

# The economic effects of recipient-restrictions in transfer programs

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August 2007

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## **Preface**

This thesis has been written in connection with a project proposal from health and welfare department of Oslo municipality in which they wanted students to write masters thesis on the effects of economic housing instruments (økonomiske boligvirkemidler) on foreigners. In order to address the complete economic picture, however, I have in this thesis looked at several welfare schemes that may affect individuals' decision making and consumer choices. The thesis is mainly theoretical but the models discussed here can be compared to some of the welfare schemes used by Oslo municipality through health and welfare department and various urban districts (bydelene).

I would like to thank my supervisor Geir B. Asheim for the precision in his pieces of advice, for challenging and educative discussions, and for sacrificing his free time and holidays to enable me to deliver in time. Secondly, I would like to thank Marita Kristiansen, my contact person at the municipality, for the invaluable insight into how the municipality of Oslo works. Lots of gratitude also goes to Mona and Katrine for their information about how Oslo municipality functions at various levels, and to Vincent and Olga for proofreading my thesis.

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# 1. Introduction

The government through Oslo municipality devotes a reasonable amount of resources to redistribution of wealth from the rich to the poor. In an attempt to reach this redistributive goal, Oslo municipality uses a number of economic instruments to help those in economic difficulties. Two of these instruments are social help and the so called economic housing instruments (økonomiske boligvirkemidler) which include among others, rent allowance (bostøtte) and Husbanken's loaning systems. Rent allowance sums up to annual payments of 500 million kroner, and Husbanken loans out up to 700 million kroner each year, and over 900 million kroner was given out in social help to individuals in Oslo municipality in 2005, with about 25% given to individuals with foreign background.

## 1.1 Redistributive potential of transfers

Redistribution has a utilitarian motive and seeks to reduce the poverty gap in the society. That the poor in the society need help is an indication that the society admits that these people's situation is caused by circumstances outside their control, and that they themselves cannot change the situation. This is the case that most welfare policies and literature on welfare discuss (Blackorby and Donaldson (1988), and many more). An important issue raised in these papers is how to reduce the deadweight loss caused by over consumption of welfare goods and services. This over consumption is caused by individuals consuming goods and services that they do not qualify for. Recent development in welfare policies and literature has also turned its focus to the dynamic aspect of the issue, where through poverty alleviation programs, individuals (if possible) are in the long run helped to get over the poverty line. Most of this literature focuses on helping these individuals to get into the labour market or to be able to earn their own incomes through businesses. These discussions focus on how efforts made by individuals in one period, may affect their probability of getting into the labour market in another period. In such cases, as Besley and Coate (1992) put it, poverty is not only caused by bad luck, but also by individual decisions. The long-run dependence on social welfare in Norway is a problem that affects individuals who for certain reasons either cannot get into the labour market for the first time, or return to it after a fall out. The inability to work is mainly caused by health conditions and/or lack of relevant qualifications. However, when

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discussing immigrant employment in Norway, Bratsberg, Raaum and Røed (2006) argue that besides lack of relevant skills, discrimination and disutility of labour in the form of cultural preferences, may also explain the low participation of immigrants in the labour market. The long-run dependence on welfare assistance has especially been a topic of discussion on issues concerning immigrants and integration. Statistics show that on average immigrants, especially those with non-western background, depend on welfare assistance more frequently and over longer periods than the population in general. Generally, integration into the labour market has been extended to address integration into the social system, where when addressing immigrant issues and politics, labour exclusion, poverty and social exclusion have been addressed by similar policy instruments. The latest development has been the bringing together of the welfare offices (trygdekontor og sosialkontor) and labour office (Aetat) in an attempt to improve the services offered to the users.

Many arguments have been brought up in order to reduce the deadweight loss that is caused by this over consumption. Literature on welfare points out that when the policy makers do not have the information necessary to target the deserving recipients, then it should devise “self-targeting” mechanisms that induce only the intended recipients to participate with the others opting out (Gahvari and de Mattos (2004)). This is in line with John Mill (1848)’s characterization of poverty alleviation problem as how to give help to those who need it without unduly encouraging their reliance on it. One way to achieve this is by imposing certain restrictions on the participants, so that those who are not targeted do not find it beneficial to participate in these programs. See, among others, Nichols and Zeckhauser (1982), Blackorby and Donaldson (1988), and Besley and Coate (1991, 1992). These restrictions make the welfare gains less attractive and are used to screen or deter individuals from applying for transfers that they do not deserve. The screening argument is motivated by the desire to discourage the potential impostors from applying for welfare transfers, and thereby only the truly needy benefiting from the welfare assistance. The deterrent argument is according to Besley and Coate (1992) and is motivated by the idea that individual choices in the present period affect their state in a future state. The goal therefore is to induce all agents to exert their correct level of effort in all periods, so that those who can get and keep out of poverty. I will in this thesis discuss some of these arguments and compare them to the welfare system in Oslo.

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Individuals consume some amounts of consumption goods and leisure, and they have different preferences over different bundles of these goods. They have a labour income which they use to purchase some consumption goods. This labour income is earned by working a number of hours. This implies that there is a trade-off between the consumption good and the amount of leisure an individual can have. For a given numbers of hours worked, there are individuals with high income generating ability who earn higher than those with low income generating ability. There may also be individuals who have higher consumption costs than their income, so that although they have high income generating ability, they may still need economic transfers to cover their consumption costs. The government's objective then is to provide some transfers to those with low income and those with high consumption costs, so that they can afford consumption goods enough to sustain themselves. These transfers are in the form of cash- and in-kind-transfers.

An entry point to my discussion is to use a discrete choice model, where each individual chooses whether to apply for transfers, or not. The use of taxes to redistribute wealth and income is the most discussed instrument both in the society and in the economic literature. Many studies show that when there is a discrete choice between some goods then transfers may lead to redistribution. Besley and Coate (1991) do this when discussing public provision of private goods. In this thesis I will discuss a situation where the government taxes those with high income generating ability and those who do not have higher consumption costs than their income, and provides transfers to those with low income generating ability and those with higher consumption costs than their income, besides providing other welfare services.

I will in the next chapter discuss individual's labour-leisure choice given preferences and endowments, but without transfers. Then I will discuss the effect of transfers and specifically consider the non-distorting effects of lump-sum taxes. These discussions are held under the assumption that the government has full information about the individuals' income generating ability (here given by their wage levels) and preferences.

In reality, however, the government makes its decisions in an environment of asymmetric information, and in addition, cannot use lump-sum taxes to redistribute income. This causes a deadweight loss which the government must try to reduce in order to achieve its redistributive goal. I will in chapters 3, 4 and 5 discuss how restrictions on the recipients can be used to reduce this deadweight loss caused by imperfect information, and argue that as long as the

loss that these restrictions cause is less than their total gain, then their use can help reach the utilitarian objective of the government. The gains can be in the form of reduced poverty gap through redistribution of income, and/or an increase in labour skills, which may increase individuals' chances of getting into the labour market, thus reducing the number of the poor. How exactly to measure these losses and gains will not, however, be discussed in this thesis. I have in chapter 3, discussed the use of restrictions such as work requirement and reduced cash-transfers, and in chapter 4, the use of in-kind transfers to target the recipients. These discussions are based on a static model, which I move from in chapter 5 and look at how work requirement can be used in a dynamic set up to deter individuals from depending on welfare programs over long periods. In chapter 6, I compare the welfare programs of Oslo municipality to some of the instruments discussed in this thesis. The conclusion shall be presented in chapter 7.



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## 2. Individuals' labour-leisure choice given preferences and endowments

Assume an economy with  $N$  individuals who each lives for only one period. A representative individual has a labour income  $w$ , which he spends on a consumption good  $c$ , at price  $p$ . This consumption good is an aggregate of the individual's expenditure and includes expenditure on food, clothes and housing, among others. We assume that this individual has no other source of income, and in our one period model he has no reason to save anything. The individual has a given endowment of time which he can either use at work or for leisure. He exerts some level of effort  $e$ , measured in the amount of labour hours, in order to generate some income which is used to buy the consumption good. Leisure time costs in the form of consumption goods foregone. By normalising the endowed amount of time to 1, we get  $e = 1 - l$ . The representative individual has preferences over consumption and leisure given by the utility function,  $u(c, l)$ . In our model  $u(c, l)$  is increasing in each argument, strictly concave and twice differentiable.

### 2.1 Optimization

If the individuals take prices as given, then their decisions depend only on relative prices, so that we can treat one good as the numeraire and set its price to 1. I will follow the convention here, and treat the consumption good as the numeraire and set  $p = 1$ . The price of leisure in units of consumption is  $w$ .

### 2.1.1 The individual's problem

Each individual treats  $w$  as fixed and maximizes his utility subject his constraints, that is, each solves

$$\max_{c,l} u(c,l)$$

*subject to*

$$c + wl = w \tag{2.1}$$

$$0 \leq l \leq 1 \tag{2.2}$$

$$c \geq 0 \tag{2.3}$$

Equation (2.1) is the budget constraint and states that the total amount spent on consumption good plus that spent on leisure, must equal the total income earned through labour. Here labour is the only source of income. (2.2) states that leisure must be positive, and not exceed the total amount of time the individual is endowed with, and (2.3) is a non negativity constraint on consumption.

Given that  $u'_c(c,l) > 0$ , then the budget constraint will hold with equality.  $u'_i(c,l)$  is the partial derivative of  $u(c,l)$  with respect to argument  $i = c, l$ . We also assume that

$$\lim_{c \rightarrow 0} u'_c(c,l) = \infty; l > 0, \text{ and } \lim_{l \rightarrow 0} u'_l(c,l) = \infty; c > 0, \text{ this will ensure that the non negativity}$$

constraints on consumption and leisure will not be binding, and that in equilibrium, we will therefore never have  $l = 1$  because this would imply that  $e = 0$ , and  $c = 0$ , which wouldn't support existence. We can therefore ignore this case. We further assume that  $u(c,l)$  is quasi-concave in both arguments.

The optimization problem is now simplified to

$$\max_{c,l} u(c,l)$$

*subject to*

$$c + wl = w$$

The Lagrangian for the problem is

$$L = u(c, l) + \lambda(w - wl - c),$$

where  $\lambda$  is the Lagrangian multiplier. The restrictions on the utility function ensure that there is a unique optimum which is characterized by the following first order conditions:

$$\frac{\partial L}{\partial c} = u'_c(c, l) - \lambda = 0 \quad (2.4)$$

$$\frac{\partial L}{\partial l} = u'_l(c, l) - w\lambda = 0 \quad (2.5)$$

$$c + wl = w$$

(2.4) and (2.5) give us;  $u'_c(c, l) = \frac{u'_l(c, l)}{w}$ , which can be written as  $\frac{u'_l(c, l)}{u'_c(c, l)} = w$  and states that

the marginal rate of substitution (MRS hereafter) of leisure for consumption equals the wage rate, or in other words; the amount of consumption goods the individual is willing to give up in order to get one more unit of leisure of equals the wage rate.

From (2.1) we get  $\frac{dc}{dl} = c'(l) = -w$ , which gives us the opportunity costs of leisure in terms of consumption good. We see that an extra unit of leisure will cost the individual  $w$  units of forgone consumption goods.  $-w$  is the slope of the curve we get when we rewrite the budget constraint by expressing consumption as a function of leisure, that is  $c = w(1 - l)$ .

The MRS measures the value that the individual places on one extra unit of leisure relative to that of consumption goods, whereas the opportunity cost is quantified by amount of consumer

good he has to sacrifice. We see that  $\frac{dc}{dl} = -\frac{u'_l(c, l)}{u'_c(c, l)}$  which implies that when the individuals

maximize their utility then their marginal rate of substitution equals their opportunity cost.

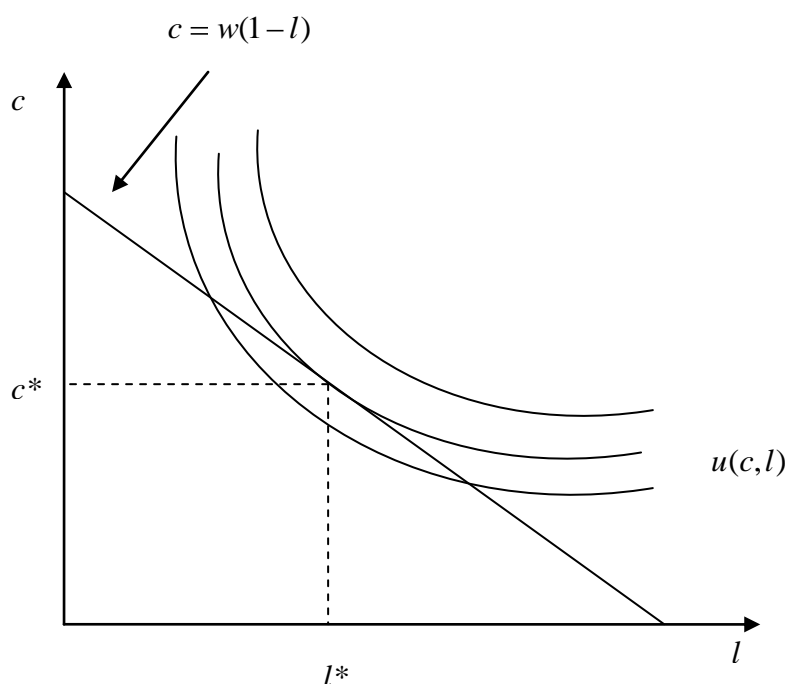


Figure 2.1

For a given wage level, the individual can increase his consumption by working more. The budget constraint makes it impossible to increase both consumption and leisure given that the wage rate remains unchanged. Different bundles of consumption good and leisure may give different levels of utility.

For given utility function and wage rate, the individual's optimal allocation is given by

$\frac{dc}{dl} = -\frac{u'_l(c,l)}{u'_c(c,l)}$ . This is shown in figure 2.1 by the point where the budget curves tangents the

utility curve. For any  $l < l^*$  on the budget constraint, the individual can increase his utility by increasing his amount of leisure. And for any  $l > l^*$  on the budget constraint, the individual can increase his utility by reducing his amount of leisure. For given utility function and wage rate, the individual cannot use his labour inputs to raise his utility to any level above the point

where  $\frac{dc}{dl} = -\frac{u'_l(c,l)}{u'_c(c,l)}$ . That is why we say that this allocation is optimal.

## 2.2 Endogenous labour supply

Our representative individual allocates his time between activities in the economic market (labour) and all other activities (leisure),  $e + l = 1$ , and earns wages  $w$  for each labour hour which he spends on the consumption good  $c$ . This implies that he can afford  $we$  amount of the consumption good for working  $e$  hours, and we get  $c = we = w(1 - l)$  which can also be written as

$$l = 1 - \frac{c}{w} \quad (2.6)$$

Note that (2.6) can also be derived from the budget constraint (2.1).

### 2.2.1 The effects of wage level on labour-leisure choice

*The intra-temporal substitution effect:* Substitution effect is the effect where a price change affects the slope of the budget constraint, but leaves the consumer on the same indifference curve. This effect causes the consumer to substitute away from the good that becomes comparatively more expensive. Suppose now that there is an increase in the wage rate. Higher wages make labour more productive which effectively increases the opportunity costs of leisure; the individual may thus choose to stay at the same level of utility and substitute leisure for the labour. He therefore works more. An increase in the number of hours worked increases the amount of consumption goods affordable.

*The intra-temporal income effect:* Higher wages means more income for the same amount of labour input; hence the individual may find it optimal to maximise his utility by increasing both consumption and leisure. An increase in income (caused by increase in  $w$ ) shifts the new budget constraint upwards, and thus the individual can achieve a higher utility level. An increase in wage rates here leads to an increase in both the amount of consumption goods leisure consumed by the individual, and the individual increases his utility.

A positive change in wages will therefore lead to a positive change in consumption through both the intra-temporal substitution effect and the income effect. The change in leisure, however, depends on whether the substitution or income effect is dominant. A greater

increase in  $c$  relative to that of  $w$ , leads to the substitution effect being dominant since  $\frac{c}{w}$  in (2.6) increases and  $l$  decreases. If  $c$  increases relatively less than  $w$ , so that  $\frac{c}{w}$  decreases, and  $l$  increases, then the income effect is dominant. If the substitution effect dominates over the income effect, then an increase in wages leads to a decrease in leisure. If the income effect dominates over the substitution effect, then an increase in wages leads to an increase in leisure. If the two effects are equal, then labour leisure choice is not affected by the wage level.

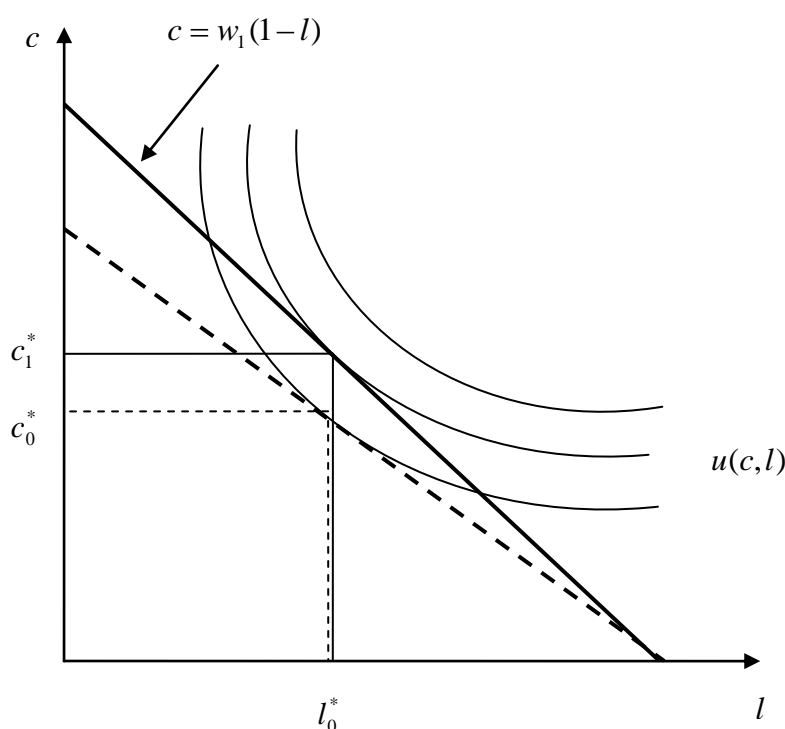


Figure 2.2

Figure 2.2 illustrates a case where an increase in the wage level leads to an increase in both the consumption good and leisure, but the increase in leisure is almost negligible.

## 2.3 Diversity in wage rates

In reality, different individuals earn different amounts of hourly wages depending on their qualifications, working experience, and sector of labour. For simplicity, let our economy have two individuals, one with a low hourly wage rate  $\underline{w}$ , and another with a higher hourly wage rate  $\bar{w}$ . From (2.1) we get  $c = w(1-l)$ , which expresses consumption as a function of leisure. Figure 2.3 shows the adjustment of the amount of consumption good for given values of  $w$  and  $l$ .

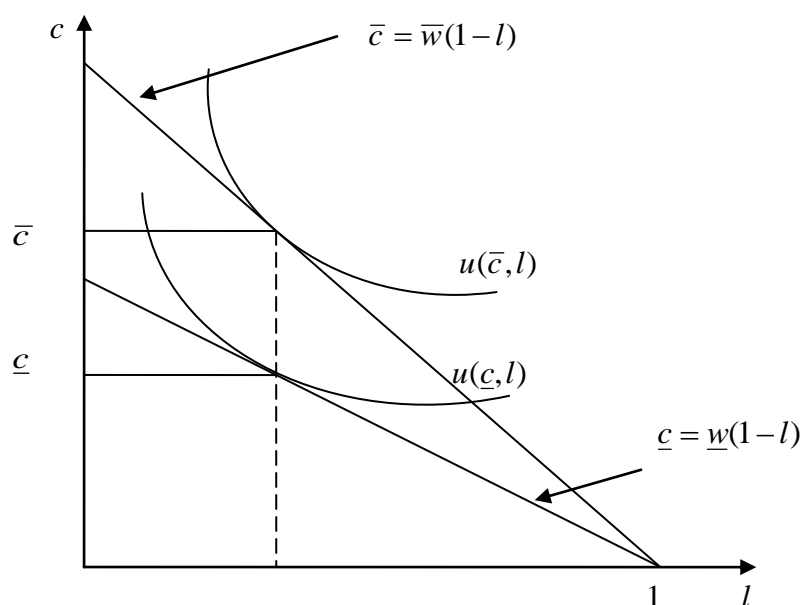


Figure 2.3

For any amount of leisure, the individual with the lower wage rate earns less than the one with higher wage rate. The relation between wage rate and effort also reflects the opportunity costs of leisure. Consumption goods are more costly for the individual with low wage rate than the individual with high wage rate, which gives difference in levels of utility reached for any given amount of leisure. In our two individuals' economy, we define the poor as the individual who for any level of effort, has lower income level. This individual has a low income generating ability represented here by  $\underline{w}$ . From figure 2.3, we can also see that this individual has a lower amount of leisure time for any level of consumption good. Assuming that both individuals have the same preference over given bundles of consumption goods and

leisure, then the individual with low income generating ability has lower utility of consumption goods and leisure for any given effort level or amount of consumption good. I will in the next section define the individual with low income generating ability as poor and the one with high income generating ability as rich.

In the discussion above, the ability is in the form of income generating ability which gives different wage levels. Individuals may for health reasons, however, have high disutility of labour and thereby be forced to reduce their labour hours, which would affect how much labour income they get in total. In such a case, we may refer to the individual with high disutility of labour as poor. Another group that may be categorised as poor are those with high relative utility of income. For them it is so that for any level of income, they have relatively higher consumption expenses than others of the same income and income generating ability. These consumption costs could be due to size of the family, medical treatment, special housing, or transport situation. This forms the backdrop for my discussion, where individuals are either poor or rich, and there is a benevolent policy maker whose goal is to tax the rich and offer some transfers to the poor. In my simplified model with only two individuals, I will consider one poor and another rich, or one with low ability and the other high ability.

## 2.4 Use of social assistance

If we assume that each individual only has his labour income as his source of income, then for any given level of consumption, the individual provides  $1-l$  amount of labour, given the budget constraint and the fact that  $0 \leq l \leq 1$ . Utilitarianism is an ethical theory that says that the moral worth of an action is determined solely by its contribution to overall utility. The government's redistributive objective is based on this theory, and can here be captured by supposing that it offers some economic transfer to the low ability individual so as to increase his utility. Given that we have two types of individuals (one with low ability and the other with high ability) the government's intervention is such that it gives transfers to the low ability individuals, while preserving the incentives of the one with high ability to make choices that will put him in a position to work and pay taxes to cover the transfers to the low ability individual.



The welfare system works in a way such that the low income individual receives an economic transfer equal to  $A$ , while the high income individual pays taxes to cover this transfer. In this benchmark case, I assume that there is full information and the government can observe the individuals' earning abilities and preferences. Besley and Coate (1992) examine a similar situation when presenting a benchmark case for discussing the use of poverty alleviation programs. In addition to assuming full information, the authors also assume that each individual has quasi-linear preferences defined over income and work. This corresponds to my utility function,  $u(c, l)$  where  $l = 1 - e$  as defined before.

I will in the next section show that lump-sum transfers in the form of social help are efficient, in that they do not distort the Pareto optimum allocations of labour and leisure.

### 2.4.1 The non-distorting effect of lump-sum transfers

Lump-sum tax, is a tax where each individual pays a fixed amount independent of the level of his or her income. The amount each individual pays may vary, given his ability (in order to generate redistribution), but does not vary with how much effort he exerts. Economic literature generally supports the fact that this kind of taxes is the most suitable instrument to use, since it does not distort the labour leisure choice (Blackorby and Donaldson (1988), Kevin Roberts (1984), Nichols and Zeckhauser (1982), Hylland and Zeckhauser (1979)). This is to say that when lump-sum taxes is used, then the Samuelson condition that  $MRS = MRT$ , or opportunity costs as in our case, is met and the individuals do not wish to change their labour-leisure allocations.

To set up a benchmark case for further analysis of welfare instruments, I will here consider the use of optimal lump-sum transfers, assuming that the policy makers have full information about the potential applicants' preferences and wage rates. For any amount of hours worked, the low ability individual now gets his labour income  $\underline{w}(1-l)$  plus some welfare endowment  $A$ , which is in the form of lump-sum transfers. The high ability individual, on the other hand, has a labour income  $\bar{w}(1-l)$  and pays a lump-sum tax  $A$  to cover the transfers to the low ability individual. Each individual chooses freely on what to spend his after transfer/tax income. The preference over consumption and labour has not changed and the utility function,  $u(c_i, l)$  where  $c_i = \underline{c}$  or  $c_i = \bar{c}$  still fulfils the same conditions as before.

The poor individual's problem now is

$$\begin{aligned} & \max_{c,l} u(c,l) \\ & \text{subject to} \\ & c + wl = w + A \end{aligned} \quad (2.7)$$

(2.7) is the new budget constraint. Total income now is labour income plus the welfare endowment, and this equals the total amount spent on consumption good plus that spent on leisure.

The Lagrangian for the problem is

$$L = u(c,l) + \lambda(w + A - wl - c),$$

$$\frac{\partial L}{\partial c} = u'_c(c,l) - \lambda = 0 \quad (2.8)$$

$$\frac{\partial L}{\partial l} = u'_l(c,l) - w\lambda = 0 \quad (2.9)$$

$$c + wl = w + A$$

(2.8) and (2.9) give us  $\frac{u'_l(c,l)}{u'_c(c,l)} = w$  and as before we find that the marginal rate of substitution

of leisure for consumption equals the wage rate.

From (2.7) we get  $\frac{dc}{dl} = c'(l) = -w$ , and again as above, we find that  $\frac{dc}{dl} = -\frac{u'_l(c,l)}{u'_c(c,l)}$  which

implies that individuals maximize their utility when their marginal rate of substitution equals their opportunity cost. We see that the individuals' utilities are maximised when MRS equals opportunity costs, exactly like in the case when labour income was the only source of income. This implies that the lump-sum transfers do not distort the optimal allocation of labour and leisure. That the low ability individuals can now work less for the same amount of total income is an intended distributive objective of the transfers. The high ability individual now allocates his labour-leisure choice to a point where his MRS equals his opportunity costs given the lump-sum taxes he has to pay, and ends up at  $\bar{l}^*, \bar{c}^*$  as illustrated in figure 2.4. The

low ability individual maximises his utility given now his wage rate and the transfers he is legible to, and ends up at  $l^*, c^*$  as illustrated in figure 2.5. These points give Pareto optimal allocations in that no individual can be made better off without making the other worse off. Lump-sum transfers, we can therefore say, move the allocations from one Pareto optimal to another.

In the case above the use lump-sum transfers and given perfect information makes it straightforward for the government to devise a separating scheme, so that only to those who are eligible benefited from the transfers. It has the information of each individual's income generating ability and preference, and imposes some lump-sum taxes on those with high ability, and gives lump-sum transfers to those with low ability. If  $Y$  is the after-transfer taxes for the individuals, then such a policy will give an individual with a wage level,  $w$  an income profile defined by

$$Y = \begin{cases} w(1-l) + A & \text{if } w = \underline{w} \\ w(1-l) - A & \text{if } w = \bar{w} \end{cases} \quad (2.10).$$

Individuals with different levels of ability, will now face new budgets line shown by the bold lines in figure 2.4 and 2.5.

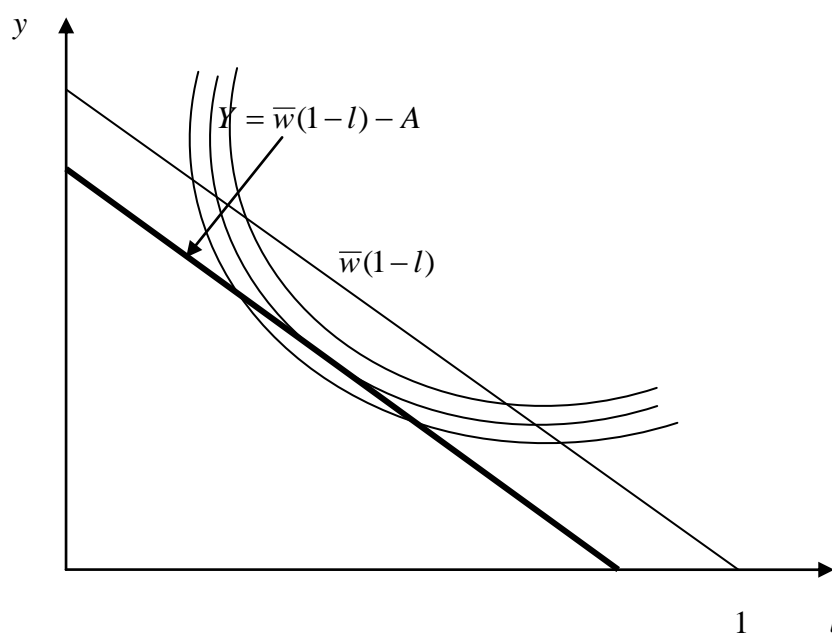


Figure 2.4

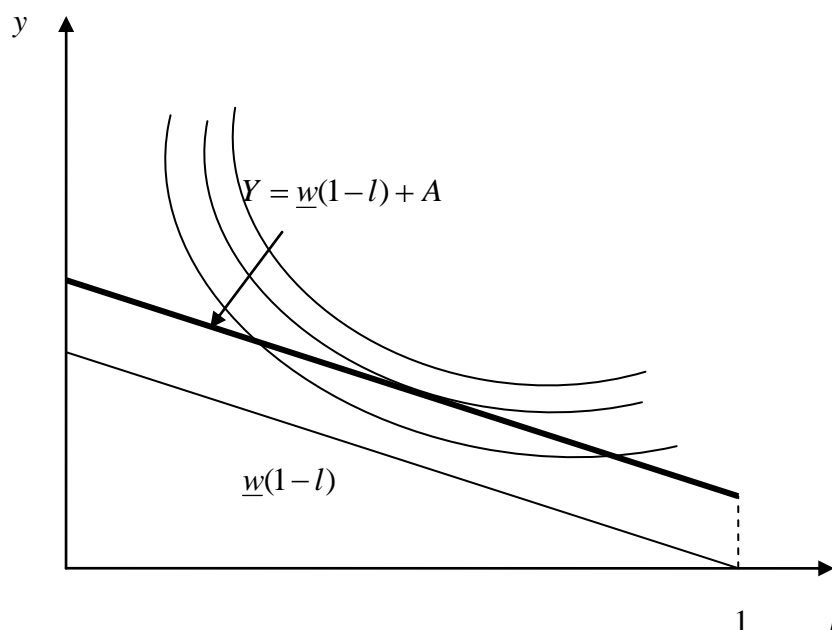


Figure 2.5

In reality, the government makes its decisions in an environment of asymmetric information (and not the one with full information as assumed in the discussions above), which makes the application of lump-sum transfers impossible. Most economic discussions, therefore, concentrate on the measures available which can be used to more efficiently reach the government's redistributive goal. The assumption that all individuals have the similar preference over similar bundles of consumption goods and leisure is also not met in reality. These deviations from the assumptions of full information, and those under which lump-sum tax was discussed lead to different results, and in particular cause deadweight loss (Harris and Townsend (1981), Nichols and Zeckhauser (1982)). The government cannot therefore achieve the Pareto optimal allocation, and must take its environmental conditions into account when designing its transfer schemes. The transfer schemes achieved when not all optimal conditions are met are referred to as second-best Pareto optimal schemes. This is in comparison to the first-best Pareto optimal schemes that can be achieved under full information.

## 2.5 Detering individuals from diverging from their optimal allocation, designing separating schemes

A situation where the government or the policy maker is unable to observe individuals' ability, wage level, or preference, makes it impossible for it to design a first-best transfer schedules. It must instead resort to second best transfer schedules based on the indicators it has, and target efficiency among individuals, so that those who are not eligible do not gain from claiming the transfers. The process where the government makes the first move, in order to get the right information from the applicants, and thereby discouraging the potential impostors from applying for transfers, is called screening.

In the dynamic set-up, Besley and Coate (1992) introduce the concept of deterrence which they discuss through the application of work requirement. Under work requirement, recipients have to meet certain participation requirements in order to receive welfare benefits. These requirements are often a combination of activities that are intended to improve the recipient's employment prospects (such as training, rehabilitation and work experience) and those designated as contributing to society (such as unpaid or underpaid work). We can therefore refer to work requirement, as welfare with restrictions. According to Besley and Coate (1992), the deterrence argument of work requirement enables us to capture the idea that poverty depends not only on luck, but also on choices made earlier in life. We therefore see how individuals' *ex ante* choices influence their future earning ability. In an asymmetric information set up, we will see that restrictions may serve as incentives for those who do not qualify not to apply for transfers. Nichols and Zeckhauser (1982) argue that an optimal transfer program in general may have to sacrifice productive efficiency in order to target recipient efficiency, and suggest that one way of doing this is by imposing restrictions on recipients. Other restrictions include; reducing minimum income that qualifies one to receive transfers, using more efforts to ensure that the information given is correct, the latter may, however, not be achieved in practice. Restrictions on consumption bundles through in-kind transfers and giving some information rent, can also be used to induce individuals to reveal their true income generating ability. We will see when discussing these restrictions, that the government must sacrifice some efficient allocation in order to target efficiency among the individuals. I will argue that the allocations achieved through restrictions on beneficiaries, however, improve the performance of the programs. This is the same as the finding by

Hylland and Zeckhauser (1979), who concluded that by imposing restrictions on beneficiaries, programs will perform better than those that rely solely on income taxes and (cash) transfers.

In reality and as assumed in this paper, there are high ability individuals who for a reasonable tax level will prefer exerting their optimal effort level and pay taxes, to working less or not working at all, and claiming transfers. There are also low ability individuals who are eligible to receive transfers. These two groups do not add any problems to the government's decision making. There are, however, those individuals who by reducing their labour input and applying for transfers, may get a higher utility than the one they would get from working the optimal amount of hours, and depending only on their labour income. If not addressed by the transfer schemes in an asymmetric information environment, then these individuals may claim transfers that they do not qualify for, and lead to higher costs for the governments, thus undermining its redistributive objectives.

I will in the next sections discuss how, by using different restrictions, the government can design separating schemes where individuals exert their optimal level of effort and only those truly deserving benefit from transfers.

### 3 Imperfect information: Poverty caused by income generating ability

Consider a situation where poverty is caused by the ability to generate income, with the low ability individual referred to as poor and the high ability individual, rich. As discussed in the previous section, for any given tax/transfer level there will be three types; those who will work and pay taxes, those who may pretend to be of low ability and apply for transfers, and those who truly deserve transfers. But also as mentioned there, the problem with asymmetric information set-up is that of separating the potential impostors from the truly deserving applicants. It is these two groups which the individuals I discuss in this thesis, represent.

$e = (1 - l)$  implies that each individual's preference can be expressed as a function of the consumption good and effort. The low ability individual receives low hourly wages  $\underline{w}$ , which for a given number of labour hours gives him some low labour income denoted by  $\underline{w}(1 - l)$ . The high ability individual, on the other hand, receives high hourly wages  $\bar{w}$ , which for a given number of labour hours gives him some high income denoted by  $\bar{w}(1 - l)$ . The redistributive objective of the government is to give the low ability individual some transfer  $A$ , so that he can end up at a utility level higher than the one he would have if he only had his labour income. This can, for example, be achieved when  $A$  is such that for any number of hours, he can get more units of the consumption good. This increases the low ability individual's utility of the consumption good and leisure. The high ability individual, on his side, pays taxes to cover the transfers, a condition that reduces his utility of the consumption good and leisure. We assume that  $\underline{w}$  and  $\bar{w}$  are known, but the government cannot observe what type each individual is. Consumption equals total income, which equals labour income plus transfers, that is  $c = y = w(1 - l) + A$ .

An optimal transfer scheme should be such that the high ability individual pays taxes to cover the transfers to the low ability individual. For such a scheme to be implemented, however, it must be incentive-compatible, that is, the high ability (low ability) individual must prefer his tax (transfer) package to the one he gets by pretending to be of low ability (high ability). In such case the high ability individual works  $(1 - \bar{l}^*)$  hours, earns  $\bar{y}^*$ , and pays taxes,  $T = A$ .

The low ability individual works  $(1 - \underline{l}^*)$  hours which gives  $\underline{y}^*$  in labour income, and he receives a transfer,  $A = T$ . The optimal effort level for the high ability individual equals the number of hours he works, and at optimal  $\bar{e}^* = (1 - \bar{l}^*)$ . For the low ability individual  $\underline{e}^* = (1 - \underline{l}^*)$ . In an environment of full information then the benchmark model is implementable.

### 3.1 Only income is observable

Suppose now that the government can observe individuals' income but not their income generating ability. The government is, in this case, not in a position to devise a scheme which can separate the deserving applicants from pretenders depending on their abilities.

#### 3.1.1 Income taxes

If the government can observe income, but not the income generating ability of the individuals, then it can use income taxes to reach its redistributive objective.

Since the low ability individual earns less than the high ability individual, for any amount of effort, the government can set up a policy where individuals with low income get transfers and those with high pay taxes. Our two individuals are now such that the low ability individual is the intended beneficiary. The individuals consume all their total income so that we have  $c = y + A$ , where  $A$  is positive for the poor and negative for the rich, and  $y = w(1 - l)$ . The tax and transfers, in that case, depend on the level of income, and the income tax is particularly a function of the income.

Let  $y^{\min}$  be the minimum income necessary to meet the consumption needs of any individual. The government could decide that those who earn less than  $y^{\min}$  get some transfer  $A = (y^{\min} - w(1 - l))$ , while those with income above  $y^{\min}$  pay some non-distorting tax, which can be fixed at  $T$ , like in the case with full information. Lack of information on income generating ability, however, creates a problem here in that individuals may work fewer hours



in order to earn  $\tilde{y} < y^{\min}$ , and qualify for the transfers  $A = y^{\min} - \tilde{y}$ . In particular, individuals with  $u(\tilde{y}^* - T, \tilde{l}^*) \geq u(A, 1)$  may choose not to work at all, and receive  $A = y^{\min}$ . This is true for both high ability and low ability individuals. The condition of reduced labour supply, however, reduces the gains of pretending to be poor because of reduced income, and the benchmark transfer scheme is only implementable if

$$u(\tilde{y}^* - T, \tilde{l}^*) \geq u(A, 1) \quad (3.1)$$

and

$$u(\underline{y}^* - T, \underline{l}^*) \geq u(A, 1) \quad (3.2)$$

are met. That is, if the high ability individual prefers claiming no benefits to reducing his labour supply to  $(1 - \tilde{l}) = 0$ , and consuming  $A = y^{\min}$ . The low ability individual, in that case, does not work at all and claims transfers equal to  $A$ . There is redistribution from the high ability individual to the low ability individual. This scheme is, however, not efficient in that the low ability individual maximizes his utility by adjusting to point  $(y^{\min}, 1)$ . He does not work at all and claims transfers equal to  $A$ , as shown in figure 3.1. (The bold continuous line is the opportunity curve for the high ability individual, while the bold dotted line belongs to the low ability individual.)

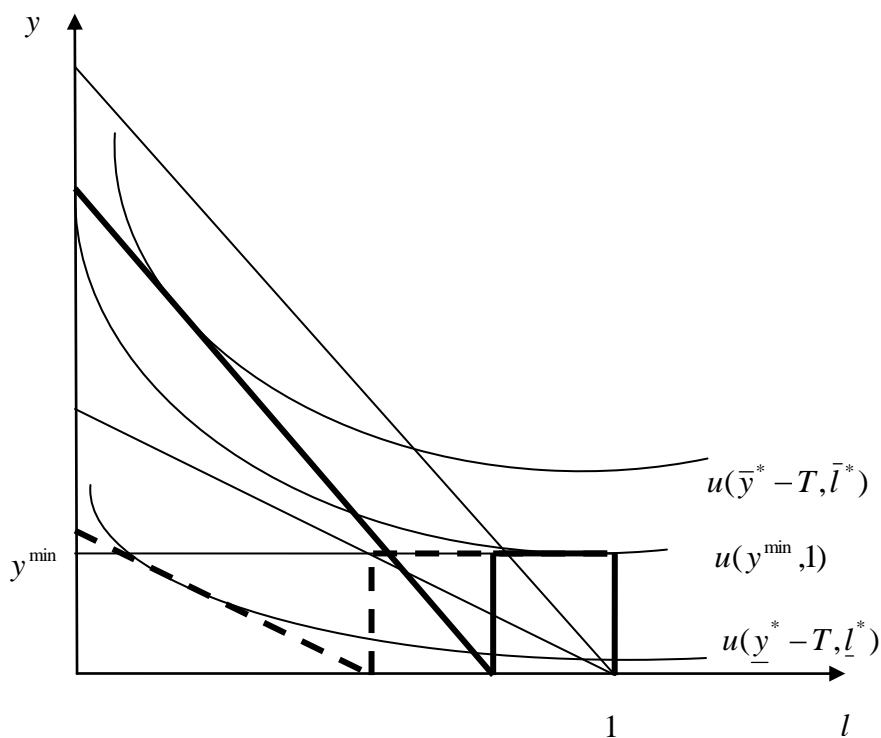


Figure 3.1

If condition (3.1) is met, but not (3.2) such that, instead of (3.2) we have

$u(\underline{y}^* - T, \underline{l}^*) \geq u(y^{\min}, 1)$ , then nobody would apply for transfers and the scheme would not

lead to any redistribution. In the case where condition (3.2) holds, but (3.1) is not met so that instead of (3.1), we have  $u(\underline{y}^* - T, \bar{l}^*) \geq u(y^{\min}, 1)$ , then the problem of implementation remains and the policy maker cannot separate the low ability individual from an impostor of high ability. The use of lump-sum cash transfers leads to a deadweight loss, in that both individuals apply for transfers and nobody pays taxes. The allocations are thus inferior to the first best allocations which we get when we have full information. Furthermore, if all individuals were to apply for transfers, then the government's budget constraint (taxes equal transfers) would collapse.

If the government now decides that those who earn less than  $y^{\min}$  get the transfer

$A = (y^{\min} - w(1-l))$ , but chooses an income tax  $h(y)$  for those with income above  $y^{\min}$  to

cover the transfers, then we get new opportunity lines as shown in figure 3.2. The redistributive effects of this scheme, however, remain the same as in the case with fixed tax level,  $T$ .

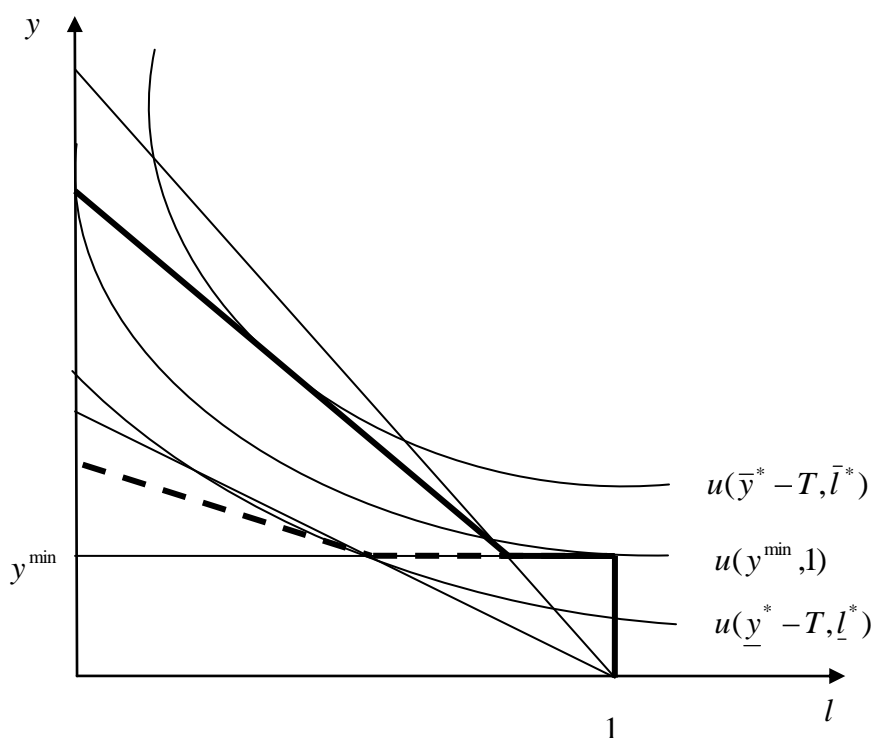


Figure 3.2

The government's intention is not to discourage individuals from working as is in the case of the two income tax schemes discussed above. I will now discuss a model that offers transfers to the low ability individual, while preserving the incentives of both the high ability and the low ability individuals to work.

Let now  $y^{\min}$  be such that the individual with an income level equal to or less than  $y^{\min}$ , gets a transfer  $A$ . The highest consumable (after transfer) income for such an individual is  $y^{\min} + A$ . Let  $y^{\max}$  be such that an individual with income level equal to or greater than  $y^{\max}$ , pays a tax  $A$ , to cover the transfers given to the poor and does not end up at an after-tax income level less than  $y^{\min} + A$ , that is to say  $y^{\max} - A \geq y^{\min} + A$ . Individuals with labour income between  $y^{\min}$  and  $y^{\max}$  pay some income tax,  $T = h(y)$ .

The government's problem now is to choose a tax scheme so that some amount  $A$ , is transferred to those with income less than  $y^{\min}$ . Since the low ability individual does not have an incentive to imitate the high ability individual, we have no need to use marginal taxes, and

so for incomes above  $y^{\max}$ , the government can use some fixed taxes. The tax level, however, should be such that the high ability individual still prefers working and paying taxes to reducing his effort level and claiming transfers. The incentive constraint for the high ability individual then is  $u(y - T, \bar{l}^*) > u\left(y^{\min} + A, 1 - \frac{y^{\min}}{w}\right)$ . The government now chooses  $A = T$ , and for any given values, it also chooses  $y^{\min}$ , such that

$u(y - T, \bar{l}^*) = u\left(y^{\min} + A, 1 - \frac{y^{\min}}{w}\right) + \varepsilon$ , where  $\varepsilon$  is very small. In so doing, the government

can make sure that the high ability individual works and pays taxes. The low ability individual maximises his utility at  $\left(y^{\min} + A, 1 - \frac{y^{\min}}{w}\right)$ . The government offers a marginal tax rates  $h(y)$

between  $y^{\min}$  and  $y^{\max}$ , and this can be up to 100% because nobody allocates his labour leisure choice between these points.

$$h(y) = \left\{ \begin{array}{l} A \\ h(y) \\ -A \end{array} \right\} \left. \begin{array}{l} \text{if } w(1-l) \leq y^{\min} \\ \text{if } y^{\min} \leq w(1-l) \leq y^{\max} \\ \text{if } w(1-l) \geq y^{\max} \end{array} \right\} \quad (3.2)$$

For an individual with wage rate  $w$ , such a scheme gives the opportunity lines shown by the bold lines in figure 3.3. The continuous line is for the high ability, and the dotted line is for the low ability individual.

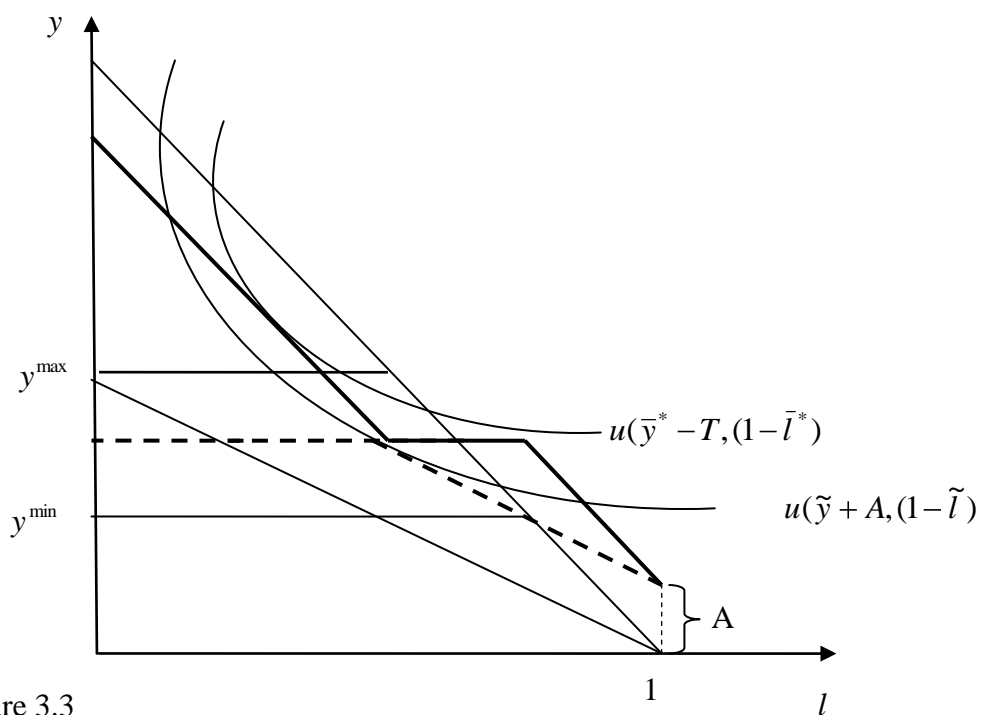


Figure 3.3

The tax function is now as given in figure 3.4.

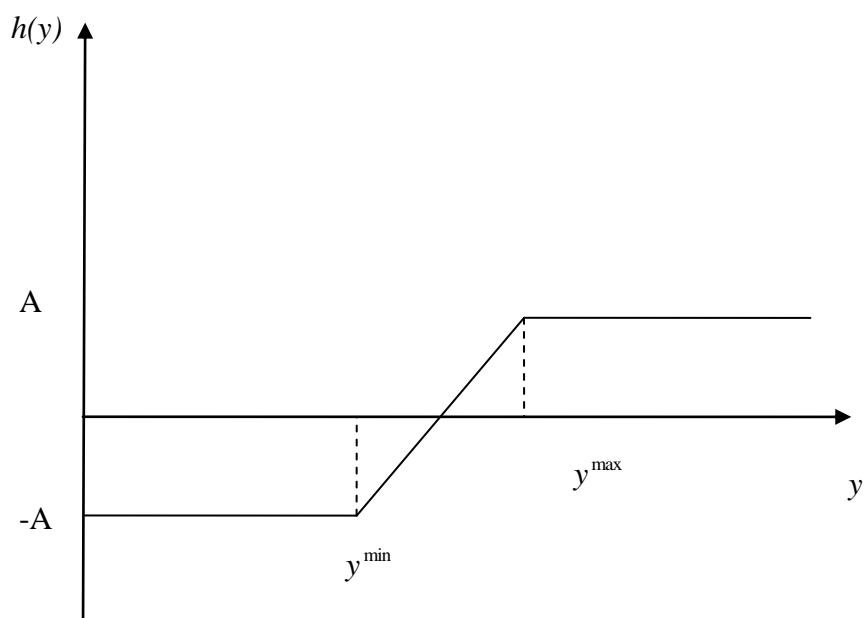


Figure 3.4

If the utility curves are not as “well behaved” as in figure 3.3, then the high ability individual may choose to reduce his labour input so as to qualify for transfers. In particular, if he has

$1 - \frac{y^{\max}}{\bar{w}} \leq \bar{l}^* \leq 1 - \frac{y^{\min}}{\bar{w}}$ , then he may choose to reduce his labour input and maximize his utility at  $\left( y^{\min} + A, 1 - \frac{y^{\min}}{\bar{w}} \right)$ . This because, the individual does not lose any income by reducing his labour input. Individuals' optimal labour-leisure choice depend on the government's choice of A and  $y^{\min}$ .

For any level of A, a reduction in  $y^{\min}$  reduces the number of hours the individuals can work in order to gain from the transfer benefits. If we have  $y^{\min} = 0$ , then an individual with  $1 - \frac{y^{\max}}{w} \leq l^* \leq 1 - \frac{y^{\min}}{w}$  will choose to adjust at (A,1) as we discussed before. Reducing  $y^{\min}$  without increasing A, however, reduces the distributive objective of the government. The gap between the high ability individual's utility curve and that of the low ability individual may therefore not be a desirable solution.

Let the timing of the scheme be such that the government chooses a transfer level  $A=T$ , then given that level, chooses  $y^{\min}$  and thus  $y^{\min} + A$  and  $y^{\max}$ .

### Changes in A

A tax reduction from  $T_0$  to  $T_1$  leads to the high ability individual paying less tax and increases his utility for any effort level. If the government decreases A, but keeps

$u(y - T, \bar{l}^*) = u\left( y^{\min} + A, 1 - \frac{y^{\min}}{\bar{w}} \right) + \varepsilon$ , then we have (as shown in figure 3.5)  $y^{\min}$  increasing

from  $y_0^{\min}$  to  $y_1^{\min}$ , and  $y^{\max}$  increasing from  $y_0^{\max}$  to  $y_1^{\max}$ , so that the redistributive objective is kept. The low ability individual must, however, now work more in order to

maximise his utility at  $\left( y_1^{\min} + A_1, 1 - \frac{y_1^{\min}}{\bar{w}} \right)$ . A very low A, however, may not lead to significant redistribution.

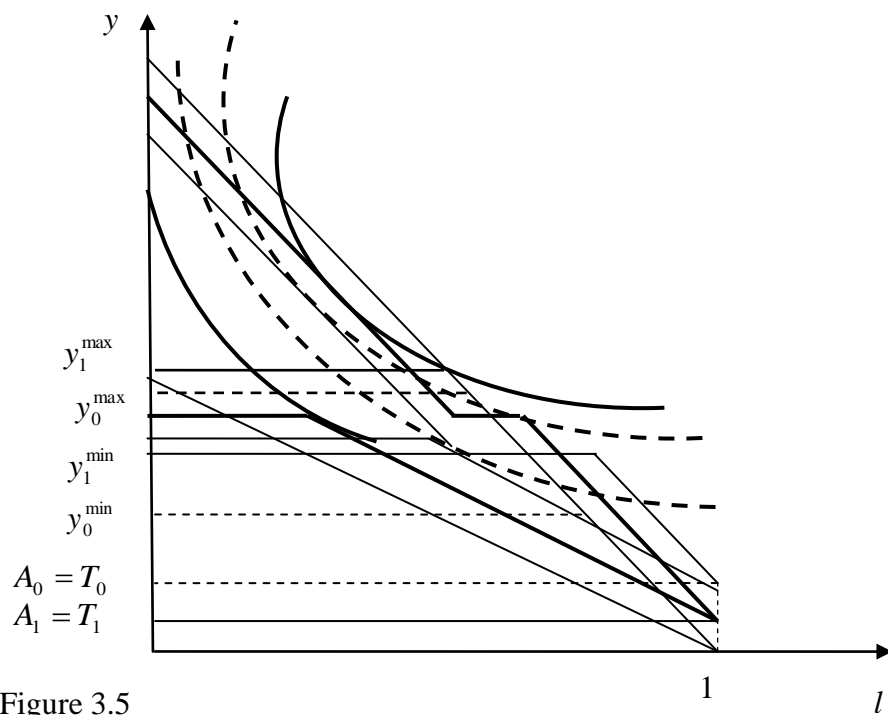


Figure 3.5

The government can adjust  $A$  to create restrictions on the recipients and reduce over consumption of the welfare transfer. An increase in the labour demand for the low ability individual reduces the gains of being poor. Such an increase can be used to deter the potential impostors from pretending and induce them to exert their efficient level of effort.

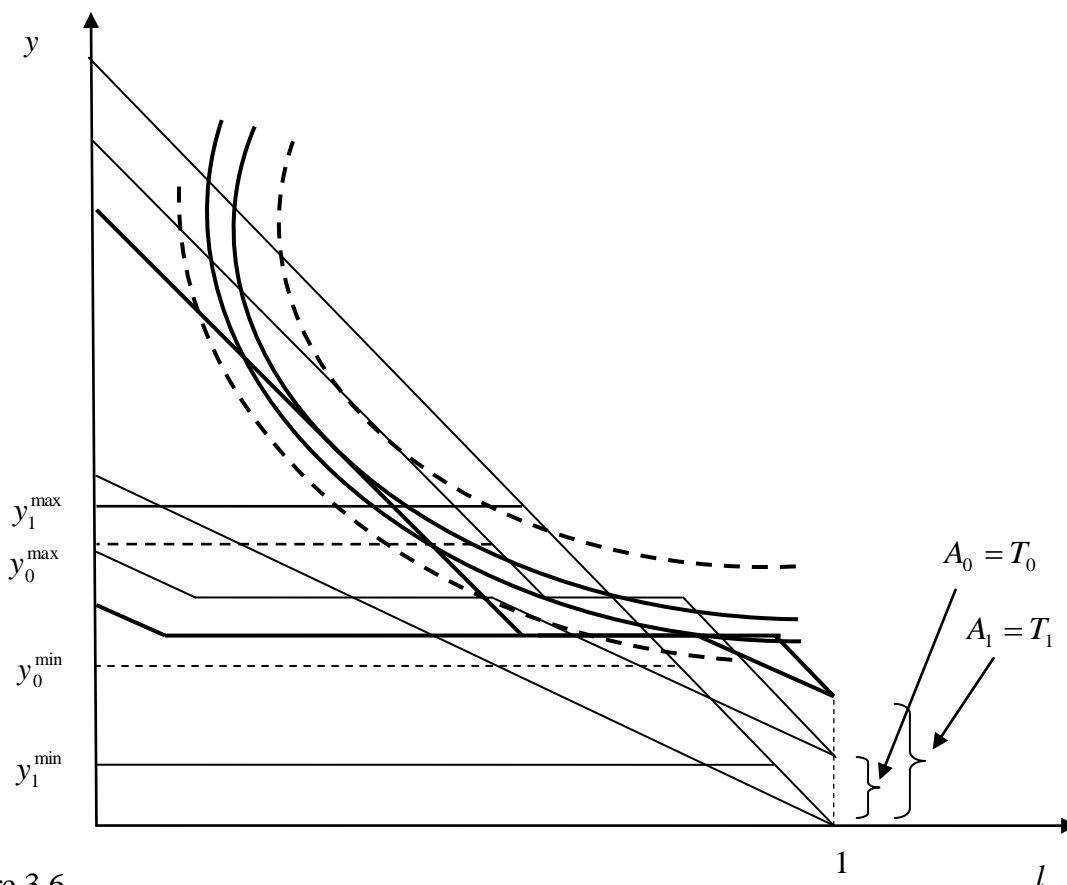


Figure 3.6

If the government, on the other hand, increases  $A$ , then it has to subsequently reduce  $y^{\min}$  so that the high ability individual does not pretend to be of low ability. An increase in  $A$  reduces the poverty gap (as shown in figure 3.6) by the reduced difference between the utility level of the high ability individual and that of the low ability individual.

A reduction from  $y_0^{\min}$  to  $y_1^{\min}$ , also enables the government to increase taxes without the fear of the high ability individual pretending to be of low ability. Thus, the government is able to collect enough taxes to cover the amount needed for the transfers to the low ability individual. A very high  $A$  and very low  $y^{\min}$  may, however, lead to the low ability individual adjusting to  $(A,1)$ , as before. This therefore limits the process of reducing  $y^{\min}$  and the ability to reduce the poverty gap between the two individuals.



### 3.1.2 Work requirement

As discussed above, the policy maker faces some limitations on how far he can reduce or increase  $A$ . This may make it difficult or impossible to screen out all potential impostors. In such cases, using work requirement in addition to income tax may provide a solution.

Work requirement is a restriction on the welfare programs, where those who apply are required to work  $e_w = (1 - l_w)$  hours and receive a transfer  $y_w$ . These labour requirements are often a combination of activities that are intended to improve the recipient's employment prospects (such as training, rehabilitation and work experience), and those designated as contributing to society (such as unpaid or underpaid work). In order to distinguish between the labour effort exerted in work requirement activities and that exerted elsewhere, I will refer to all labour within work requirement activities as labour in the public sector, and all others as labour in the private sector. Work requirement can be implemented in the case with full information, but given that the labour in the work requirement is less productive, then the benchmark model provides better results.

The use of work requirement as a restriction to those who claim welfare, however, has a separating effect. Besley and Coate (1992) argue that because the high ability individuals have a higher opportunity cost of supplying hours of their time than the low ability individuals, work requirement has a screening effect that separates those who deserve assistance from would be impostors. I will in this section develop on my model from the previous part and discuss some of the findings in Besley and Coate (1992).

Income is still observable and the policy maker can set an income tax  $T = h(y)$ , for all incomes above  $y^{\min}$ , as before. Each individual chooses whether to or not to claim the benefit package  $(l_w, y_w)$ , and if they do so, then they must work  $(1 - l_w)$  hours in the public sector. They may also continue to supply as much labour as they want in the private sector.

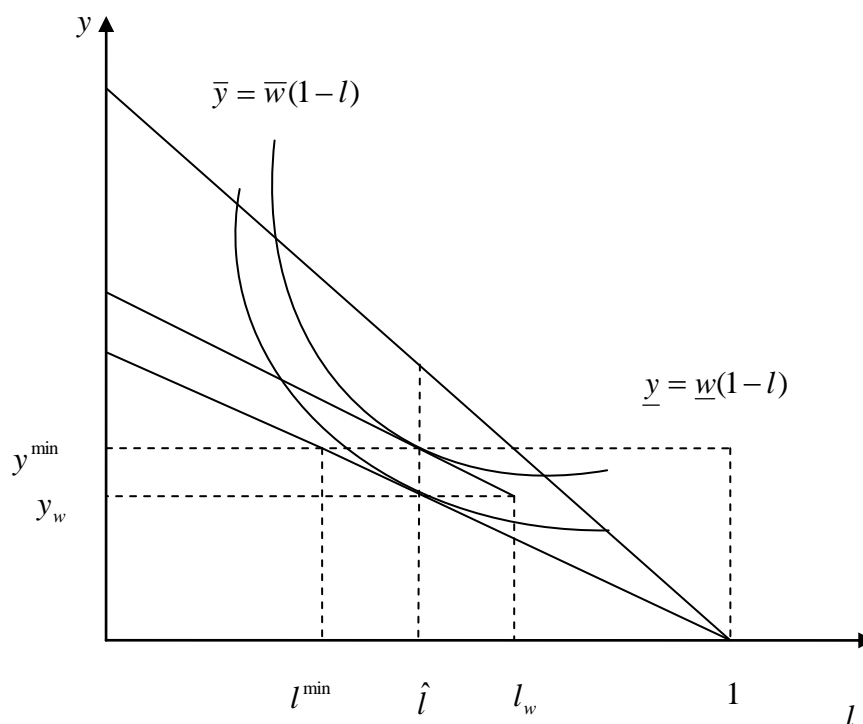


Figure 3.6

The basic idea is that for any  $(1-l)$  hours worked, the low ability individual gets lower amount of consumption goods than the high ability individual who faces a better trade off between consumption good and leisure. If the low ability individual took the package, then he would face a budget line starting from point  $(l_w, y_w)$  with a slope equal to  $\underline{w}$ . As illustrated in figure 3.6, this budget line will always be above his original one and for any  $\hat{l} \leq l_w$ . He now has a utility level higher than the one he would get if he did not participate in the program. Alternatively, for any income level above  $y_w$ , he now works less than he would have to if he did not participate in the program, in particular, he now has to work  $1-l_w^*$  hours, (which are fewer than  $1-l^{\min}$ ) in order to have an after transfer income equal to  $y^{\min}$ . This increases his utility level.

On the other hand, if a high ability individual accepts the same package, then he will end up at a budget line starting from point  $(l_w, y_w)$ , but with a slope equal to  $\bar{w}$ .

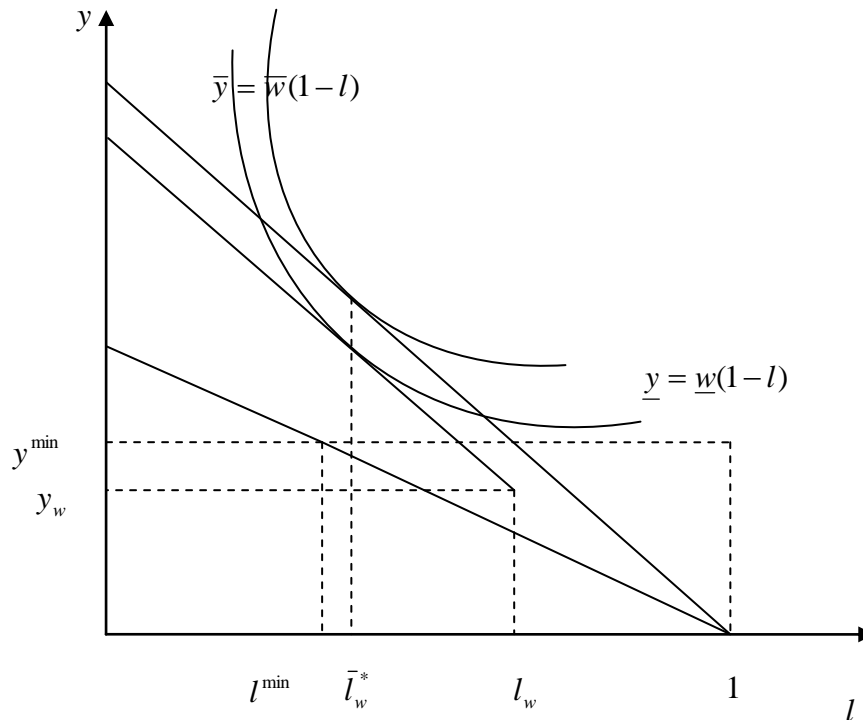


Figure 3.7

As shown in figure 3.7, this budget line is always below his original one and for any  $\hat{l} \leq l_w$ , he now has utility level lower than the one he would get if he did not participate in the program. Alternatively, for any income level above  $y_w$ , he would now work more than he had to if he did not participate in the program. This would reduce his utility level. He thus has no incentive to pretend to be of low ability and apply for welfare. Such a scheme is both incentive compatible and results to optimal second best allocations, which separate the two different types.

Any work requirement scheme such that for any amount of effort  $(1-l_w)$ , the returns  $y_w$  is such that  $\underline{w}(1-l_w) < y_w < \bar{w}(1-l_w)$ , has the separating effect. The budget line for the high ability individual will always be below his original one, so he will not apply for the welfare transfers.

### 3.2 Unobservable income and income generating abilities

Suppose now that the government can neither observe individuals' income nor income generating ability. In this case, it knows that one individual has low ability and the other has high, but cannot tell who is who. In Besley and Coate (1992), the authors discuss a situation where the government knows the fraction of the total population that is of low ability and that which is of high ability, but it cannot tell what group each individual belongs to. The individuals in my discussion can be seen as representative members of the groups in Besley and Coate (1992).

Like in the case where only income could be observed, attempts to implement the benchmark case will lead to over consumption of the welfare transfers. The information gap also leads to failure to implement income tax, because individuals may choose to report wrong income levels so as to avoid paying taxes. Work requirement, however, follows the same structure as in the case with observable income. The separating work requirement here is to offer  $(l_w, y_w)$ , which leads to the benefits from the scheme being higher than the loss caused by the low ability individual having to work less in the private sector. As discussed in the previous section, and as shown in figure 3.8, any work requirement scheme  $(l_w, y_w)$  such that  $\underline{w}(1-l_w) < y_w < \bar{w}(1-l_w) - T$ , will increase the utility level of the low ability individual, and at the same time deter the high ability individual from participating.

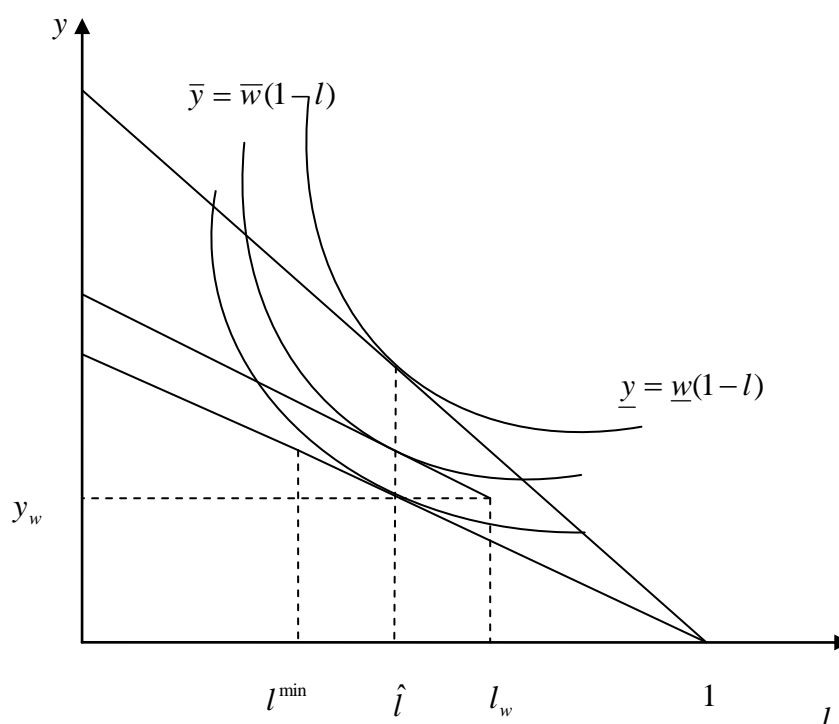


Figure 3.8

Very high work time requirement with relatively little returns may, however, discourage the truly poor from participating in the program. On the other hand, very high returns relative to the work requirement in the work requirement programs may not be cost minimising.

Our problem given that income is unobservable, is how to collect the amount used for transfers. This can be done, for example, by a head tax on all those who do not apply for transfers. Besley and Coate (1992) discuss a case where, work requirement programs come with costs for the policy maker in form of a public sectors' input needed to obtain transfers, and argue that in such a case, the policy maker also has an incentive to minimize these costs. I will not, in this thesis, discuss how the government can obtain transfers, but assume that it has certain cost minimizing way of doing so. If so, then it can use work requirement to achieve redistribution.

The amount of effort the applicants exert in the private sector now, depends on whether or not we have income effect, that is, whether the welfare program affects the labour supply or not. In the case where we have income effect, then the low ability individuals can now reach  $y^{\min}$ ,

and thus  $u(y^{\min}, l)$  with fewer total labour hours. In this case, the individual may choose to increase his utility of the consumption good and leisure, by increasing both his leisure time and the level of consumption good.

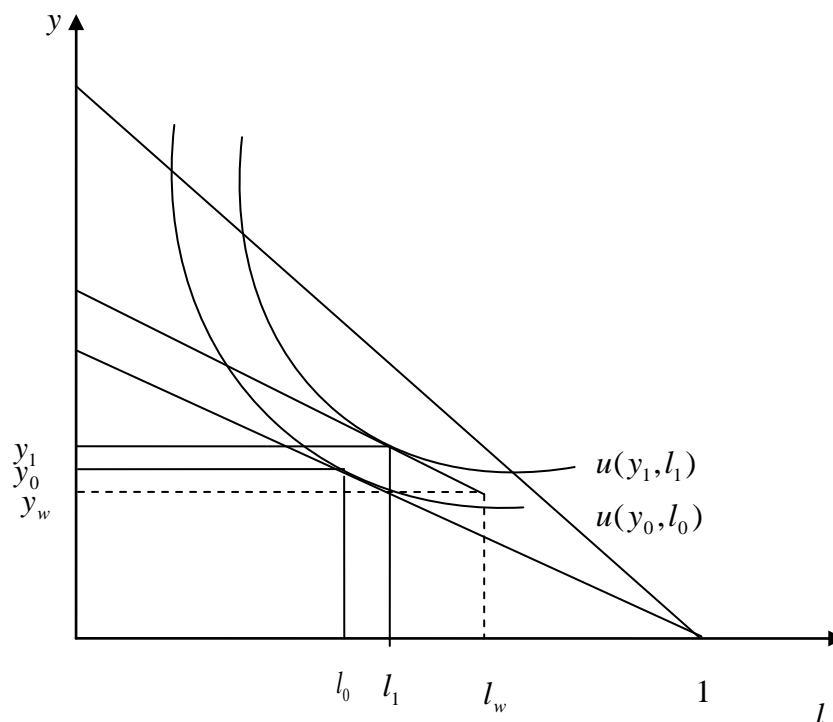


Figure 3.9

Figure 3.9 shows that if we have income effect, then the low ability individual may increase his utility from  $u(y_0, l_0)$  to  $u(y_1, l_1)$  by increasing both his leisure time and income.

If leisure is neither a normal nor inferior good, then we do not have income effect for leisure. In such a case, the individual still works the same number of hours as before, but now has more income, thus higher utility, given that income is a normal good. Such a case is defined by  $(l_0 = l_1)$ , that is, the individuals work the same amount of hours in the presence of welfare transfers, as they would in the case without.

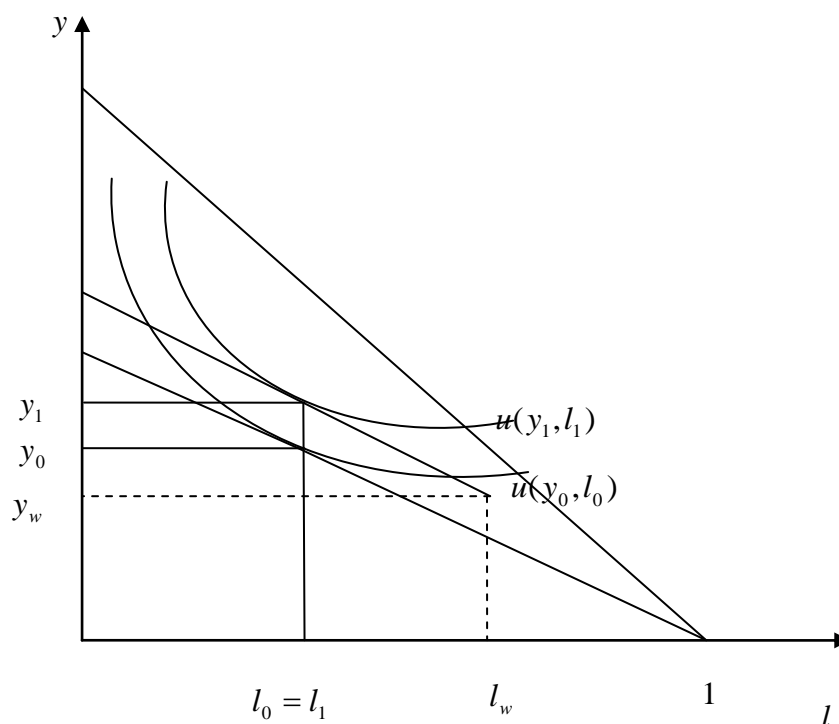


Figure 3.10

Figure 3.10 shows a case without income effect and therefore, no change in effort level due to work requirement. Let  $e^* = (1 - \underline{l}^*) = (1 - l_0)$  be the low ability individual's optimal level of effort in the absence of work requirement. In this case, a work requirement smaller than  $(1 - l_0)$  causes an equal reduction in private sector labour supply, while a work requirement in above  $(1 - l_0)$  may cause the individual to cease all work in the private sector.

The work requirement model assumes that poverty is caused by low income generating ability. Poverty can, however, also be caused by disutility of labour due to health situations (physical or psychological). Certain individuals may also have a higher utility of income than others of the same level of labour income and income generating ability due to exogenous factors, such as health costs or family sizes. As a result, individuals may either not be able to work as much as required under the work requirement programs, or have higher consumption costs relative to their total income. When poverty is caused by disutility of labour or by relative utility of income, then work requirement would not be useful. This because, controlling for income generating ability, work requirement would discourage the truly poor with high disutility of labour, or high relative utility of income, from taking part. When the disutility of labour is not caused by health problems, it may be reasonable to argue that the

society has no obligation to help high ability individuals who are unwilling to work. However, when disutility of labour is due to health situations or by utility of income, then we need other measures than the income generating ability, to distinguish between the truly needy and the potential impostors. An optimal welfare program in its totality would here be such that these individuals be identified and be offered benefits of their own. If such a benefit does not exist, then work requirement programs alone fail to be optimal in helping all the truly poor in the society. Nichols and Zeckhauser (1982), and Blackorby and Donaldson (1988) discuss how welfare can be offered in the form of in-kind transfers (such as medical treatments), valued only by those individuals with the relevant disability. High ability poor individuals would have no incentive to pretend that they had the unobservable disability, since what they would receive amounts to a transfer of lower value. This is especially so because in-kind transfers are inferior to cash transfers due to their restrictions, especially in cases of no re-sale.

I will in the next sections discuss the use of in-kind transfers as an effective redistributive instrument, when income tax and work requirement programs fail to target the desired groups.



## **4 Imperfect information:**

### **Poverty caused by relative utility of income**

Suppose now, that poverty is not only caused by income generating ability, but also by individual's relative utility of income. We here consider individuals, who have a high relative utility of income. For them, it is so that for any level of income, they have relatively higher consumptions expenses, than others of the same income level and/or income generating ability. These consumption costs could be due to size of the family, medical treatment, special housing, or transport situation. An important factor here is that the cause of poverty is exogenous. Two individuals with the same income generating ability may have equal amount of income, but different utility of income in such cases. Cash is no longer better than kind, and as Blackorby and Donaldson (1998) write, "marginal willingness-to-pay equal to marginal cost" is not a good cost-benefit rule. Even with optimal income tax and work requirement schemes, the individuals with higher relative utility of income would benefit from any additional redistribution, and policy instruments beyond work requirement, and income tax and transfers may be social economically beneficial. I will now extend my definition of the truly deserving individual from the low ability individuals, to include those with relatively high utility of income. Poverty can also be caused by individuals' relative disutility of labour, and here we include those who because of health reasons may not participate in the labour market. Such individuals may not benefit from programmes that require them to work more, so that income tax and work requirement schemes fail to increase their utility. I will, however, stick to my denotation and refer to the truly deserving as low ability, and potential impostors as high ability individuals. I will, in this section, discuss how in-kind transfers may have a separating effect on the potential applicants of this nature.

## 4.1 Only income is observable

Blackorby and Donaldson (1988) present a simple model, where they divide the population in the society into two groups, the infirm and the able. Full information setting here, implies that the government, has the required information about individuals' disutility of labour and utility of income, and can distinguish between the potential impostors, and the truly deserving. The benchmark model can then be implemented in such an environment. In that case, the government taxes the able and offers transfers to the infirm. Income tax and work requirement, as mentioned, fail to target these individuals, and we need extra redistribution instruments.

If the government can only observe individuals' income, but not their types, then the benchmark model leads to over consumption of the welfare goods and services, and certain individuals may apply for transfers that they do not qualify for. Income taxes and work requirements still fail to target these truly deserving individuals. In-kind transfers can then be used as the additional distribution instrument. In-kind transfers involve transfers of goods or services to the truly deserving individual.

Blackorby and Donaldson (1988) show that, the optimal in-kind transfers that satisfy self-selection constraints in this environment, lead to the transfers to the infirm not being "overprovided". Besley and Coate (1991) also show that this is true by the use of a simple structure to study public provision of private goods and how this causes redistribution. The authors consider the public provision of an indivisible good, which is produced in different variants, each embodying a particular quality level. Every person may consume only one variant of this good; they cannot be combined, an example is education. The quality is normal in the sense that, people with higher income levels would opt for higher quality variants of the good. Redistribution is then achieved as long as only the poor households consume the good. An important point to make here, as Slesnick (1996) argues, is that, the ability of in-kind transfers to alleviate poverty depends on accurate targeting. The government must therefore, in this case, be able to target the correct good that it provides in the form of in-kind transfers.

### 4.1.1 The use of rent allowances, restriction on consumption bundles

Ear-marked transfers such as rent allowances can be looked at as in-kind transfers. Cash transfers have the property of efficiently transferring purchasing power from one individual to another, in that, the amount transferred has the same value for both individuals. Economists argue that, as Blackorby and Donaldson (1988) write, this property (of efficient transfer of purchasing power) is not always shared by transfers of goods and services, when resale is difficult or impossible. This makes cash-transfers superior to in-kind transfers. Given, however, that the restrictions are intended, the value of a restrictive in-kind transfer may be equal to that of a cash-transfer. This is especially true in a setting where, the preference of the individuals is not publicly available to the government, and we cannot assume as above that all individuals face the same utility function. In such cases, as Blackorby and Donaldson (1988) show, the superiority of transfers of purchasing power over transfers of goods and services disappears.

I will, in this section, discuss how the use of in-kind transfers may have a separating effect on the potential applicants. I will still use the simplified assumption, that there are only two individuals in the community, one intended beneficiary, and another who is supposed to pay the taxes to cover the transfers. However, instead of their types being determined by income generating ability, as before, I will here assume that our individual types differ due to their marginal utility of income, determined exogenous factors such as health condition and expenses, family size, special requirements, among others. These individuals now have the same amount of labour income, but different utility functions denoted  $u$  for the poor and  $\bar{u}$  for the rich. Individual types are randomly distributed, and the government does not know the individuals' types.

In section 3.1, we assumed that all the individuals had to do was to choose whether or not to apply for transfers. In reality, and as we will assume in this section, individuals must also choose how to allocate their income on various consumption goods and services. The consumption good particularly, is divided into quantities of specific goods, and each individual chooses a consumption bundle to maximize his utility, subject to the constraint that total expenditure does not exceed his total after-tax (transfer) income. For each individual, total income will now be spent on house rent, or any other goods, that is,  $r + c = w(1 - l) + A$ ,

if he gets a transfer  $A$ , or  $r + c = w(1 - l)$ , if he has to only rely on his labour income.  $w$  and  $l$  are now fixed and therefore, the labour income given. Assume that the poor individual's optimal residential requirement is worth  $\underline{r}^*$ , while the rich individual's optimal residential requirement is worth  $\bar{r}^*$ . If we have a cash-transfer, then the poor individual has an after transfer income of  $w(1 - l) + A$ , out of which he pays  $\underline{r}^*$  as house rent. If the rich individual had the same income, then he would still use  $\bar{r}^*$  to pay his house rent. As illustrated in figure 4.1, income effect may lead to the individuals increasing their expenditure on residential apartments given that their income goes up. I will, however, for simplicity assume that this is not the case.

I will here, discuss how restrictions on consumption bundles, can be used to discourage the potential impostors from applying for transfers that are not meant for them.

Assume that the poor individual has higher housing costs than the rich one, that is, assume  $\bar{r}^* < \underline{r}^*$ . Fixed leisure now allows us to consider the utility as a function of the consumption goods, namely  $c$  and  $r$ , so we have  $u = u(c, r)$ . For any given level of income, the individuals maximise their utilities by the poor choosing  $\underline{r}^*$  and the rich choosing  $\bar{r}^*$ . Such a relation can be illustrated by figure 4.1 below, where we have the amount spent on house rent on the x-axis, and that spent on other goods on the y-axis.

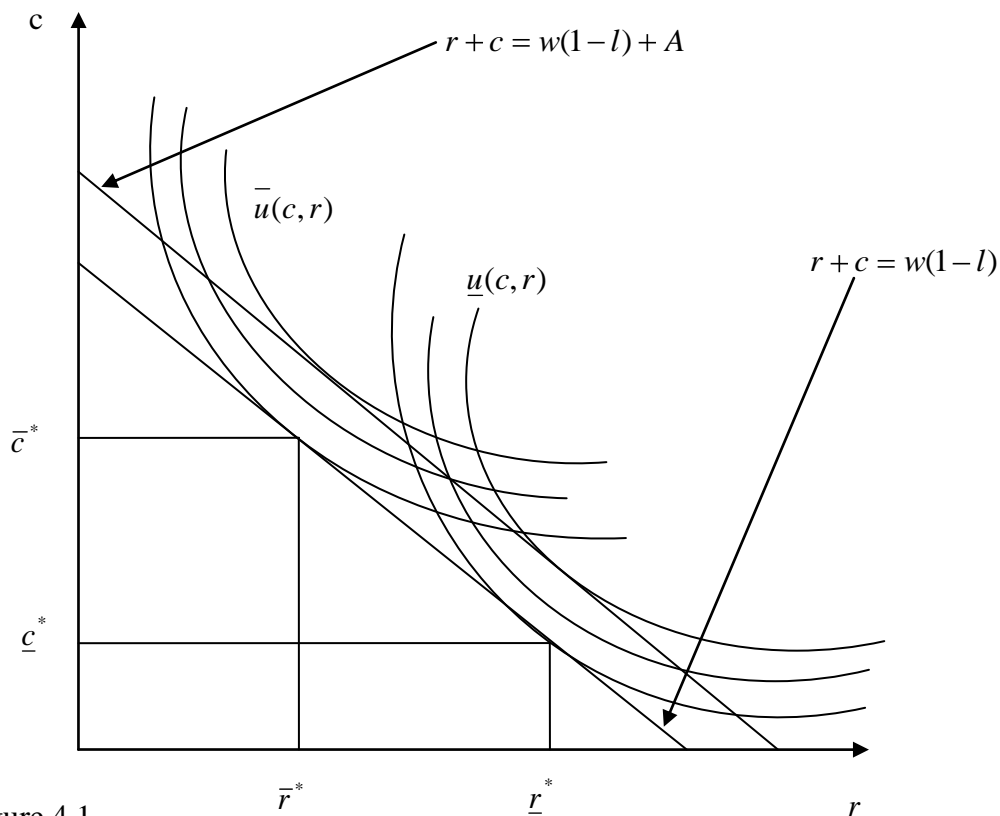


Figure 4.1

Let a transfer scheme now be such that, the government provides house rent subsidies to any individual who applies for transfers. This transfer is such that an individual whose residential requirement is worth  $r^*$ , pays an amount  $r^g < r^*$ , and gets  $r^*$  in house rent allowance. Such an individual then has  $c^g = w(1-l) + A - r^g$ , to spend on other goods. In order to discourage the potential impostor from applying for the transfers, the government can design a scheme such that it only gives transfers to individuals with high residential costs, that is, those with  $r^* = \underline{r}^*$ . The individual with  $r^* = \bar{r}^*$ , in this case, does not benefit from applying for transfers, as shown by the two individuals' opportunity curve (the bold line) in figure 4.2, where  $r^{\min} = \underline{r}^*$ .

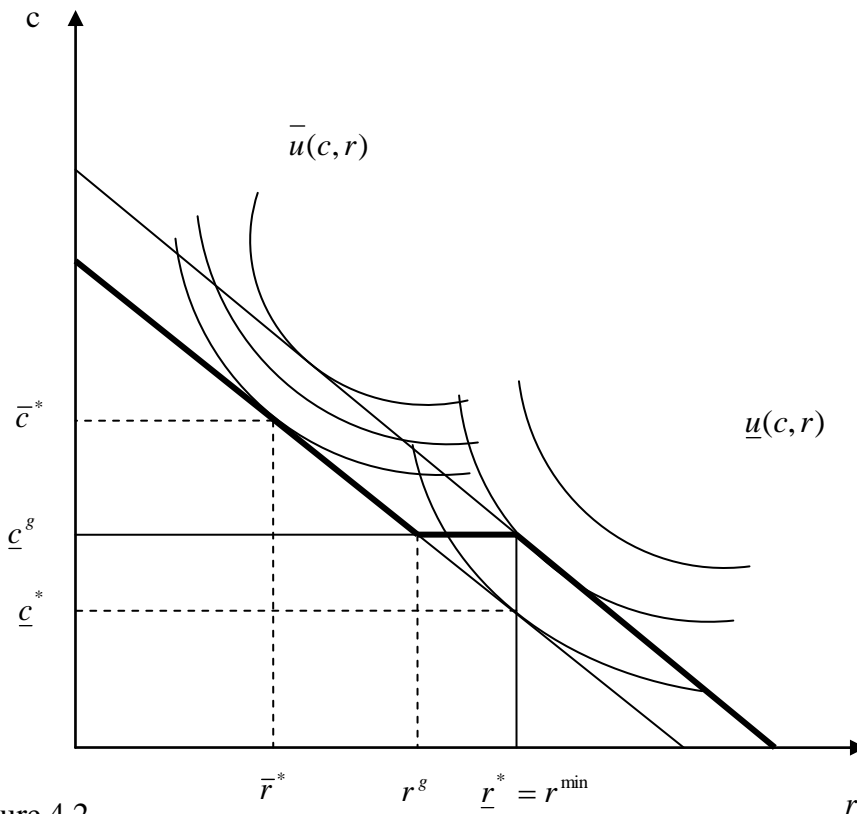


Figure 4.2

The poor individual now pays  $r^s$ , and gets an apartment worth  $\underline{r}^*$ . He also has  $c^s$  to use on the purchase of other consumption goods. The rich individual does not apply for the transfers since the bundle  $(c^s, r^s)$  would lead give him a lower level of utility. This solution, however, only has a separating effect if  $\bar{r}^*$  is sufficiently less than  $\underline{r}^*$ .

When  $\bar{r}^* \geq \underline{r}^*$ , and when apartments vary in quality, then inferior in-kind transfers can be used to discourage the rich from applying for transfers. Inferior in-kind transfers are such that for given quality levels, the potential impostor would be prefer to get off the transfer scheme, and pay more for an apartment of his own choice. The quality of the apartment can be determined by factors such as location, size, and facilities in the apartment, among others.

Blackorby and Donaldson (1988) discuss an example of inferior in-kind transfers, where they argue that if rape victims are offered transfers of cash, then everyone has an interest in qualifying. But if counselling is provided instead, then only the intended beneficiaries will be interested in the transfer. In an asymmetric information setting, as long as it is impossible or costly to distinguish victims from other people, there is an advantage to supplying the

counselling service over offering cash transfers. This observation, the authors write, applies to many other social services, and to medical care and education. A similar argument will support the use of low quality housing facilities when the government uses house rent subsidies, or provision of apartments, as a redistribution instrument. An important fact here is that resale is not possible, so that in our case, then the recipients would have to live in simple apartments in certain areas.

## 5 From static to dynamic model

Static models, as the ones used in chapters 2 and 3, are suitable to describe, or discuss situations where decisions made in one period, have no effect over what happens in other periods. We say that in such situations, changes in variables in one period do not have spill over effects into the variables in other periods. As we saw, effort exerted in each period only affects individuals' outcomes in that period, and we did not consider the future.

The conditions for Oslo municipality, are such that individuals have to use up their savings in order get social assistance, and/or house rent allowance. These conditions include those that oblige individuals to sell any belongings that the family may not need, such as cabins, caravans, etc. In the absence of savings, all income is consumed in the same period, and each period can be treated on its own, such that our static models correctly describe the environment in which decisions are made.

Real life decisions, however, besides moment to moment decisions, also contain dynamic economic decisions and choices, and these cannot be addressed by our one stage model. That is because, in reality, individuals consider not only the present consumption and leisure bundles, but also those of a future time. Individuals must therefore choose not only how much to spend in the present period, but also how much to invest and/or save for the future. Effort decisions made today may not only affect consumption and leisure bundles today, but may have a lagging effect into the future. Individuals therefore, for example, invest time and money in education so that they may have better labour income in the future. Such investments may require a reduction in the present consumption and leisure bundle. Decisions concerning where to stay in the future may include the decision of whether to sell or buy apartments, and such may affect today's income and expenditure decisions. A high ability individual may have to choose between renting and buying an apartment. In order to buy in the future, individuals may have to get some jobs, and save some labour income. The costs of house loans will affect how much they have to save. In such cases, communal loaning system come in the picture in that it offers affordable loans to those who may not be able to have access to the private credit market. Another important concern for the policy makers is how long individuals depend on welfare systems. This concern is especially relevant in the case of foreigners, where social assistance is meant to keep them out of poverty at arrival into the



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country, but that they should also be able to carter for themselves as time goes by. This is an important part of the debate concerning the integration of foreigners into the Norwegian society. The dynamic dependency on welfare assistance also concerns individuals who lose their jobs for one or another reason, and who in the best case, should receive economic assistance in the short run, but be able to return to the labour market in the long run. Many economic decisions are significantly influenced by what firms, households, and the government anticipate about the future, and as time goes by, these expectations are adjusted, and so is the response to them, and this adjustment process takes several time periods. In order to address these situations, we must use models that take different periods of time into consideration. Such models are referred to as dynamic models.

In this section we assume, as Besley and Coate (1992), that poverty is not only caused by bad luck, but also by choices made in the initial period, here expressed in the level of effort exerted in the present period, in order to get out of poverty in later periods. Individuals' earning abilities in the later periods will depend on acquired skills and relevant qualifications for new jobs in Norway, and this, does not only depend on luck in the form of genetic endowment, or previous experience, but also on the level of effort exerted in the initial period in acquiring these skills. In the case of foreigners, these skills may among others, include language skills.

## **5.1 A simple two period basic model where the individuals are of low ability in the first period**

In this section, I will use a simple two period model of consumption good and effort, to study how economic transfers may affect the labour-leisure choices of individuals in a dynamic set-up. A two period model is a simplification of reality, but it enables us to address some dynamic moments in the real life decision making. The length of each period may vary, depending on what assumptions we make and which groups we study. In the case of integration of immigrants, the first period will depend on how long the introduction program lasts, and may vary from individual to individual. The actual numbers may affect the actual amounts of resources used but do not, in any way, distort the analysis and conclusions in this section.

Let our individual's life now be divided into two periods where in the first period, the individual depends on social welfare. This could be because the individual is a new arrival in Norway, and lacks the necessary qualifications to get into the labour market, or that he has lost his previous job, and needs to acquire new skills to increase his chances of getting a new one. The individual exerts some effort in the first period, and gains the necessary skills to get him out of the poverty in the second period. I will simplify my model and let this effort to be equal to the amount of hours invested in activities that may increase one's skills, that is,  $e_1 = 1 - l_1$ . In the second period, the individual has an income that is dependent on the skills acquired in the first period. Let the individual with probability  $\pi$ , be of high ability in the second period. This implies that he earns an income above the poverty line by exerting relatively less effort as compared to a situation where he was of low ability.  $\pi$  is an increasing and strictly concave function of the level of effort exerted in the first period. We therefore have  $\pi = \pi(e_1)$ ,  $\pi'(e_1) > 0$ ,  $\pi''(e_1) < 0$ , which means that higher level of effort gives higher chances of being high ability in period, but at a decreasing rate.  $(1 - \pi)$  is the probability that an individual is of low ability, and depends on welfare system in the second period. There are those who will get out of poverty in the second period, and there are those who will not. These now respectively form our new definition of high ability and low ability individuals. Welfare assistance should now be focused so that those who can make it out, get out of poverty in the second period.

Each individual now cares for the utility of consumption and leisure in both periods and maximizes

$$u(c_1, l_1) + \pi(1 - l_1)u(\bar{c}_2, \bar{l}_2) + (1 - \pi(1 - l_1))u(\underline{c}_2, \underline{l}_2) \quad (5.1)$$

For each individual, there are unique effort levels  $e_1^* = 1 - l_1^*$ , and  $e_2^* = 1 - l_2^*$ , which solve the problem. In the first period, he only knows his expected utility in the second period, and the amount of effort exerted in the first period therefore, depends on the expected gains in the second period. For any  $u(\bar{c}_2, \bar{l}_2) > u(\underline{c}_2, \underline{l}_2)$ , higher  $\pi(1 - l_1)$  will lead to higher second period returns to effort exerted in the first period. And the larger the difference between the two utility levels in the second period, the higher the effort level exerted in the first period that is to say that,  $e_1$  increases with the difference between the utility of being high ability, and that

of being low ability in the second period. In this dynamic setup, the level of effort exerted in the first period affects the number of the poor in the second period, thus making the expected number of the poor in the second period endogenous. We therefore need programs that give individuals incentives to exert efficient level of effort in both periods. We especially need programs, where the individuals exert the optimal level of effort so as to get out of poverty in the second period. Work requirement has come out as a popular instrument here.

We assume that the individuals know their efforts, but that this is unobservable to the policy maker. The individuals, on their side, know the structure of the government's welfare program.

## **5.2 Only income is observable**

Assume now, that the policy maker can only observe the individuals' income, but not type or effort level in both periods. Individual types in the second period, is now determined by how effort exerted in period one affects the individuals' income generating ability in the second period. A high ability individual now, is one who, by exerting his optimal effort level can gain the required skills and get of poverty, while a low ability individual does not. There is no difference in individual types in the first period. Both lack necessary skills to participate in the labour market and depend on welfare assistance. The benchmark program is now problematic because it reduces the utility difference between the high ability individual and the low ability individual in the second period, thereby, reducing the returns to effort exerted in the first period. Individuals may choose lower effort level than optimal and the number of poor is higher in the second period, thus creating unnecessarily long-run dependence on the welfare system. This problem is also true for all programmes that reduce utility difference between high ability and low ability individuals in the second period like income tax schemes. Work requirement in the second period may lead to the individuals exerting the optimal level of effort in both periods, as I will discuss in the next section.

### 5.2.1 Work requirement as a deterrent instrument

I will follow Besley and Coates (1992) second argument, that work requirement can be used to deter high ability individuals from choosing effort levels, in the first period, which will lead to them being poor in the second period. The authors define maximal work requirement as the work requirement which, if coupled with a transfer sufficient to get the poor above the poverty line, would make them just indifferent between participating and not participating in the welfare program. Let  $e_w^{\max} = (1 - l_w^{\max})$ , denote this maximal work requirement and  $y_w^{\max}$ , the returns got from the public sector at exerting  $e_w^{\max} = (1 - l_w^{\max})$ . The interaction is then such that the policy maker offers  $(l_w^{\max}, y_w^{\max})$ , and each individual chooses whether or not to claim the benefit package. If they do, then they must work  $(1 - l_w^{\max})$  hours in the public sector and earn  $y_w^{\max}$ .

In the first period, all individuals have no skills and choose how much effort to exert in acquiring them so as to get out of poverty in the second period. This may include taking formal education or participating in some training programs, so as to achieve the necessary skills required to participate in the labour market. He may also depend on some welfare program according to the static models discussed in chapters 3 and 4, but we, in this section, do not consider these programs or any effects they may have on the individuals' choices. All we focus on is that, each individual chooses some level of effort to exert so as to get out of poverty in the second period.

In the second period, the individual is either of high ability or low ability. If he is of high ability, then he works in the private sector and consumes his labour income. If he is of low ability, then he now participates in a work requirement program in order to get transfers from the government. The nature of the program may be that the individual gains certain skills that can enable him to get out of poverty in the future, but again, for simplicity, we do not focus on this in the following discussion. Any individual who participates in the work requirement program now gets a package,  $(l_w^{\max}, y_w^{\max})$ .

I will now discuss how work requirement program in the second period may affect individuals' effort choice in the first period.

For any utility level in the first period, we now have a situation where each individual is also concerned about the expected utility of consumption and leisure in the second period given by,

$$\pi(1-l_1)u(\bar{c}_2, \bar{l}_2) + (1-\pi(1-l_1))u(\underline{c}_2, \underline{l}_2) \quad (5.2)$$

From (5.2), we get

$$u(\underline{c}_2, \underline{l}_2) + \pi(1-l_1) \left[ u(\bar{c}_2, \bar{l}_2) - u(\underline{c}_2, \underline{l}_2) \right] \quad (5.3)$$

and see that the expected utility of consumption and leisure in the second period, depends on the difference between  $u(\bar{c}_2, \bar{l}_2)$  and  $u(\underline{c}_2, \underline{l}_2)$ , as mentioned earlier. If the government offers a work requirement package  $(l_w^{\max}, y_w^{\max})$ , such that  $y_w^{\max}$  is enough only to cover the costs of subsistence, then it can set  $l_w^{\max}$  such that difference between  $u(\bar{c}_2, \bar{l}_2)$  and  $u(\underline{c}_2, \underline{l}_2)$  is not affected. According to Besley and Coates (1992), this can be reached by setting  $u(y_w^{\max}, l_w^{\max}) = u(\underline{w}(1-l), \underline{l})$ , and  $y_w^{\max} = y^{\min}$ , as shown in figure 5.1. This is because, any individual who does not get out of poverty in the second period, will have to participate in the work requirement program, and does not benefit from any other welfare programs. For such an individual,  $u(\underline{c}_2, \underline{l}_2)$  equals  $u(y_w^{\max}, l_w^{\max})$ .

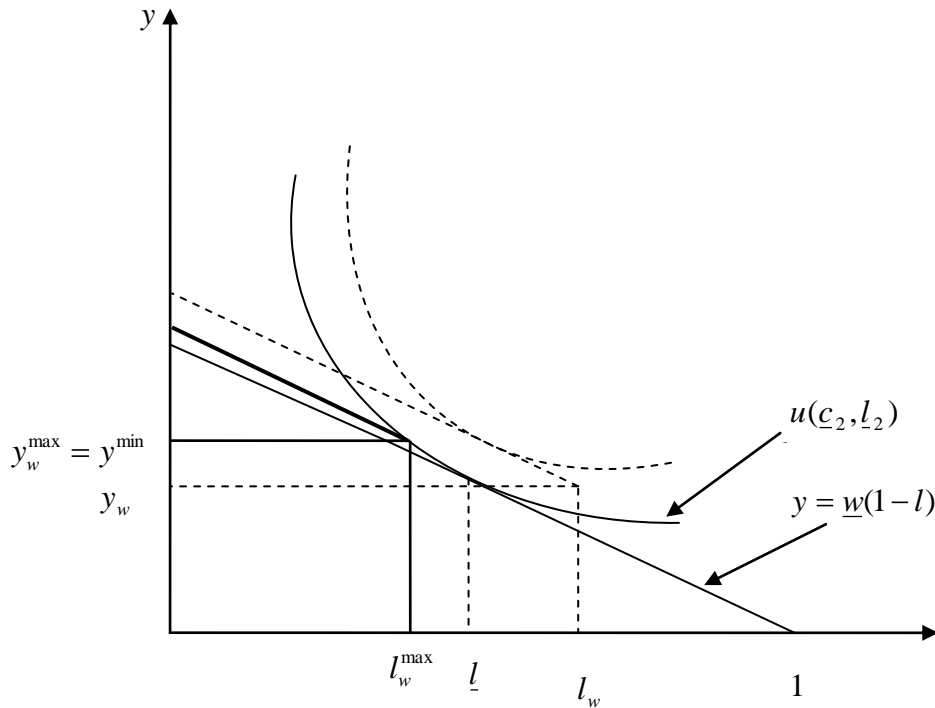


Figure 5.1

$u(y_w^{\max}, l_w^{\max}) = u(\underline{w}(1-l), l)$ , and  $y_w^{\max} = y^{\min}$ , imply that the individual without skills, is indifferent between taking the package, or leaving it.

We have  $l_w^{\max} < l_w$  because at  $l_w$ , the individual without skills earns  $\underline{w}(1-l_w)$ , which is less than  $y^{\min}$ . For a work requirement equal to  $l_w^{\max}$ , the low ability individual does not work in the private sector because that would reduce his utility. If we have  $l_w^{\max} > l_w$ , then the work requirement will not have the intended effect because  $l_w^{\max} > l_w$ , must be coupled with a transfer  $y^{\min} - \underline{w}(1-l_w^{\max})$ , in order to achieve the poverty alleviation goal. Such a scheme reduces the difference between  $u(\bar{c}_2, \bar{l}_2)$  and  $u(\underline{c}_2, \underline{l}_2)$ . This is because the individuals will be able to receive an after transfer income of  $y^{\min}$ , but work less than  $(1-l_w)$  hours. This may not give the individuals without skills an incentive to exert the optimal effort level, in the first period, to get out of poverty in the second period.  $l_w^{\max} < l_w$  reduces the gains that the individuals without skills may get from the welfare system. The leisure time under the work program can, however, not be less than  $l_w^{\max}$ , because that would leave the individual without

skills better off not participating in the program, since it gives utility levels lower than  $u(\bar{w}(1-l), l)$ .

A high ability individual who does not get out of poverty in the first period, will have to participate in the program in the second period and end up at point  $(l_w^{\max}, y_w^{\max})$ , which (as shown in figure 5.2) gives lower utility than if he got out of poverty and did not participate in the program.

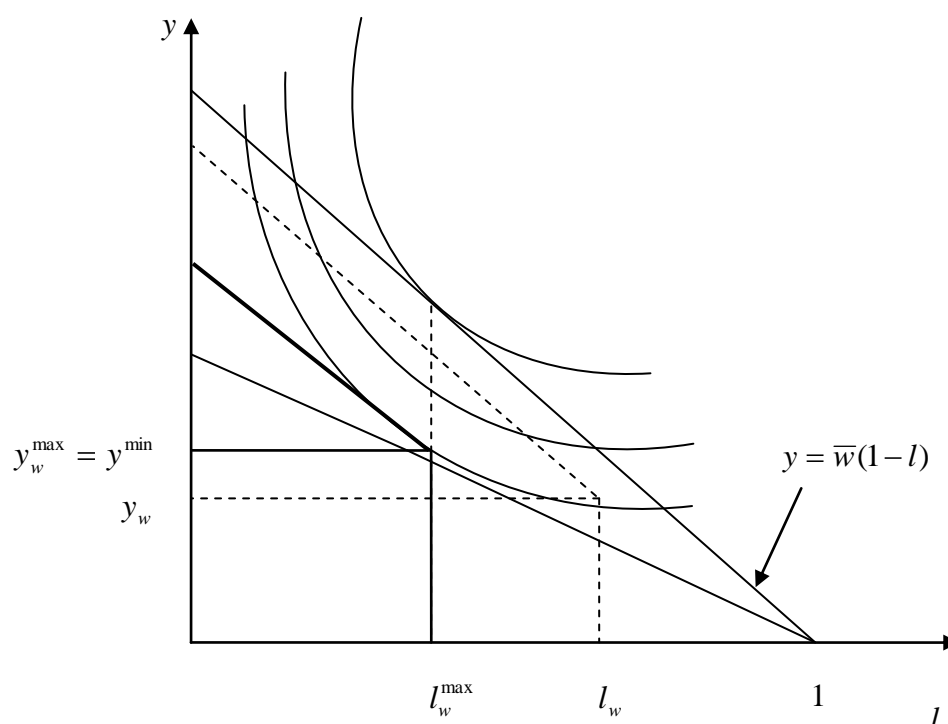


Figure 5.2

The number of the poor in the second period falls with an increase in the level of effort exerted. The probability of getting out of poverty may also depend on how well the skills acquired in the first period target the labour market.

$\pi$  may also capture an individual's chances of getting a job in the second period, given that he is of high ability then. Job opportunities in the second period may therefore, also affect the level of effort exerted in period one. The lower the chances of getting a job is in period two, the lower the effort exerted in period one. This affects the effectiveness of work requirement. Besley and Coate (1992) argue therefore, that the work requirement can only be an effective

deterrent if the amount of work demanded is considerably in excess to that which the low ability individuals would do in the absence of intervention.

An important feature here is that, when considering the dynamics of the interaction, we see that it is important to induce the individuals to exert effort levels today that may lead to them getting out of poverty tomorrow. When poverty, however, is caused by disutility of labour due to health problems, or relative utility of income, then individuals' future utility does not improve by them participating in work requirement schemes. In such cases, in-kind transfers, as discussed in chapter four, are more effective instruments to achieve redistribution.



## 6 Recipient targeting and the welfare programs in Oslo municipality

In chapters three, four and five, I discussed how recipient-targeting may reduce the loss caused by the asymmetric information that the policy maker faces when designing a transfer scheme. My discussions in those sections were, however, model based and did not discuss the possible application of the results in a real life welfare program. The purpose of this section is to discuss how the welfare programs of Oslo municipality, as the benevolent policy maker, can be compared to these model based discussions.

In economic theory, the term moral hazard is used to refer to the possibility that the redistribution of risk changes people's behaviour. The term originated from, and is commonly used in the insurance industry, where insurance may transfer risk from the insured to the insurer, such that, for example, an individual whose automobile is insured against theft, may be less vigilant in locking the vehicle than one who is not insured. In our discussion, we may use it to refer to situations, where the provision of welfare goods and services may transfer the risk of being without labour income from the applicants of welfare, and thus lead them to behave in different ways in order to claim larger economic assistance from the social welfare. Moral hazard here, will lead to higher costs for the municipality because of the possible gains enjoyed by the social clients who may not qualify for the transfers. This happens because the social client considers only his private gains, which may be equal to his private costs but less than the social economic costs for the whole community, given that some one else has to work and pay taxes that are used to cover these costs. Individuals' labour-leisure choice may thus be affected in that, more individuals may choose to go to the social agency instead of looking for a paid job if their utility of working and earning a given income level, is less than that of staying home and receiving social assistance. Sicknesses may also be exaggerated so as to not go to work. In economics terms, the social insurance lowers the costs of not being employed or earning less, and the individuals in return consumes more. More particularly, the real cost of consumption is now less for the individual and he in return buys an inefficiently large sum. For an individual who receives a transfer  $A$ , the real cost of consumption (as can be calculated from the budget constraint,  $c + wl = w + A$ ), now becomes  $\frac{c - A}{w}$ , which is less than  $\frac{c}{w}$  for any  $A > 0$ .

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Given that Oslo municipality makes its decisions under an environment of asymmetric information, just as the one under which the instruments in chapters three, four, and five, the policies designed may only at best achieve second-best allocation. The first step to separating the deserving recipients from the potential impostors is documentation.

Oslo municipality, like other municipalities, requires that an applicant document that he does not have an income level that can meet his daily needs. It is expected that those who can work to afford their consumption do so, and that only those eligible, benefit from the welfare system. The amount one gets may also be attached to marital status and the number of children one has. An individual seeking economic help must be able to document that he has less money than is necessary to meet his needs. He therefore, must present his financial documents to the relevant authority and these documents give the required indicators. The interaction is based on the hope that those applying for economic assistance give the right information. This can, however, not be controlled so we have an information gap between the municipality and the applicants, in that the applicant may have access to information that is not available to the municipality, and the policy maker in the municipality cannot be sure that the information he gets is always correct. Information monitoring is often impossible or expensive.

Incentive problems arise when the policy maker wants to choose how much economic assistance to give an applicant in that, the applicants may attempt to claim transfers meant for others. As mentioned above, the applicant has different interests than those of the policy maker, and he may have an incentive to incompletely and/or inaccurately, offer the information needed to make optimal decisions. The real costs of working for the applicant, the opportunity costs of leisure, is an example of pieces of information that the agent may have as private information, and this may have fundamental implications to the contracts offered by the municipality. An applicant may, for example, report that he is more sick than he actually is, or a higher effort in searching for jobs, so as to justify staying unemployed. Inefficient effort level or inaccurate information by the applicant may lead to the municipality making an inefficient decision about the transfer scheme to design.

The level of effort put in looking for labour, may affect one's chances of getting a job and this, will further affect access to social welfare. Individuals may choose to work in the black

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market and not report this as part of their wage income. In that case, they will fail to report the correct number of hours worked. Individuals may present divorce papers in order to get the benefits of single parents, yet continue to stay together. By not saving all the money in a bank, individuals may be able to give false amount of wealth. In brief, it is not possible to distinguish between individuals, and the municipality must use economic instruments to separate the potential impostors from the deserving applicants. The instruments, as discussed in chapters three, four and five, cause a deadweight loss.

In our set-up, the uncertainty is endogenous in that the applicant's behaviour is determined within the interaction. How sick the agent reports to be, may be determined by the possible gains to be got from the social welfare relative to those from labour income. Whether to work in the black market or not, is affected by the gains of keeping the labour wages private and the chances of being detected. Because the total welfare gain by single parents is higher than those of a family living together, a couple may have the incentives to present divorce papers but continue to stay together. In the dynamic setup, the amount of effort one puts to get out of poverty in the first period is determined by the gap between the benefits of being out of poverty in the second period, and that of staying poor and receiving social assistance.

Most of the discussion, in this part, will be based on the information got from the web pages of the department for labour and resource management, NAV, and discussions with staff at health and welfare department in Oslo municipality. The goal is to give an insight into the various schemes used by Oslo municipality, and see how they relate to the instruments I have discussed in chapters three, four and five. My discussion will, however, be general and not go into the details of the various transfer schemes and their benefits. Detailed discussion that addresses the various schemes, and the related costs and benefits figures, is not within the scope of a masters thesis. An important point I will try to put across is that, in order to target the various individual types in the society, policy makers in the municipality must use different types of instruments.

When poverty is caused by income generating ability, then the policy maker can either use income tax and cash transfers, or work requirement.

## **6.1 Income tax**

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The use of income tax and cash transfers can be compared to the municipality's use of social assistance, where individuals get a fixed amount which I denoted A, in chapter three.

Economic assistance or social help, as it is normally referred to, shall, according to the social service law (sosialtjenesteloven), ensure that all individuals have enough resources to meet their subsistence demands

The benefit is meant to be temporary, and in order to be received, the applicants should have tried other ways out first. This means that these individuals shall have exploited all their income generating ability, social welfare, work requirement, or their capital, and/or reduced their expenditures. This is in line with the fact that the benefits should encourage people, to work and not adjust to (A,1). I have, in this thesis, considered a simple case with only individuals. In reality, though, applicants may belong to households and in such cases, the policy maker will consider the income of the other members of the household. This does not, however, change the general conclusions concerning the effects of social assistance. The only difference is that we now have several individuals being considered together.

The state proposes rates which should be able to cover the costs of subsistence such as: food, clothing and subsistence, TV, newspaper leisure and travel expenditure, etc. These rates, however, work only as guidelines and each municipality decides the final rates of subsistence. All applications are considered on individual basis depending on individual economic, health and social situation, that is to say, individual's type as defined in chapter three. The benefits shall enable the individuals to cater for his subsistence, and the municipality has the duty and right to decide what types of expenses are necessary to ensure a reasonable subsistence, that is to say that, it considers the individuals' utility.

As per January 2006, Oslo municipality' value for A was NOK 4760 for single recipients, NOK 3580 for a recipient with a non recipient spouse or cohabitant, NOK 7470 for a couple, and NOK 5420 for single parents. The municipality does not have any fixed minimum income, but gives assistance to those whose labour income is less than their consumption costs and this, after they have exploited all their income generating ability and reduced their consumption to basic subsistence level.

As discussed in chapter three, social assistance helps redistribute income and increases the utility of the low ability individuals. Given that the municipality encourages individuals to try other methods first, and to exploit all their income generating ability before applying for social assistance, and given that social assistance can be given to supplement the individuals' income, the scheme used by the municipality can be compared to the one in the model illustrated in figure 3.3. And as discussed, in that section, such scheme encourages individuals to work and when their income is supplemented, their utility is increased for any given level of income.

Other incomes, however, do not directly imply labour income, and it is possible to get other welfare benefits, for example, disability benefits (uføretrygd) and social assistance. In the cases where the benefits got as disabled is higher than the possible eventual income earned in labour situation, individuals may have the incentive to apply for these benefits and therefore stay out of work. Such a combination then works against the goal of keeping individuals in labour, even when they receive social assistance to supplement their income. This can, for example, be true for individuals who have so little labour skills that if they worked, then they would earn less than if they claimed disability benefits.

By setting values for  $A$  and their corresponding  $y^{\min}$ , the government uses a non-welfarist definition of poverty to increase individuals' welfare. This may, however, not be achieved in all cases because individual utility is subjective.

Social assistance is meant to be short term, but given that it has no work requirement, and that it reduces the future poverty gap also, then social assistance may serve as a poverty gap, in that individuals may have no incentive to exert any effort to get out of poverty in the long-run.

Income tax has distorting effect in that if the labour taxes are very high, then individuals may choose to work less and pay less tax. Such a situation, may lead to more individuals preferring to apply for social assistance also. However, if the tax level is controlled such that this distorting effect is minimized, and the social economic gains got in form of redistribution of wealth and reduction of poverty maximized, then the use of income tax and economic transfers can be justified. That the municipality requires individuals to have tried elsewhere, before they can get social help, may give these individuals an incentive to exert some effort in

order to get out of poverty. This is however not an obvious or automatic consequence of the expectations of the municipality.

## 6.2 Work requirement

The dynamics of individuals' decision-making schemes makes it necessary, not only to study the spread of the use of social assistance among individuals, but also how long it lasts. Work requirement in Norway is mainly focussed at getting individuals out of unemployment in the long-run. One of its main targets has been individuals with foreign background, who statistics show, receive social assistance more frequently than the Norwegian population in general. The figures are higher for newly arrived foreigners especially those with non-western background. 55% of those who receive social assistance are non-western foreigners.

Whereas it is generally more difficult for newly arrived foreigners to be integrated into the Norwegian labour market than the locals, (which makes it more difficult for the individuals to be economically self reliant), the integration period, and difficulty level of the non western foreigners, vary from group to group. This is mainly because of difference in educational background. This leads to, as studies show, fewer labourers and more unemployment among foreigners, which has made these individuals more reliant on social assistance.

Studies also show that individuals with foreign background depend on social welfare for longer periods than the rest of the Norwegian population. This is contrary to the goal of the social welfare. A report from statistics Norway shows that among foreigners who had been in Norway for 5 years, 13 percent of them received social assistance in 1993. This is three times higher than the number for the locals. There is also a clear divide between different groups of foreigners, with the clearest divide being between refugees, where among 30% receive social assistance and non-refugees, where among 7% do. Such divides can be further seen between foreigners with western background and those with non-western background, and further between groups from different countries. This implies that different measures should be taken to address the situations of the different groups or even individuals. I will, however, not go into details about the various groups. In the literature we read that lack of relevant qualifications is one of the explanations for the low unemployment among foreigners, see Djuve and Hagen (1995) and Bratsberg, Raaum, and Røed (2006).

In the long run, and because social assistance does not get people out of poverty, there is a need for initiatives that will get individuals into the labour market. That the unemployment level in Norway is not very high can perhaps imply that these initiatives will not be very costly for the government.

There are several forms of work requirement programs which the government and Oslo municipality have initiated in order to target the long run dependence on social assistance. Individuals who participate here get a transfer which if not enough, can be supplemented by social assistance. These programs are so that, some responsibility is laid on the recipients of social assistance, and are applied in two ways; introduction programs for newly arrived foreigners into the country, and in the form of rehabilitation programs for individuals who have fallen from the labour market due to various reasons.

### **6.2.1 The introduction programme as work requirement**

The main objective of the introduction programme is to get newly arrived refugees faster into the labour market, or motivate them to take some formal education. This is achieved by giving the participants skills in Norwegian language as well as insight into the Norwegian society. In a wider scope, the participants also become more able to participate in the society at a level equal to the other citizens. Participation in the municipal introduction programs is compulsory for the refugees.

Participants get introduction benefits, which I denoted  $y_w$  in chapter three.

### **6.2.2 Rehabilitation program (Rehabiliteringspenger)**

Rehabilitation programs function in that, individuals receive benefits for subsistence if they because of sickness, injury, or disability, cannot continue working. The benefits are temporary and are given on condition that the individual is in some form of activity where the goal is that he or she goes back to work as soon as possible. The program can run continually for up to 52 weeks. If the individual has a job from before, then he must try in cooperation with his employer, to create a situation so that the job situation can be maintained. In cases where the same job cannot be maintained, or if the individual does not have a job from before, then the

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local NAV office, will see if the individual can get other kind of assistance such as rehabilitation aimed at getting individuals back to work (ykesrettet attføring).

Like in the case of introduction program, those who participate in rehabilitation programs, get some benefits similar to the  $y_w$  in chapter three. The basis for benefits is the income that rehabilitation benefits are calculated from, and is calculated from the last income three years, before the individual became disabled by over 50%

Individuals with higher expenses because of family size or needs, get supplementary benefits so that they can meet these needs.

The advantages of work requirement programs, such as its ability to get individuals out of poverty in the long run, has been the government's objective through the ministry of labour and inclusion. Reports from NAV and statistics Norway show that there has been a substantial success in the program.

The programs under NAV initially focussed on targeting individuals who did not have the necessary qualifications. They failed to target those who had fairly high levels of education, but did not have access to the labour market because of their background or lack of skills. This has led to an extension of the programs, and more courses are offered to target more groups, even academics.

That NAV cooperates with small firms and certain employers, may also create control problems in that, the authority cannot control whether the reports they get, about among others, the labour input and wage levels are true.



### **6.3 House rent**

In addition to social assistance towards subsistence, households may receive assistance to cover housing facilities and electric bills. These transfers are earmarked, and can be looked at as in-kind transfers. I have in this thesis focused in the use of house rent allowance.

According to the rules and guidelines that Oslo municipality uses, in order to get house allowance, either the applicant or a member of the family must be a legitimate or deserving recipient. These may include families with children, disabled persons and pensioners. One of the requirements of Oslo municipality for those applying for rent allowance is that all members of the family must stay in the apartment, thus there is no possibility of renting out the apartment or house.

That the apartments must be simple, in order to get house rent allowance, and that such apartments are often located in areas that are not very popular to live at, enables the municipality to separate those who truly need help and the potential impostors.

In general, however, there is a need to use different instruments to target different groups.

## 7 Conclusion

In this thesis, I have discussed the use of lump-sum taxes as a benchmark model, which leads to optimal redistribution according to the utilitarian goal of a benevolent policy maker, here represented by Oslo municipality. The use of lump-sum taxes is based on the assumption that the policy maker has full information about the recipients' types, and their preference over different bundles of consumption goods and leisure. Individual types were either determined by their income generating ability, reflected by their wage levels, or by their relative utility of income, depending on health conditions, size of family or other exogenous factors, that affect their consumption of labour income. These types were random characteristics, and determined whether an individual got transfers, or was to pay taxes to cover the costs of the transfers.

In an environment of full information, we saw that the use of lump-sum tax and transfers was optimal in moving the allocation of resources from one Pareto optimal allocation to another. The environment of full information is, however, hypothetical and I extended my discussion to cover the real life situation where, the policy makers make their decisions, in an environment with asymmetric information. In such an environment, the use of lump-sum taxes leads to deadweight loss and there is a need to use other instruments of redistribution to reduce this deadweight loss. This can be achieved by targeting the efficiency of the recipients, and I have discussed three different ways by which this can be done; namely by the use of income taxes and cash transfers, work requirement, and the use of in-kind transfers. These instruments target recipient efficiency by creating restrictions on their choices of labour and leisure in the cases where poverty is caused by income generating ability. In the cases where poverty is caused by relative utility of income, the instruments create restrictions by targeting what quantity or quality of goods and services they can receive. I have divided the asymmetric environment into two, first when only income is observable, and the second case, when the policy maker has no information about the recipients, and discussed the effects of the various instruments under different situations.

When poverty is caused by income generating ability, and the policy maker has information about the recipients' incomes, then we have seen that income taxes and cash transfers can be used. How high the cash transfers can be is, however, limited and this may limit the use of this instrument to redistribute income. Income tax may also have a distorting effect on the

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labour inputs, and cash transfers when not correctly targeted, may turn to be poverty traps, in that individuals who receive social assistance may choose not to work as efficiently as they would in the absence of these transfers. These effects may therefore, limit the extent to which income tax and cash transfers can be used as an instrument of redistribution. The use of work requirement can target certain groups of individuals that income tax may not. In the long run, work requirement has the deterrent effect in that it creates an incentive in individuals to work hard to get out of poverty. This is especially true for individuals without required skills as in the case of newly arrived foreigners, who may lack language and labour skills. In that way, it reduces the number of the poor in the long term. This is an effect that cash transfers do not necessarily have. Using work requirement as a deterring instrument does not however increase the utility of the participants. This is because it should create an incentive in individuals to get out of poverty. Work requirement may also crowd out the private sector because it has cheap labour input to offer certain services, but in cases of subsidised income for individuals working in the private sector, this negative effect is reduced or disappears. When income cannot be observed, then the use of income tax and cash transfers fails, and work requirement provides the necessary requirements to both discourage potential impostors in the short run, and encourage individuals to work hard to get out of poverty in the long run.

When poverty is, however, caused by relative utility of income, then the use of labour income and work requirement may fail to target the correct recipients. The use of in-kind transfers may, however, target those who have utilized their income generating ability, but may still be poor due to their consumption expenditure because of health costs or family size. The fact that in-kind transfers are inferior to cash transfers has a separating effect when this inferiority is intended. I have here looked at the use of house rent allowance as in-kind transfers, and discussed how low quality houses can be used as inferior in-kind transfers to effectively separate the deserving recipients from the potential impostors.

Finally, it is important to note that each instrument, on its own, cannot target all the various types in the society, and a good welfare program should therefore, use different instruments at different levels, to target different groups. Given a continuous range of individual types, the definitions of the intended recipients and potential impostors may vary from individual to individual, affecting to what extent the various instruments can be used, and their administrative costs on the policy makers. Discussing the distribution of individual types in

Oslo municipality and recommending which instruments to be used, is, however, beyond the scope of this thesis.

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