and thus increases the unemployment rate. The beneficial effects of a more progressive tax system, i.e., wage moderation and a lower unemployment rate, are less if benefits are not indexed to after-tax wages, because then the replacement rate is pushed up by the fall in after-tax wages. Clearly, the welfare state components can not be seen in isolation.

More generally, we show that, if the unemployed do not escape the burden of taxation, changes in the average labour tax rate do not affect the unemployment rate or the producer wage. However, if unemployment benefits are not fully indexed to after-tax wage income or the unemployed enjoy untaxed, informal income, the unemployed escape part of the burden of taxation. In that case, a higher tax rate on labour pushes up unemployment and wages. In non-Walrasian settings there is a surplus to be divided between firms and workers. Progressive taxes then tilt the balance in favour of less purchasing power and more jobs. This explains why in many econometric estimates of wage equations higher average tax rates give rise to upward wage pressure while higher marginal tax rate induce downward wage pressure (e.g., Lockwood and Manning, 1994).

8.2. Other efficiency grounds for progressive taxation

In the presence of trade union power, efficiency wage and/or search frictions, a more progressive tax system thus tends to moderate wages and boost employment (e.g., Bovenberg, 2003; van der Ploeg, 2003). The boost to the number of jobs may be enhanced, since a more progressive tax system typically reduces the number of hours worked per employee. Sørensen (1999) shows that a union, concerned with employment of its members, restricts working hours below the level which the individual employed member would prefer at the going after-tax wage. Since tax progression drives an additional wedge between the marginal disutility of work and the marginal productivity of labour, hours worked per worker falls and labour supply is further distorted. Wage moderation boosts employment, i.e., the total hours of labour demanded by firms. Together with the induced shorter working week this boosts the total number of jobs in the economy. Labour supply effects thus remain important in non-Walrasian labour markets and, a priori, it is not clear what happens to unemployment. We need to closely examine the evidence from micro-econometric studies, since some agents may face high marginal tax rates and exhibit elastic labour supply (Bovenberg, 2003). In any case, it is better to focus on the employment effects, which also seems more relevant in the analysis of problems arising from ageing of the population. Cross-country comparisons of employment are also easier for statistical reasons.

Many politicians are concerned about the unequal distribution of labour within the family. Men typically work more hours on the labour market than women, but do less shopping, childcare and other household chores. A more progressive tax system has, if the tax system is individualised, the added benefit that the partner who works most hours is stimulated to work less while the other partner is encouraged to work more hours on the labour market. Hence, a more progressive tax system can contribute to a more equal distribution of labour between men and women in the family.

Failing capital and insurance markets may also provide efficiency grounds for progressive taxation (e.g., van Ewijk, et al., 2003). Future labour income is usually not accepted by commercial banks as a guarantee for a loan, since people cannot be forced to work and pay back in future. Problems of adverse selection imply that good risks do not borrow, thus the bad risks remain. As a result, interest rates go up and credit is rationed (Stiglitz and Weiss, 1981). People thus are unable to borrow when they are young and to smooth consumption over their life cycle. Progressive taxes redistribute incomes from people that are old and earn a lot to people that are young and do not earn a lot. In this sense, a progressive tax system acts as an implicit credit market and alleviates some of the distortions of rationed credit markets (Hubbard and Judd, 1986). Rationing of credit particularly hurts students with poor parents. This is bad for society, since the full potential of human capital remains underdeveloped. Since a progressive tax system also redistributes from rich to poor parents, it partially alleviates adverse effects of credit rationing on schooling (Jacobs, 2003).

Insurance markets fail to fully insure the risks of losing income if people become ill, disabled or unemployed. People typically have a better knowledge of their own chances of becoming ill, disabled or unemployed than insurance companies. The good risks thus leave the market and the insurance companies are left with the bad risks. Insurance premiums go up; some insurance markets may stop functioning altogether (Rothschild and Stiglitz, 1976). As a result, people engage in less risk jobs and activities. Since a progressive tax system also redistributes income from people with good luck to people with bad luck, it also corrects to a certain extent for failing insurance markets (cf., Sinn, 1995). A progressive tax system also encourages risk-averse people to invest in risky studies (e.g., Eaton and Rosen, 1980).

We have given a large number of arguments why social policies and redistributive taxation may alleviate non-tax distortions in second-best economies, but social policies such as progressive taxation also exacerbate non-tax distortions and may reduce output. They distort markets, reduce the incentive to work and can exclude many people from the labour markets. If unemployment benefits are taxed or the unemployed enjoy untaxed, informal income, tax progression raises the *effective* net replacement rate and can thus induce wage pressure and destroy jobs. If labour supply is endogenous, the effect of progressive taxation on employment is ambiguous. The effects on wage moderation and on hours worked typically

work in opposite directions. Tax progression may harm the incentive to invest in training and human capital, so that it may lower the productivity of the economy. Tax progression also encourages tax evasion, reduces working hours, lowers productivity by reducing the employers' optimal efficiency wage relative to the level of unemployment benefit, and lowers the efficiency of the job matching process by reducing workers' expected marginal return to job search. Even if employment rises with more tax progression, output may fall and finance of a generous welfare state may become more difficult. Conversely, a by-product of a less progressive tax system is that some low-wage earners may face higher average and marginal tax rates. Since low-wage earners are likely to have relatively elastic labour supplies, OECD (1995) argues that the efficiency costs of taxation may actually increase rather than decrease.

Sørensen (1999), Røed and Strøm (2002), and Bovenberg (2003) point out that there is an optimal degree of tax progression. It is an empirical matter to find out whether the efficiency grounds for social policies dominate the costs of market distortions. However, the case for social policies is greater in economies plagued by many non-tax and non-benefit distortions.

9. Concluding remarks

Countries with large welfare states and substantial redistribution do not seem to have much worse economic performance. This is a puzzle for advocates of the 'Washington consensus'. We stressed reciprocal altruism, mutual obligations and second-best as important factors to bear in mind when designing the welfare state and redistributive tax schemes. In particular, we provided an example of an economy with efficiency wages where higher conditional unemployment benefits boosted job growth while higher unconditional benefits (welfare) depressed job growth. We also showed that more tax progression induces wage moderation in non-competitive labour markets with trade unions and/or efficiency wages. Effectively, modern market economies with large welfare states are riddles with distortions. Many of these distortions cancel out against each other, so the economics of second best applies. Also, welfare is hardly ever given unconditionally. Governments understand the principle of reciprocity and mutual obligations. They also know how to deal with problem of second best when they design the welfare state. These are the reasons why there is no empirical evidence that large welfare states make countries poorer in the sense of lowering national income per head of the population. Another reason is that countries with large welfare states typically introduce many pro-growth policies such as low taxes on capital, special treatment for corporations and more education subsidies.

Social interactions and the effects of neighbours on individual behaviour are just as important for understanding the causes of unemployment (Akerlof, 1980; van de Klundert, 1990) and welfare stigma (e.g., Besley and Coate, 1992; Lindbeck, Nyberg and Weibull,

1999). These insights are crucial for the design of an efficient welfare state. It is a mistake to think that all interactions between people are mediated through the price and wage mechanism alone. The individual's voluntary choice between living on welfare and working depends very much on social norms and interactions. In a very interesting paper Åberg, Hedström and Kolm (2003) study the social and psychological costs of involuntary unemployment empirically and within the context of a search-theoretic model of the labour market. Examining the behaviour of young people in Stockholm, they find evidence that these costs are low if people live in a neighbourhood where many people are unemployed and vice versa. Consequently, there are ratchet effects in unemployment. If unemployment is high in an area, psychological costs of unemployment are low and thus people search less intensively for a new job and are more likely to become and remain unemployed themselves. Conversely, if unemployment is low, psychological costs of unemployment are high, people search harder for a new job, and unemployment is more likely to remain low. This work emphasises the importance of communities and of social norms in understanding unemployment and in the design of the welfare state.

It also matters for the welfare state what people believe are the rewards of effort, hard work and risk taking. If people think these activities lead to economic success, there is much less support for redistribution and the welfare state. If people are down and out after having tried to get a job and search for income, there is much more support for redistribution. Fairness implies that society is much more willing to help those with bad luck than lazy people. Since many people care about relative incomes and are engaged in rat races, it makes sense for governments to have a higher tax rate and more redistribution simply to correct for the adverse externality of working too hard. Also, societies with a lot of inequality end up with populist governments who redistribute more than more equal societies. In the process such unequal societies end up with higher tax rates, higher unemployment, lower output and higher inflation. In sum, reciprocity, mutual obligations, sociological considerations, beliefs, procedural fairness, consumer rivalry and the theory of second best matter for a better understanding of the effects of the welfare state on employment and output. This has important implications for public finance and promises exciting venues for future research.

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