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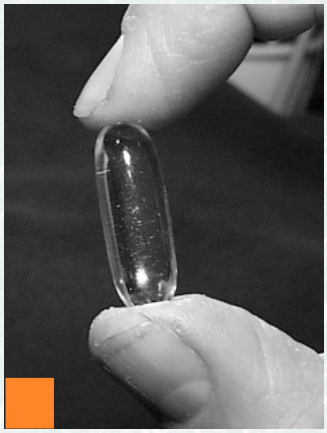
The Welfare Society in the 21st Century

Bernard Enjolras



INCENTIVES

Welfare State and disincentives effects

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Theoretical perspectives

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Preface

This report is one of the products from a project entitled *The Welfare Society in the 21st Century*. Funded by the Norwegian Confederation of Trade Unions (LO) and the Norwegian Labour Party in commemoration of LO's 100th anniversary in 1999. The project spans a broad range of issues, including economics and working life, everyday life and civil society, social services, social security and welfare state distributions. A number of publications show how Norwegian society has developed in recent decades, and discuss challenges and opportunities on the threshold of a new millennium.

The project is based on contributions from scholars in Norway and abroad. Some reports are based on papers delivered at seminars while others are the result of more comprehensive studies. A list of all publications resulting from the project – a total of 44 reports and the main book *Between freedom and community* (in Norwegian only) is annexed.

The project has been directed by a project group headed by Ove Langeland and otherwise composed of Torkel Bjørnskau, Hilde Lorentzen, Axel West Pedersen, and Jardar E. Flaa and subsequently Reid J. Stene. The group received useful and constructive comments from several colleagues at Fafo and from other sources. Jon S. Lahlum has ensured that the reports are published in professional form. The project group would like to express its gratitude to the sponsors for making the project possible.

Oslo, April 1999
Ove Langeland

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Introduction

The Norwegian welfare sate is characterized by institutions aiming at providing the population economic security and equality together with a high living standard. At the same time the Norwegian welfare state is committed to realizing a high level of employment and labor force participation. The "working approach" promoted by the Norwegian government (arbeidslinja) aims to integrate the more important part of the population to the labor force and to make them economically self-sufficient. Is there a trade-off between these goals? Does a high level of social protection discourage work participation? Does the welfare state generate disincentives that undermine economic performances?

Before answering these questions it is necessary to clarify in which perspective disincentive effects will be considered. There are two dimensions to be taken into account: the scope of the phenomena and the underlying normative concerns.

1) The scope of disincentive effects

The scope of disincentive effects is potentially large. Traditionally, economists have focused on estimating the disincentive effects of high taxes and cash transfers and how these and other types of state intervention (regulation, subsidies, tax expenditures) have affected resource allocation.

According to Linbeck (1981a), disincentive effects are due to the wedge introduced by the social transfers system between the social return and the return to the individual on productive effort. Lindbeck analyses the welfare state's impact on households in five fields: the choice between income and leisure, the pursuit of do-it-yourself work and the production for barter, the intensity of work, the investment in human capital and geographical mobility, the search for tax loopholes and engagement in illegal activities. The problem with this type of analysis is that there are few data available on these dimensions of the disincentive effects of the welfare state, therefore it is difficult to confirm or disconfirm such an analysis.

2) The normative concerns underlying the study of disincentives effects

As highlighted by Sandmo (1991), the interest concerning disincentive effects traduces an evolution in economic thought. During the 1960s there was little discussion of merits and weaknesses of the market and little awareness of disincentive problems.

Considering disincentive effects due to the welfare state is obviously a normative question which can have at least three different basic motivations.

The first one stresses the perspective of the welfare loss due to public intervention. In his essay "Equality and efficiency: the big trade off", Okun defines the problem as the trade-off between markets and democracy. The underlying principles of these social organizations are said to contradict each other: the market requires inequality to function whereas democracy requires equality. Stated in these terms, the problem is to choose between equality and efficiency. Because individuals are supposed to be driven by monetary stimuli, they have an incentive to work harder when they have positive rewards and to reduce their efforts when these rewards decrease. As long as markets give a reward proportional to effort they lead to efficient behavior. Democracy (or the welfare state), by introducing a wage between rewards and effort, is supposed to create disincentives. The welfare state, by distorting the choices that people make (as far as markets are considered to be efficient), generates inefficiencies, in itself a matter of concern.

The second approach stresses the perspective of a decline of work in the welfare state. If the concern is the potential decline of work or savings due to welfare policies, the question is determining whether welfare policies discourage working or saveing, so that we have to consider two effects of welfare policies: the income and the substitution effect.[1] The income effect states that because people are poorer due to taxation they increase their labor supply (to compensate the income loss), whereas the substitution effect states that because the relative prices of time, labor and leisure are changed peope reduce their labor supply.

This traditional position has been criticized by Lindbeck (1981), according to whom the effects on labor supply of isolated reductions in the after tax wage rate are ambiguous, because of the income effects; even when they do occur they are not really relevant when we are concerned with disincentives problems.

[1] "The income effect stems from the fact that the tax makes people worse off, and if leisure is a normal good, this reduction in their real income causes them to consume less leisure, so that to this extent the income tax acts as an incentive. The substitution effects stem from the fact that at the margin people are keeping less of their income, and this acts as a disincentive [...] the combined result is that taxation may cause people to work more hours, or fewer" (Atkinson 1995 p 133).

"High deductions make you want to work more overtime to make up what you lose (income effect) but if you get to a certain amount it's not worth working for (substitution effect)" (Brown and Levin quoted by Atkinson 1995 p 134).

> "The emergence of disincentive effects on work does not depend on the positive economic issue of whether work effort falls or rises in response to some government action, but rather on the welfare economic issue of whether deviations are created, or raised between the social and private return on (marginal) work effort." (Lindbeck 1981 p31).

As stressed by Atkinson (1993), the question of whether one should consider the substitution effect alone as Lindbeck does (as done by the first approach) or take into account the overall effect (substitution and income effect, as in the second approach) depends on the underlying normative concern. There are two possible reasons: one is that the existence of taxes may distort the choices that people would otherwise make, the other is that we attach value to work as such. In the first case the cost of the welfare state is measured by the substitution effect, in the second case it is the total effect that matters.

But one should raise the question as to why disincentive effects are undesirable, or, to put it another way, are markets always efficient and why should we seek to raise the level of work? One can argue that markets know market failures or that the efficiency of the market is a theoretic construction which never occurs in the real world. One can argue that raising the level of work has a positive impact on the public finance, but some may argue that people should work less on environmental or social grounds.

A third normative motivation to study disincentive effects is to better design welfare policies. Taxes and benefits are the most direct way in which governments can affect the financial incentives for individuals to work or to save. But the structure of taxes and benefits might lead to undesirable side-effects, for example the unemployment trap (when unemployment benefits give no incentive to unemployed workers to find a job) or the poverty trap (when social benefits give incentives to stay with assistance instead of going to work). Taxes and benefits in this perspective can be restructured in order to be consistent with their fundamental purpose.

The definition of the scope and the underlying normative concern constitutes a guideline to define the way to study disincentive effects.

For example Lindbeck, analyses the welfare state's impact on household behaviors, not only on the basis of its effect on households' labor supply and on saving, but more broadly. By considering only the substitution effect (and not the income effect) he assesses the disincentive effects of the welfare state in terms of

welfare loss neither in terms of real effects on the economic variables nor in terms of potential improvement of social policies.

In the following pages we restrict the study of disincentive effects of the welfare state to the effect on hours of work in the market for two reasons. The first is that the effect of hours of work on the market is the main effect considered by the policy makers and the second is that empirical studies of disincentives effects are available only when it comes to work on the market. Furthermore, we believe that the normative reason for studying disincentive effects is to contribute to improving their performance.

1 Taxes, benefits and labor supply: theoretical issues

1.1 Taxes and labor supply

The basic model

The basic model of labor supply (Killingsworth 1983) is of a person choosing his/her hours of work and facing an income/leisure trade-off. A central hypothesis is that the individual has a choice. In reality, it may be that there are no jobs available and the individual is forced to consume leisure. The choice is assumed to depend on the wage rate w, the individual's preferences representing indifference curves leisure/income, and the other sources of income M. The individual's income will be $(wL+M)$, where L represents the number of hours worked. Given the individual's preferences, the labor supply L will vary with the wage rate w and the other sources of income M. The Slutsky equation[2] of labor supply shows two effects of the variation of the wage rate: the income effect and the substitution effect. Introducing a social security tax reduces the disposable income to $w(1-t)L+M$ where L the labor supply has changed due to the combination of the two effects. The income effect traduces the fact that the individual is worse-off due to the income reduction whereas the substitution effect traduces the changes in the

[2] The Slutsky equation is derived from the labour supply function. The individual's labour supply h being a function of the wage rate w, the price of the consumption goods p and the non labor income M, that is $h=h(w,p,M)$. $\partial h/\partial w$ measuring the variation of the labour supply when the wage rate varies, can be decomposed as follows: $\partial h/\partial w = (\partial h/\partial w)s + h\ (\partial h/\partial M)$ or multiplying throughout by w/h, $\partial h/\partial w.w/h = (\partial h/\partial w)s.w/h + w\ (\partial h/\partial M)$. This decomposition is known as the Slutsky equation. $(\partial h/\partial w)s.w/h$ measures the substitution effect, $w\ (\partial h/\partial M)$ measures the income effect.

relative prices of leisure and goods, leading the individual to reduce his labor supply. By making individuals worse-off the income effect leads them to behave differently. Because they are poorer, they postpone their retirement, they cannot enjoy as much leisure, etc. The substitution effect arises from the fact that not all activities are taxed at the same rate. Taxation diverts activities from taxed to untaxed areas, or from areas with higher taxes to areas of lower taxes. The substitution effect is obviously negative on labor supply. The income effect is usually considered as positive on labor supply, because the individual tries to make up what he has lost due to the tax by working more. The overall impact can be ambiguous, depending on the relative strength of the income and substitution effects. The basic model allows for taking into account transfer payments by considering them as negative taxes. The difference between taxation and transfer payments is that, under taxation, one's tax liability is positive, whereas under transfers this liability is negative, that is payments go from the government to the individual instead of spring from the individual to the government. In other respects transfer payments are similar to tax payments.

Methodological issues

To empirically measure the effect of taxes on labor supply it is necessary to solve problems in economic theory and econometrics. The results depend on the way these problems are approached, which explains the absence of consensus among economists about the magnitude of disincentive effects.

The first theoretical problem is how to take into account the fact that the taxation is not proportional but progressive. The effect of progressive taxation is to create a convex non-linear budget set where the net after tax wage depends on hours worked. Since most of consumer theory is based on constant prices that are independent of quantity purchased, the Slutsky equation needs to be modified to assess the effect of a change in the tax rate. Theoretical problems become more complex when other provisions of the tax codes are taken into account because that creates non-convexity in the budget set. There is then the possibility of discontinuities in labor supply function (for a fixed level of taxation individuals can choose different levels of labor supply), which supposes that the empirical model of labor supply is able to compare different discrete points. "On *a priori* grounds, almost nothing can be said about the effect of taxation in the non convex budget case" (Hausman 1985).

The second problem is setting up an econometric model able to take into account the non constancy of the net after tax wage which means treating the non-linearity of the budget set. A way to proceed consists of taking the exogenous non-linear budget set and explaining the individual choice of desired hours. This has been done by Hausman (1980) by working backward from the labor supply specification to the underlying preferences, which can be represented by a utility function.

These methodological problems have led to two generations of studies. The first generation does not take into account the non-convexities of the budget set whereas the second generation does. Although the more sophisticated of these studies seem to be the less robust (Pencavell 1986, Blundell 1993) by being vulnerable to misspecification and measurement error. MaCurdy (1990) considers that the surestimation of the results of the second generation is due to the statistic model and not to the economic model. For married women the assessment of the results is more tricky once taking into account the sensitivity of labor market participation to the wage estimation (the problem is due to the fact that there is no wage data for non working women). Studies show a positive elasticity (the substitution effect is dominant) for women, but in the standard model a simple reservation wage condition is used to determine participation, in which an individual moves into employment if the market (after tax) wage exceeds his or her reservation wage. It is easy to show that many of the large elasticity for female labor supply are simply an extrapolation of the wage effect on participation.

1.2 Benefits and incentives to work

The basic model

The effect of benefits on labor supply is generally analyzed the same as for the effect of taxes on labor supply, on the basis of standard consumer theory. An individual maximizes utility by choosing among leisure/income options, given budget constraints. Because most transfer programs reduce benefits when earnings increase, the recipient's budget constraint is shifted in position and slope.[3] In analyzing work incentives two parameters are of importance: the income guarantee

[3] The budget constraint is given by the plot of the net income by the hours of work. As far as the net income does not increase proportionally when the worked hours increase because of the decrease of benefits, the budget constraint is not linear but composed of different brackets, each of them having a different position and slope.

and the marginal tax rate (benefit reduction rate). The guarantee produces an income effect (case of a flat rate benefit) whereas the tax rate produces both an income and a substitution effect (case of income-related benefit). Hence a transfer with a positive tax rate (which means that the benefit decreases with earnings) creates income and substitution effects that reduce labor supply. The various transfers affect the budget set in many ways, and might thus influence economic behavior.

The problem faced by the individual is the reverse of the case with income tax (as far as the benefit can be analyzed as a positive tax) but the budget constraint is more complicated because of the presence of the transfer programs, which generates non-convex budget sets (Hausman 1985). Generally, such programs raise non labor income by the amount of the transfer. The individual then faces a high marginal tax rate until he/she reaches the break-even point at which all benefits have been taxed away. Beyond the break-even point the individual rejoins the general tax system. In the case of AFDC[4] programs (Hausman 1985, Atkinson 1985), the earnings up to a set amount ($30 per month) are "disregarded" and not taxed by the program. Beyond this point, the individual faces a the high marginal rate until the break-even hours are reached.

Such complex budget constraints also generates a "poverty trap": by considering the marginal tax rates, there is a range of gross earnings where there is little increase in net income as gross income increases (Atkinson 1989). For those in work, the withdrawal of benefits as income rises involves a high marginal tax rate on additional income. The term "composite marginal tax rate" is used to denote the combined effect of extra taxes paid and benefits lost as a result of an increase in income.

Methodological issues

As stated by Atkinson (1985), the problem when one tries to estimate labor supply is that the marginal tax rate faced by individuals is endogenous. This means that one cannot treat the marginal tax rate as a parameter but must take the full (exogenous) budget set into account. Furthermore, with non-convex budget sets, a person may be indifferent between several levels of work, yielding to several tangency between indifference curves and budget sets.

[4] AFDC: Aid to Families with Dependent Children, the main welfare program in the U.S

In comparing different national systems of transfer and benefits (Atkinson and Mogensen 1993), one is struck by the differences in welfare institutions across countries. Therefore it is out of the question to give a synthetic and comparative view of the effect of benefits on incentives to work as will be done for taxes. The aim we pursue by reviewing the international literature is more modest and consists in listing the different types of incentives or disincentives to work linked to idiosyncratic welfare systems, which could help us to set up "good" questions when it comes to Norway.

2 Taxes and labor supply: empirical results

2.1 From theoretical to empirical models

As stated previously, the labor supply of an individual is the result of maximizing behavior. The individual's labor supply h is a function of the wage rate w, the price of the consumption goods p and the non labor income M, that is $h=h(w,p,M)$. The sign of $\partial h/\partial w$ measuring the variation of the labor supply when the wage rate varies is indeterminate, depending on the relative magnitude of the income and substitution effects. The theory implies that the sign of the substitution effect is positive (individuals want to increase their labor supply when the wage rate increases and to decrease it when the wage rate decreases due to, for example, a tax increase) whereas the sign of the income effect is negative provided the fact that leisure time is a normal good. The sign of the overall effect (uncompensated effect of an increase in the individual wage rate on hours of work) is indeterminate and depends on the relative magnitudes of the substitution and income effects.

The empirical model must account for individual differences in hours worked: two individuals facing the same values of w,p and M would in general choose different levels of labor supply since their preferences differ. A way to account for these differences consists of adding a vector of individual characteristics Xi to the labor supply function. The first generation studies used a log linear function as an estimation basis:

$$\ln H = a + b \ln(w/p) + c \ln(M/p) + d\, Xi + \varepsilon$$

To interpret the parameters b and c it is useful to consider the Slutsky decomposition of the wage effect into a substitution and income effect.

$$\partial h/\partial w = (\partial h/\partial w)s + h\ (\partial h/\partial M)$$

or multiplying throughout by w/h,

$$\partial h/\partial w.w/h = (\partial h/\partial w)s.w/h + w\ (\partial h/\partial M)$$

Wage elasticity (uncompensated)	=	Substitution elasticity + income elasticity (compensated)

The left side $h\ (\partial h/\partial M).w/h$ is normally referred to as the uncompensated (for income changes) wage elasticity and can be broken into two components:

The first, reflecting the substitution effect, $(\partial h/\partial w)s.w/h$, is referred to as the compensated wage elasticity and measures the utilityconstant (or income compensated) effect of an increase in the wage rate on the individual's hours of work. At the same time, an increase in the wage rate augments the individual's wealth allowing him/her to consume more goods, which increase utility and less goods that generate disutility (such as hours of market work) which is measured by $w\ (\partial h/\partial M)$ the income effect of a wage increase on hours of market work.

Returning to the log linear specification, we see that b yields a direct estimate of the uncompensated wage elasticity and c a direct estimate of the income elasticity. The compensated wage elasticity (measuring the substitution effect) must be derived from the other parameters using the Slutsky equation: the compensated wage elasticity is equal to $b-(wh/M)c$.

Therefore empirical studies aim to estimate three type of elasticities[5]: the uncompensated elasticity (or wage elasticity) which measures the overall effect of the taxation on labor supply; the compensated elasticity which measures the substitution effect (usually negative) of the taxation on labor supply and the income elasticity which measures the income effect (usually positive) of the taxation on labor supply.

[5] The elasticity measures the responsiveness of the labour supply to a variation of the wage. An uncompensated elasticity of for example –0.4 means that if the wage increases by 1% the labour supply will decrease by 0.4%, conversely if the wage decrease by 1% the labour supply will increase by 0.4%.

2.2 Empirical results

Labor supply elasticity

As mentioned, Killingsworth (1983) differentiates between two generations of empirical studies of labor supply. The first generation, most of which appeared in the 1960s and early 1970s, uses a simple methodology that is unable to deal with the non linearity and non convexities of the budget sets, and thus is not able to take into account the effect of taxation. The second generation develops more sophisticated techniques and attempts to deal with non linearity in the budget set.

It is possible to summarize the results of the litterature reviewed by Killingsworth (1983) as follows:

Ranges of estimated wage and income elasticity of the first generation studies

	Uncompensated	Compensated	Income
Males	0.0 to -0.4	0.00 to 0.36	0.00 to -0.16
Females	0.2 to 0.9	0.1 to 2.0	-0.1 to -0.2

(source: Killingsworth 1983)

For males, most of the estimates of the uncompensated wage elasticity fall in the range 0.0 to –0.4 and indicate that income elasticity is negative but fairly small.

A wage increase reduces the labor supply and a decrease in wage increases the labor supply (the income effect is dominant). In the case of females, the range of estimates is much larger and the uncompensated wage elasticity is positive. A wage increase leads to an increase of the labor supply.

Range of estimated wage and income elasticity of the second generation studies

	Uncompensated	Compensated	Income
Males	-0.23 to -0.005	0.13 to 0.23	-0.1 to -0.4
Females	0.6 to 1.1	0.7 to 1.2	-0.1 to -0.2

(source: Killingsworth 1983)

With respect to males, the second generation studies find a negative uncompensated wage elasticity, which, in accord with theory, means that the male labor supply is backward bending (a wage decrease leads to an increase of labor supply at least for the superior segment of the curve and vice versa). Female labor supply is more responsive to wages than male labor supply (the uncompensated marginal

wage rate elasticity range from small to large positive values and the income elasticity are clearly negatives). Most of these studies thus give sizable effects on the female labor supply of a decrease in the marginal tax rate.

Some elasticity for Sweden

Author	Uncompensated	Income
Blomquist 1993	0.08	-0.04
Blomquist and al. 1990	0.05	-0.01
Jakobson 1982	Male: 0.06 Female: 1.2	-0.027 -0.14
Ljones and Strøm 1987	Male: 0.08 Female: 0.013	-0.39 -0.11

(source: Gustafsson and Klevmarken 1993)

The uncompensated elasticity for males are small positive numbers and is positive but somewhat larger for females, reflecting forward sloping supply curves (which disagree with the predictions of the theory): a wage decrease due to an increase in taxation, leads to a decrease of labor supply which reveals the presence of a disincentive effect of taxation.

Aaberge, Dagsvik and Strøm (1995) report uncompensated elasticity for Norway of 0.33 for males and of 1.59 for females, an income elasticity being –0.11 for males and –0.28 for females yielding a compensated elasticity of 0.22 for males and 1.31 for females. In a previous study with 1979 data, Dagsvik and Strøm (1988) reported uncompensated elasticity of 0.19 for males and 1.05 for females, an income elasticity of –0.04 for males and –0.12 for females yielding a compensated elasticity of 0.23 for males and 1.17 for females.

For Denmark, Smith (1991) finds an uncompensated wage elasticity of 0.06 for women and 0.10 for men. Petersen and Smith (1995) find an uncompensated wage elasticity of 0.08 for cohabiting men and –0.12 for single men. For cohabiting women the uncompensated wage elasticity is 0.04 and –0.06 for single women.

Contrary to the first generation studies that find negative uncompensated elasticity, the second generation studies, taking account of taxes, find either a positive elasticity or a negative elasticity close to zero. This finding rejects the hypothesis of a backwarding labor supply (in accord with theory) that can be interpreted as implying that the effect of income taxes is to increase labor supply (at least for males) and supports the hypothesis of a forwarding labor supply (the effect of income taxes is to reduce labor supply).

But this result has to be evaluated carefully. McCurdy et. al. (1990) show that the maximum likehood estimation of these second generation models imposes a positive substitution effect on all observations of the non-linear segment of the budget constraint. The estimation technique constrains the compensated elasticity to be non-negative, which tends to produce larger uncompensated elasticity and smaller income elasticity.

A second problem when comparing cross country results is that we have no idea which other factors (than taxation) may influence labour supply decisions. There may be economic, social or cultural factors leading to differences in labour supply for which we do not control for. The differences between countries may be due to the level of taxation but may also be due to other factors.

Disincentive effects of taxation?

The empirical findings show that there are reductions in labour supply attributed to the existence of taxes. The size of this effect is small for men and larger for women. However, there is a lack of consensus about many aspects of the estimate of the magnitude of disincentives.

Predicted effects of progressive income tax systems on hours worked

		% decrease of hours worked of the existing tax system relative to:		
Author	Gender	Proportional tax	No tax	Lump sum tax
Hauseman (1981) USA	Males		-8.2	
	Females		-18.2	
Blomquist and Hansson-Bruzewitz (1990) Sweden	Males	-6.2	-13.4	-13.6
	Females	-9.3	-23.0	-23.3
Bourguignon and Magnac (1990) France	Females	-16.6	-19.3	
Colombino and del Boca (1990) Italy	Females	7.1		
Van Soest and al. (1990) Netherlands	Males		-14.1	
	Females		-16.0	
Aaberge and al. (1995) Norway	Males	-31.0		
	Females	-38.0		
Smith (1991) Denmark	Cohabiting Males	-4.8		
	Cohabiting Females	-1.4		
Triest (1990) USA	Males		-2.6	
	Females		-9.8	

Concerns about taxation have been expressed about the marginal rate of taxation. The possibility that the marginal rate of taxation discourages work effort is one of the main considerations of the political debate on taxation.
The existence of high marginal tax rates does not mean in itself that serious disincentives exist. Elasticity for Sweden, Denmark and Norway is positive. A positive elasticity means that labor supply increases with wages, and hence decreases with taxes. But in the case of Sweden there are a variety of results without any agreement on both the direction and the size of the effect (Atkinson and Mogensen 1993). Concerning Norway the number of studies are too small to be conclusive.

However, the absence of clear findings does not mean that tax reform, with an aim to design an incentive tax scheme, is without value, as shown by simulations of different tax schemes based on labour supply elasticities.

The effect of taxes on labour supply is usually summarised by comparing the hours of work under the existing tax system with the predicted hours under a proportional tax system yielding the same revenue. It is also possible to state the effect of the existing tax system by comparing it to a lump sum tax or a no tax situation.

This table shows the percentage of decrease of hours worked due to the existing tax system compared with three different tax schemes: proportional, no tax and lump sum tax (i.e. a fixed amount independent of income). The existing tax system leads to a decrease in worked hours ranging from –1.4% (Denmark) to -38% (Norway) by comparison of what the worked hours would be under a proportional tax system. For Italy the passage toward a proportional tax system would reduce worked hours for females by 7.1%. Figures for Norway are very high compared to other countries. According to Aaberge, Colombino and Strøm (1996), who made comparisons using the same methods in Sweden, Norway and Italy, the weak labor supply responses for Italy are due to the fact that the tax system does not differ significantly from a proportional tax system, whilst the low responses in Sweden may be due to the stricter regulations of working hours which are accounted for in the model.

The results of the simulations show that while the wage elasticities are quite small, changes in marginal tax rates can have quite a large effect on hours of work. However a serious problem in using these results is that the estimations of supply elasticity are extremely sensitive to the specifications and the econometric method chosen. Furthermore, as stressed by Atkinson (1995), empirical evidence cannot settle the issue of taxation and work incentives definitively: “there are no

studies of labor supply that are not open to serious objection on at least one important ground" (Brown 1983, p 167).

3 Benefits and incentives to work

3.1 Transfers to families with children

The types of transfers to families with children are very diverse and vary according to countries. Nevertheless, it is possible to identify three types of problems that, whatever the welfare system considered, have to be dealt with.

The first is related to welfare dependency. The second deals with the link between childcare facilities and incentives to work. The last is concerned with the impact of means-tested benefits on the presence of the poverty trap.

There is obviously a link between welfare dependency and poverty traps as long as recipients of the benefit do not exit from the benefit toward the labour market. But there is also a difference: in the case of welfare dependency, people are supposed to stay as recipients of the program because of the moral hazard problem. They are voluntarily dependent on the program because the program is supposed to be too generous and generates no incentive to exit. In the case of the poverty trap, it is not the behaviour of the recipients which is a cause, but the design of the program which generates high marginal tax rates and therefore no incentive to exit. If the result is the same, the perspective and the policy implications are different.

Welfare dependency

Welfare dependency refers to the fact that welfare systems, by reducing incentives to work (and labour supply), encourages long-term dependency of recipients on welfare programs.

This topic has been mainly studied with the US Aid to Families with Dependent Children (AFDC) program (Danzinger et al. 1981, Moffit 1992). For the most part, it is a program only for female heads of family with children under 18. To be eligible for benefits a family must have income and assets below certain specified levels set by the 51 states of the US. Benefits are paid according to a schedule that sets a "guaranted" amount for a family of a given size and which reduces benefits at a certain rate as a recipient's income rises.

Most of the studies have been cross-sectional using cross states variation in AFDC benefits and estimates of the effect of AFDC parameters (guarantees and tax rates) on measures of the labour supply for female heads of family at a point in time.

Labour supply analyses of AFDC

Study	Results
Garfinkel, Orr (1974)	Elasticity of the employment rate with respect to the Guarantee (G): -0.7 with respect to the tax rate (T): -.07
Saks (1975)	Elasticity of participation with respect to G: -0.94 with respect to T: -3.29
Williams (1975)	Elasticity of employment rate with respect to G: -0.76 with respect to T: -0.46
Master, Garfinkel (1977)	G and T have no consistent impact
Levy (1979)	Range of elasticity of hours with respect to G:-0.9 to –1.50 with respect to T: 0.19 to 0.65
Moffit (1980)	G has a large negative impact, but T a very weak impact on hours worked
Hausman (1981)	G and T has a large negative impact on hours worked

(Source: Danzinger et al. 1981)

The results from Garfinkel and Orr (1974) and Williams (1975) mean that, in terms of actual values, increasing the annual guarantee by $500 or the tax rate by 10% reduces employment rates respectively by 2.4 and 1.4% (Garfinkel and Orr) or by 5.8 and 2.1% (Williams).[6]

As Danziger et al. indicate, the available research shows that AFDC programs generate non trivial work disincentives. Unfortunately the estimates of effect vary considerably across studies and there is consequently large uncertainty about the magnitude of the effect.

An additional finding (Moffit 1992) is that very little of the supply labor reduction arises from ineligible female heads who lower their hours of work below the break-even point to become eligible for AFDC. That implies that the work disincentives effect of AFDC have little effect on the size of the case load (the disincentives arising from women initially above the break-even point increase the caseload by 5% at most). Thus the problem of "welfare" dependency (i.e. participation in AFDC) cannot be ascribed to the work disincentives of the program.

[6] In order to calculate the percentages of variation in actual values from the elasticities one must know the absolute value of G and T which differ according to the date of each studies.

Childcare facilities and incentives to work

In the basic labour supply model, labour supply is seen as a result of the choice between income and leisure. Becker (1965) however includes factors such as domestic production in the labor supply function. As far as childcare facilities being a substitute for the self-production of childcare, the availability of childcare facilities can influence labor supply. Sundström and Stafford (1992) made a cross country study of female labor supply in 21 OECD countries. The independent variables were the total fertility rate and a set of policy variables. Public consumption as a percentage of GDP which can be interpreted as an indicator of public service substitutes of women's home work, is found to have a positive effect. The results show that the availability of a public childcare system increases the participation rate. On the other hand, as the price paid by the parents for childcare facilities usually decreases with parents' income (as a result of a mean testing procedure) and with the number of children, some parents will face a high composite marginal tax rate (for example single parents with low income) when increasing their labor supply.

For Sweden Gustafsson and Stafford (1992) considered female labour market supply and utilisation of childcare facilities as a joint decision, finding a negative price effect on female market work and on public childcare utilisation (the higher the price is, the lower is labour supply and childcare utilisation).

Poverty trap

As stated by Atkinson (1989), a variety of ways to define poverty traps exist. The way the notion is defined influences the type of policy that can be implemented to deal with the poverty trap problem. One way to define this concept is to see the poverty trap as arising in any situation where a family both receives a mean tested benefit and is liable for income tax. In this case the trap can only be removed by increasing the tax threshold or by reducing the scope of means tested benefits.

A second way to define poverty traps is to see poverty traps as arising in situations where families face high marginal tax rates on additional earnings, whatever the reason for the increase in tax rate (income tax, withdrawal of income-related benefits). As a result of income testing, people may face a high rate of withdrawal of transfers as income rises, which means that a 10% increase in gross income (by working more) may generate a smaller increase in net income. The combined effect of transfers withdrawal and tax may lead to composite marginal tax rates superior for benefits recipients than for taxpayers. In this case the trap can

also be removed by increasing the level of non means-tested benefits (such as child benefits).

Empirical evidence for Sweden shows that the composite marginal tax rate for couples with children using childcare facilities is about 50% or more over a considerable range of incomes (Andersson and Gustafsson 1992b). In Denmark, for single persons with children, 20-25% of the households have a marginal tax rate above 70% (Pedersen 1993). In both Denmark and Sweden the charges for childcare play a determinant role in explaining high levels of composite marginal tax rates for single families with children. In contrast, high levels of composite tax rates are due to the presence of means tested family benefits in the UK (Atkinson 1993).

To conclude this section, it seems appropriate to consider that the presence of public childcare facilities has increased labour female supply, but that their means tested character has contributed to the rise in the poverty traps problem for single parents with low income, at least in Denmark and Sweden.

3.2 Unemployment benefits

The unemployment benefits system provides insurance against job loss, and from this point of view is a source of welfare gain. But unemployment benefits, by

Replacement rates for single-earner households, 1994

	Replacement rate in first month of unemployment: no social assistance				60 months of unemployment i ncluding social assistance	
	Gross replacement rates (before taxes)		Net replacement rates (after tax and others benefits)		Gross replacement rates	Net replacement rates
	Single	Couple no children	Couple no children	Couple 2 children	Couple no children	Couple 2 children housing benefits
Denmark	86	86	92	93	86	95
France	65	65	79	81	54	83
Germany	40	44	60	70	39	80
Norway	62	62	66	75	0	100
Sweden	80	80	82	85	0	121
UK	24	39	52	67	38	90
USA	50	50	66	60	0	19

Source: OCDE (1996)

freeing the unemployed from having to take less suitable jobs, might increase unemployment duration, and from this point of view is creating disincentives to work. How big are these disincentives? Is it possible to minimise the trade off between incentive and welfare?

The unemployment trap: comparative facts

The unemployment trap arises in situations where benefits paid to the unemployed and their families are high relative to expected earnings in work, so they have little incentive to find a job. The disincentive effect is then captured by the "replacement rate" (benefits/earnings), so that the higher the benefits are relative to earnings the higher unemployment will be.

The main conclusions to draw from this table (OCDE 1996) are:

- Taxation means that net replacement rates are higher than gross replacement rates due to the fact that benefits are sometimes untaxed and are usually not subject to social security contributions.
- Benefits paid to families with children are often higher than for those without children, which leads to higher replacement rates for families with children.
- Social assistance complicates the pattern of employment incentives as far as social assistance can be higher than unemployment insurance levels, but conditions for entitlement to social assistance are often restrictive and usually involve means testing.
- After 60 months, unemployment benefits are often lower or not paid at all. However, if the individual is eligible for social assistance the replacement rate can be high. Furthermore, entitlement duration may be more complex; in Sweden and Norway benefit entitlement can be renewed by participation in labour market programs.

The question of whether benefits are too high in order to avoid disincentive effects or not is more complex than a simple trade off between economic efficiency and welfare objectives. This question has been investigated by testing the job search theoretical model using econometrics tools.

The job search basic model

The basic model portrays an unemployed individual searching for acceptable offers. The worker's objective is maximisation of lifetime income over an infinite horizon discounted at rate δ. Optimal behaviour is characterised by a reservation wage rule that separates acceptable offers from unacceptable ones.[7]

If the exit rate from unemployment is noted by μ , the offer distribution by *F(.),* the job offer rate by α and the reservation wage by w^*, then:

$$\mu = \alpha\ (1\text{-}F(w^*))$$

so that the exit rate is decreasing in benefit level[8], (the duration of unemployment is increasing when the benefit level increases).

Benefits may also influence the search effort of unemployed and therefore the exit rate. Instead of considering an exogenous constant job offers rate α, it is possible to incorporate an endogenous search effort into the model taking the form of a function $\theta\ (.)$ increasing in search effort s . The exit rate then becomes:

$$\mu = \theta\ (s)(1\ -\ F(w^*))$$

Empirical studies aim to estimate this equation in a reduced form. This model however does not fit with the real world, as far as it supposes an unlimited duration of benefit. When introducing limited duration of benefit, the level of benefit has no effect on the probability of return to work once the limit is reached. A rise in the maximum length of benefit can be expected to have similar effects due to a rise in the benefit level.

[7] The person is assumed to receive job offers at a constant rate α per unit of time, and the probability of job offering a wage of at least w is *1-F(w),* where *F(w)* is the offer distribution of wage. If the level of unemployment benefit b is assumed constant over time, there is a stationary reservation wage w^* which must satisfy the following condition:

$w^*\text{-}b = \alpha(1\ -\ F(w^*))\ [w^{**}\text{-}w^*]/\delta$ (1)

where w^{**} is the expected wage conditional on $w \geq w^*$. The choice of the reservation wage may be seen as balancing, on the left hand side, the increased income from accepting w^* today, on the right hand side, the improvement over w^* expected from holding out (Hey 1979). From that it is straightforward to show that a rise in the benefit leads to a reduction in the probability of return to work.

[8] It is possible to rewrite (1) as follows: $(w^*\text{-}\ b)\delta\ /(w^{**}\text{-}w^*) = \alpha\ (1\ -\ F(w^*))$

as far as $\partial w/\partial b<0,$ the escape rate decreases when b increases

Empirical results

The oldest studies of the impact of unemployment benefit on unemployment use time series analysis, which have the merit of allowing researchers to follow the consequences of changes in unemployment insurance. The problem with the use of time series evidence is that it is difficult to isolate the effect of policy changes from other influences. The results from time series analysis reach the conclusion that unemployment benefits lead to higher unemployment, but the results are divergent. Cross section studies better allow taking into account differences in individual behaviours and estimating more precisely than with aggregated data the determinants of unemployment. The results from cross section studies are convergent: unemployment duration is increased by an increase in benefits, but the magnitude of the effect is weak.

The British time series studies, Maki and Spindler (1975), Sawyer (1979), Junankar (1981), Nickell and Andrews (1983), Minford (1983), Layard and Nickell (1985,1986), estimate an elasticity of unemployment with respect to benefits ranging from zero to 4. Ståhl (1978) did not find any significant relationship between unemployment and benefits for Sweden. Björklund (1978) and Bjôklund and Holmlund (1989) found an adverse but not quantitatively important effect of benefits on unemployment duration.

The findings of cross section studies (Atkinson 1987) are relatively close and report that a 1% rise in benefits tends to be associated with somewhat less than a 1% increase in unemployment duration or decrease in the probability of leaving unemployment.

The synthesis of comparative studies for Sweden, Denmark, Germany and the UK (Atkinson and Mogensen 1993) concludes there is a non-existent or rather modest impact of benefits on unemployment duration. There is no clear proof that benefits reduce unemployment exit in the UK and Germany: the elasticity of unemployment duration with respect to replacement rate is weak. For Sweden there is some reason to believe that benefits lead to an increase in unemployment duration but also to an increase in the propensity to stay in the labour market.

Atkinson and Micklewright (1991) made four concluding remarks about these results.

Firstly, the estimated effects reported in the US and the UK studies are rather modest. Results reported by Danziger et. al. indicate that a rise in the replacement ratio of 10% would increase the average duration of unemployment by about one week.

Secondly the micro data results are not as robust as has been claimed: they are sensitive to the assumptions made concerning the benefits system. Thirdly, unemployment benefits systems differ widely across countries, so that results from one country (US or UK) cannot be taken as representative for other countries. Fourth, the estimated effect of the level of unemployment compensation on the duration of unemployment varies with the personal characteristics and with the unemployment duration of the unemployed. If the replacement rate is allowed to vary with duration in the estimated model as is the case in Nickell (1979), after 20 weeks current benefits have no significant effect on the probability of returning to work.

Two conclusions can be drawn from these empirical studies:

- The results, which are sensitive to the definition of the variables, to the sample and the period choice and to the specification of the estimated equation, present a weak robustness;
- The institutional complexity of unemployment benefits systems is obliged to use more acute hypothesis when one wants to take into account the real world so that by doing so the simplistic argument of which unemployment benefits increase unemployment duration loses its empirical support.

3.3 Pensions and disincentive to work

As western countries' populations are ageing rapidly and people are living longer than before, serious financial pressures are created on national pension systems. In this context, governments might want to encourage workers to retire later than they currently do. A better understanding of workers' retirement from the labour force behaviour is a pre-condition for assessing alternative policies. In order to increase the working period on the life cycle many routes are available: it is possible to reduce benefit payments for early retirements, it is possible to postpone the age for mandatory retirement, or to increase the accrual rate after the mandatory age. The impact of these regulatory changes depends on workers' behaviour, so that understanding the incentive structure of pension systems and the incentive effect of changes in the system, constitute the starting point for any policy proposition.

The determinants of the retirement decision

Several stylised facts have important influence on the retirement decision (Wise 1993):

- As health and functional ability deteriorate the disutility of work increases and thus the desire for leisure increases.
- Real wage earnings are first rising with age and then decreasing with age.

Both lower wage earnings and higher disutility of work create incentives to retire.

- Worker productivity declines with age. Usually, productivity is greater than the wage in the early years of the working period and less than the wage in the later years of the working period. This pattern of productivity and wages can create an incentive for firms to encourage early retirement.
- Personal savings and accumulated entitlement to pension benefits increase also with age. On one hand postponing retirement allows more consumption more during the retirement period by accumulating more savings and pension benefits entitlements but on the other hand the number of remaining years of life (for an expected life duration) is decreasing. Thus the larger the accumulated savings and benefits entitlements are at one age, the greater is the incentive to retire at this age.

In order to display incentive effects of pension schemes, Kotlikoff and Wise (1987) consider the value of annual vested accrual pension benefits at different ages.

Vested pension benefits discounted at age *a, I(a)* is defined as the difference between pension wealth at age *a+1, P(a+1)* and pension wealth at age *a, P(a)*, accumulated at age *a+1* at the nominal interest rate *r,* that is:

$$I(a) = P(a+1) - P(a)(1+r)$$

Pension wealth at age *a*, *P(a)* can be thought of as the worker's pension bank account at age *a* (the expected value of vested pensions benefits discounted to age *a*). Pension accrual is thus the increase of pension wealth in addition to the return of previously accumulated pension wealth. It is the additional return of one year of additional accumulated pension wealth. Pension accrual increments *I(a)* can be expressed as a fraction of the worker wage *w(a)*, so that *R(a,t)* denotes the ratio of *I(a)* to *w(a)* for a worker of age *a* with *t* years of service.

Incentives effects of pension schemes are due to discontinuities in pension age-accrual profiles.

a) A first discontinuity in pension age accrual profiles is due to the effect of "cliff-vesting": when 100% vesting occurs at a particular age (for example after 10 years of service), *P(a)* equals zero prior to the age of vesting and suddenly becomes positive at full vesting age. Hence *I(a)* is zero prior to cliff vesting and rises to a positive value at the cliff vesting age *a**, but *I(a*+1)* is smaller than *I(a*)* because *I(a*)* is the pension wealth value at age *a** and not the increase of the pension wealth value between two ages (*I(a*+1)*.

b) A second discontinuity might occur with early retirement.

b1) A first reason for this discontinuity to occur is that early retirement benefits might be discounted at a rate that is less than the actuarially fair rate. An actuarially fair discount rate would leave the individual indifferent to taking pension-accumulated wealth now and taking it tomorrow. But if the discount rate is less than actuarially fair, the individual is given an incentive to take it now instead of tomorrow, because the present value of the pension wealth is superior to its future value, given the individual depreciation rate of the future. In this case, taking benefits at early retirement age provides a larger present value of vested pensions benefits accrued up to this age than taking these accrued benefits later.

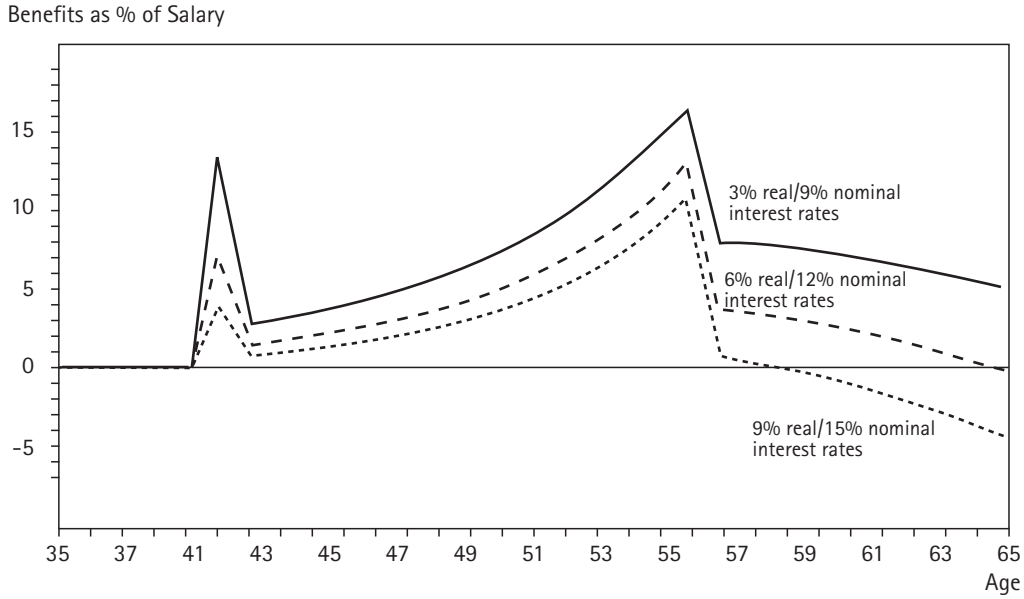
b2) a second reason is that after the early retirement age, incentives to take accrued benefits appear: prior to early retirement age, the pension wealth is discounted, which means that one crown of accumulated wealth at age *a+1* has a superior value than one crown of accumulated wealth at age *a*, because the worker is closer to receiving accumulated wealth at age *a+1* than at age *a*. After the early retirement age, one crown of accumulated wealth at age *a* has the same value than one crown of accumulated wealth at age *a+1* since the accumulated wealth is immediately available (and thus not more discounted). This discounting effect leads to a smaller pension accrual *I(a)* (since *P(a)* has risen relative to *P(a+1)*).

b3) A third reason is that at early retirement the life span during which benefits will be collected if retirement is postponed is shortened. Before early retirement age this factor does not occur because the pension-accumulated wealth is not available.

c) At normal retirement age the three factors b1), b2), b3), also play the same role and lead to a decline in the pension wealth accrual *I(a)*. Furthermore, generally pensions schemes do not increase pension-accumulated wealth after the normal age of retirement, so that there is no incentive for workers to postpone retiring, since *I(a)* is decreasing.

These incentive effects of pension accrual profiles can be summarized as in the figure below.

Pension increments as a percentage of salary, by age for a wage stream with 6% inflation discounted at real interests rates of 3%, 6%, and 9%



Source: Figure 1.3 in Wise (ed) 1985, p 5

Are incentive effects of pension schemes undesirable?

It is possible to argue (Wise 1993, Lazear 1983) that incentive effects of pension schemes help to achieve firms' objectives. Firstly, the structure of age-wage profiles leads to overpayment of older workers (they are paid more than their productivity). Thus the firm has an incentive to encourage older workers to retire. Mandatory retirement and incentive structures of pension schemes might serve this purpose. Vested entitlement declines after early retirement age and declines even

further after retirement age, providing carrot (before early retirement) and stick incentives to continue to work until at least early retirement age or retirement age and to retire at retirement age. Secondly, pension schemes (with early retirement options) allow firms to easily adjust labour force levels without the necessity of layoffs. Thirdly, firms' pension plans encourage loyalty of the worker to the firm: because the entitlement during the first years of the plan is small the worker has an incentive to stay with the firm and to produce an optimal level of effort.

Empirical results on retirement behaviour

The results reached in different empirical studies that try to evaluate the impact of social security pensions on retirement vary considerably. The cross section and panel studies for the US reported by Atkinson (1987), Burkhauser (1980), Hall and Johnson (1980), Hanoch and Honig (1983), Pellechio (1979), Quinn (1977), Boskin and Hurd (1978), and Diamond and Hausman (1984a, 1984b) conclude that pensions have a significant influence on retirement.

On the other hand, Gordon and Blinder (1980), Harmermesh (1984), Kotlikof (1979b), Burtless and Moffit (1984) and Mitchell and Fields (1984) conclude that the effect of pensions on retirement is either insignificant or economically unimportant. Mitchell and Fields (1984), for example, conclude that "raising retirement benefits by increasing either private pensions or social security by 10% would lower the retirement age by a little less than a month, on average".

For Sweden, Hansson-Brusewitz (1992) found that the system of partial pension has a negative effect on hours of work in an atemporal model. Generally, the average age of retirement is only marginally affected by changes in wages.

For Denmark, Pedersen and Smith (1995) did not find any correlation between the expected age of retirement and the expected level of compensation when retired.

The differences in results are mainly due to the underlying model used to estimate the impact of social security on retirement behaviours.

Most of the studies showing a significative impact of pensions on retirement use explicitly or implicitly a one-period-work leisure model. This approach uses the basic labour supply model, considering that an increase in income in any period *t* brings about less work in that period (as far as leisure is considered as a normal good). Retirement is defined here to occur when leisure equals the full amount of time available as long as the individual affects his/her time between labour and leisure as a function of taste and the wage rate. A change in the wage has two

effects: the increased buying power implies that more leisure should be taken (income effect), but an increase in the wage makes leisure relatively expensive (substitution effect). The net effect is ambiguous when leisure is a normal good. Social security pensions, by reducing the price of leisure, lead to a reduction in labour supply. This model has nothing specific to retirement decisions and makes the assumption of intemporal separability, i.e. nothing is said about the relation between the utility function at time t and the utility function at time $t+1$ (the individual is supposed to have the same preferences over time). One argument for making this assumption is to consider that pensions are actuarially fair, i.e. that the actuarial premium does not alter the individual's expected income. Non independence of utility over time could wipe out any income effect of social security on retirement so that life-time models are more appropriate since there is no reason to consider that pensions are actuarially fair (that is the case for example when the pension value associated with early retirement exceeds that of normal retirement). In life cycle models it is not only the current pension value that influences the retirement behaviour but the ratio of current benefits to benefits receivable at all others ages. It is the entire path of pension entitlements as a function of retirement age that needs to be considered, since neither earnings nor pension benefits are independent of the date of retirement.

Another problem in evaluating the results is determining whether it reflects the impact of the substitution and the income effect or the impact of the shape of the age-earnings profile on retirement. A steeper profile (more rewarding work in later years relative to early years) is likely to encourage later retirement. Gordon and Blinder (1980) for example, find a positive impact of earnings on work: higher present value of earnings results in lower probabilities of retirement. This suggests that the substitution effect (leisure becomes more costly which discourages retirement) dominates the income effect (higher present value of earnings makes the individual richer which tends to encourage retirement). But if there is a correlation between the present value of earnings and the age-earnings profile slope, because of for example education (the more the individual is educated, the steeper is likely to be the age-earnings profile), then the Gordon and Blinder's result may pick up the effect of steeper profile on retirement rather than the substitution effect. This means that people retire later not because they are earning more at the end of their career, the lifetime income effect being swamped by the lifetime substitution effect, but because they allocate their lifetime leisure in a different way, taking more leisure in early periods and working more in later periods.

3.4 Disability insurance and disincentives to work

Theoretical framework

The incentive to work for disabled workers (workers eligible for disability benefits) is approached as a choice problem between either continuing in the labor market or applying for benefits and adjusting labour supply behaviour to conform with the eligibility rules. Thus this analysis only concerns people who are at least partially able to work. For such a person the problem consists of maximising two alternative utility functions depending on two options: the labour market option and the disability transfer recipiency option. The benefits of the first option involve the earned income for working minus the costs of working including the cost of leisure. For an impaired person the wage income may be inferior to the level earned when healthy, and future employment prospects may be uncertain. The benefits of the second option involve income from disability transfers and often medical care benefits awarded with disability benefits.

This framework of choice suggests that, for an impaired person, the smaller the potential wage rate associated with staying in the labour market and the lower the probability of finding employment, the higher will be the probability to leave the labour market. Conversely, the more generous the program benefits relative to potential wages, the more likely an impaired person is to apply for disability benefits.

The rules of the disability transfer program are decisive for assessing its impact on labour supply. The first rule to take into account is the wage income maximum criteria used for eligibility determination. Some programs allow the cumulation of wage income and transfer benefits conditional on a maximum earning (the wage income maximum criteria) without taking into account the worker's work potential. In this case the choice faced by the worker is more complicated. If wage earning is superior to the wage income maximum criteria he/she will not be eligible for benefits. The decision will depend on whether the additional leisure time gained if he/she were to receive benefits would offset the fall in total income of working not more than the wage income maximum criteria (i.e. if the substitution effect is superior to the income effect). If this is the case, a system which provides benefits to all impaired workers regardless of their ability to work (work potential) will tend to reduce the labor supply and will be "target inefficient".

The second rule to consider, which aim at offseting the target inefficiency, is the rule concerning the work potential according to which those who work

beyond the level indicated by the rule (whatever they wage) will not receive benefits. With such a rule the first disincentive effect is offset but a second disincentive is created: some impaired workers with the ability to work beyond the level of the work potential rule may reduce their work effort in order to qualify for benefits; they will do so if the gain (benefits plus leisure) is superior to the loss in wage income. .

The more liberal the work potential rule the more applications for benefits will increase. Conversely, the further the work potential level is from the worker's actual position the less likely he/she is to reduce work effort in order to become eligible.

Empirical evidence

Recent empirical studies of the work effort effect from disability transfers focus on older male workers. These studies are based on a model where the individual compares expected income streams associated with being in the labour market with income streams from being a disability transfer recipient and chooses that which maximise economic welfare.

Parsons (1980a, 1980b) finds that the probability of labor force participation falls significantly as the replacement rate (disability benefit/wage rate) rises. In both of his studies he found an elasticity of participation with respect to replacement rate ranging from –0.9 to –0.3, meaning that for a 10% increase in disability benefits the labor force participation rate will fall by 0.3 to 0.9%. With a different set of data Leonard (1979) found an elasticity of participation with respect to expected benefits of –0.52 suggesting as Parsons' studies, that receipt of disability transfers is a strong economic determinant. These results have been challenged by Haveman and Wolfe (1984a, 1984b) who estimated a model in which the individual compares expected income flows from the labour market and the disability transfer options. The income flows are defined as the total income flow associated with each option rather than from only a disability transfer program, as Parsons does. Their results suggest small but significant responses to expected income in the disability transfer option, the elasticity of the labour force participation with respect to disability transfer income ranges from –0.003 to –0.005 much smaller than the previous studies.

Haveman and Wolfe (1984a, 1984b) replicate the model of parsons on a different data set and obtain the same result as Parsons. But they show that by varying the specification (i.e. by introducing benefits and wage separately rather than in ratio form) leads to insignificant results. Furthermore, the correction of selectivity

bias associated with using only data on those with reported wages reduces the elasticity.

The evidence from these studies, after taking into account their methodological strengths and weaknesses, suggests that increasing disability benefits leads to a small but significant fall of labour force participation by older men.

Conclusion

The examination of the economic literature on disincentive effects of the different dimensions of the welfare state does not give a simple answer to the question of whether social policies reduce economic efficiency. The relationship between taxation, benefits and labour supply is a complex one. Most of the empirical results are dependent upon the underlying estimation method so that there is no clear and unequivocable statements. While this does not mean that nothing can be learned from empirical studies, one must be cautious when it comes to policy making. When disincentive effects are present, their magnitude is generally low. There are, however, some area where the attention should be particularly focused: the presence of poverty and the unemployment trap are probably the most interesting issues in terms of policy design. But one must remember that, when dealing with these questions, the studies only consider the supply side of the market and do not take into account the demand side. Disincentive effects are most meaningful when the supply is not rationed. The presence of poverty or the unemployment trap may be overestimated when the state of the labour market is such that there is no other choice for the individuals than to receive benefits.

As stressed by Atkinson (1987b), the economic literature on incentive effects of the welfare state has developed supply-side considerations with the risk of being unbalanced (the demand side analysis is ignored whereas it is often a determinant: for example the analysis of the impact of unemployment insurance on unemployment duration ignores the labor demand and the fact that suppliers are often constrained). This desequilibrium and the focus on disincentive effects tend to create the negative impression that benefit programs are largely dysfunctional. This analysis is a *partial* analysis. The first partial refers to the neglect of the demand side of the market. The second partial refers to the fact that analysis of a single market (such as the labour market) is only a part of the general equilibrium of the economy. A way to take into account the interdependencies characterising an action on a policy variable (here the social variable) consists of assessing the overall impact of the social policy on aggregate variables such as economic growth.

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working life: globalisation, economic development and employment; human resources, continued and further education; corporative collaboration;

everyday life: family, local communities, voluntary associations; norms, attitudes and values;

welfare services: health, care and social security, privatisation;

welfare benefits: pensions, income protection, inequality and poverty.

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