

Altering the Dutch labour market

Models of subsidized labour

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Abstract

Questioned is whether subsidized labour can increase social welfare compared to current redistribution policies. Three main policies of the Dutch welfare state – the assistance benefit, statutory minimum wage, and legislation favouring unions – are discussed. The assistance benefit causes wages to rise and unemployment to grow. Also, job-searchers put less effort in their search. The statutory minimum wage and labour unions favouring legislation causes wages to be above market-clearing levels, thus causing higher levels of unemployment. Due to higher unemployment levels among the low-skilled these policies do not achieve redistribution (efficiently). An alternative of subsidized labour is given. Such subsidy will improve employment, while government expenditure will not rise considerably. It provides an incentive to have a job, and assures a minimum income. The Earned Income Tax Credit (EITC) of the U.S.A. is given as an example of such a subsidy. Several models are provided to demonstrate the positive effect on social welfare, while redistributing income.

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Nam et ipsa scientia potestas est

Francis Bacon (1597)

Preface

My professors at the George Mason University, U.S.A., are so-called classical liberals.¹ They believe in a very marginal role for the government. During one of their classes, about labour unions, I was struck with the subject of my thesis. Legislation in favour of labour unions, as well as the assistance benefit and the statutory minimum wage disturb the labour market. Politically, redistribution and providing minimum income is often given as arguments for this disturbance, also in the Netherlands. However, I doubt if the Dutch set-up is the best way to reach redistribution (efficiently).

Somewhere along the way from idea to thesis, the set-up has changed considerably. This is mainly caused by my coach, Josse Delfgaauw, who kindly insisted that I founded my idea with some math. As a result, the more argumentative style I had in mind, changed into a more math based story. The argument itself is less vocal in my opinion, but better based. More importantly, I have learned to build a (simple) model.

For this, and his overall support, I am grateful that Josse Delfgaauw was my coach. I have to mention the fact that he was always available on short notice, from which I benefitted a lot. Furthermore, I would like to thank Dan Klein and Tyler Cowen, my professors at GMU. They made me more critical about economic theory and public policy. Without them, I would not have come up with this idea. Last, but certainly not least, I have to thank Jara, not only for her helpful comments, but also for her support.

Dutch policy will not change quickly, I suppose, especially due to the poldermodel. Consensus is in our blood. Since all parties – labour unions, employers' organisations, and the government – agree to this system, considerable changes are not to be expected. In my opinion, considerable changes by subsidizing labour can be made, without causing 'American circumstances'. I have tried to make this argument.

Martijn van der Kroon
Augustus 2009

¹ In Dutch liberals (liberalen) has a right-wing meaning. However, in the U.S.A. liberals are left-wing – democrats –, therefore the additive classical.

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Introduction

The Netherlands is a typical example of a welfare state. Several times there has been a discussion about the fact whether or not we support the (financially) needy too much. In the past, social benefits has been frozen and even decreased. Conditions of the 'assistance benefit'² have been increased and enforcement strengthened. More recently, the allowance for young less-abled³ was under discussion. Probably, conditions will be increased in the near future as well. Apparently, providing a minimum income for the financially needy and defending their rights is an important issue.

The financially needy are supported by the Dutch government through several social benefits, subsidies, and the statutory minimum wage. Income is redistributed through these instruments, with help of the progressive tax system. Some of these policies have a large influence on the labour market. I have chosen to discuss the three most important ones: the assistance benefit, the statutory minimum wage, and the poldermodel. As I will demonstrate, government's influence through the poldermodel is mainly based on the legislation that favours the bargaining power of unions.

I am concerned about two aspects. First, in which way and to what extent do these policies influence the labour market? Second, is redistribution efficiently achieved in this way? I focus mainly on low-skilled, low-income workers, since redistribution is set up to increase their well-being. I demonstrate that the assistance benefit raises unemployment, although it raises wages as well. Furthermore, it causes people to put less effort in their job-search, which increases unemployment even more. The statutory minimum wage causes wages to be above market clearing-levels, through which unemployment rises. The labour unions, favoured by legislation, have the same effect. Although the assistance benefit causes some redistribution, the statutory minimum wage and union favouring legislation do not, in my opinion. Moreover, I will state redistribution is not caused efficiently by these policies, mainly since they, although they increase wages, cause higher unemployment amongst low-skilled workers.

Instead of the policies above, I formulate an alternative in the form of subsidized labour. In my opinion, social welfare can be increased by changing the applicable legislation. Nowadays, a person can not work for a wage below the statutory minimum wage or the

² Bijstandsuitkering

³ Wa-jonguitkering

relevant wage floor.⁴ Therefore, some people receive an assistance benefit, while they could work for a lower wage than the wage floor. This construes a disturbance of the labour market, which is, in my opinion, not strictly necessary. Therefore, I suggest eliminating the legislation that favours labour unions and the statutory minimum wage as much as possible. By doing so, wages can reach market-clearing levels (better) and employment will rise. In the optimal situation full employment exists and the assistance benefit can be abolished as well. Assuring everyone of a minimum income can be done by subsidizing labour by the government. Such subsidy provides an incentive to have a job and will be able to provide a minimum income. Redistribution is reached (more) efficiently in such a way. The assistance benefit can be upheld if unemployment persists, due to market factors for instance. I provide the Earned Income Tax Credit (EITC), a form of subsidized labour in the U.S.A., as an example.

Next, I provide some generally formulated models to demonstrate the effect of subsidized labour. Although in a general format, they do take the policies mentioned above into account. First, I formulate a standard model, which I alter by introducing a declining subsidy on labour (i.e. the higher the wage, the lower the subsidy), and (second example) an EITC-like subsidy. Second, I take fixed cost of work into account and formulate an EITC-like subsidy again. Last, I formulate a model which considers bunching and use a declining subsidy on labour. In all models social welfare will (most probably) increase due to the abolishment of current policies and the introduction of subsidized labour. In my models I use the levels of the assistance benefit and the statutory minimum wage as guidance. I do not challenge the height of these government-set standards of living, since they are rather arbitrary.

1.1 Problem statement

My problem statement is:

Does the introduction of subsidized labour increase social welfare in the Netherlands? What effect will subsidized labour have on the redistribution of income? What effect will subsidized labour have on the efficiency of such redistribution?

⁴ From time to time I will only refer to the wage floor. That wage floor might be the result of either the statutory minimum wage or collective labour agreements, which I will describe in more detail later.

1.2 Structure

In order to answer my problem statement, I use the following structure.

In the next section I start with defining maximization of social welfare, through redistribution, as a goal of the Dutch government. After, I discuss the policy measures of the assistance benefit, the statutory minimum wage, and governments' influence on the poldermodel in depth in the subsequent subsections. In each subsection I also state the relevant economic theory. I do so in order to define the exact influence these policies have on the Dutch labour market and to what extent they achieve their goal of redistribution (efficiently).

In section 3 I will put forward my alternative of subsidized labour. I define the underlying principles of such a subsidy, i.e. providing incentives to have a job and providing a minimum income. I state the benefits of subsidized labour, being increased employment and redistribution (in a more efficient way). Also, I deal with the possible critique that government expenditure will increase considerably and the equilibrium wages will be at very low levels. After, I will provide the EITC of the U.S.A. as an example. I conclude that subsidized labour can improve social welfare.

Section 4 contains the several models I mention above to enhance my argument. I use three setups: one general setup, one taking fixed cost of work into account, and the last considering the bunching effect. In each I remove the wage floor, so I eliminate the statutory minimum wage and the labour union favouring legislation. Also, I try to abolish the assistance benefit as much as possible. I define a subsidy, either declining or EITC-like, to achieve redistribution in a more efficient way. After comparing the before- and after-state, I conclude that social welfare will rise in almost all situations. With the bunching effect, social welfare will rise most probably.

Section 5 concludes and gives suggestions for further research.

In this way I answer my problem statement in clear subsequent steps. First, I state the principles of social welfare and redistribution of goals of the Dutch government. Next, I focus on the problems with current legislation. Third, I define a possible solution in subsidized labour and provide an example in the EITC. I put forward the benefits and try to defend subsidized labour against possible critique. In order to strengthen my argument I provide models that indicate that subsidized labour achieves redistribution more efficiently.

2 Influences on the Dutch labour market

The Dutch government tries to maximize the total utility of the Dutch people. To achieve this goal, they apply the concept of social welfare with diminishing marginal utility. As a result, they put forward redistribution policies to equalize income to some (marginal) extent. I will deal with social welfare and redistribution in the next section.

Several policy measures are used to influence the distribution of income.⁵ I focus my thesis on the three, in my view, most important institutions that influence the labour market. The labour market is mainly influenced by our system of statutory minimum wages and social benefits. Several social benefits can be distinguished. First, we have the ‘assistance benefit’ to support those who are long-term unemployed. Second, we have the ‘unemployment benefit’⁶, for those who are short-term unemployed. When you lose your job in the Netherlands you first receive an unemployment benefit for a certain period, depending on the time of your former contract and your age. After this period you receive the assistance benefit. Since the unemployment benefit is only allowed temporarily, I do not consider this benefit in my analysis. Last, we have several benefits for the people that are (temporarily) not capable to work and the mentally and psychically challenged. One might consider these people as being outside of the workforce; therefore, I will not take these benefits into account.

Furthermore, our poldermodel has a great influence on the labour market. The Netherlands is a consensus economy, based upon close discussion between labour unions, employers’ organisations and the government. The government has instituted several pieces of legislation that enlarges the bargaining power of the labour unions. Mainly due to this legislation the labour unions have a large influence on the labour market.

In the second section I will focus on the assistance benefit, which is providing a minimum income for the unemployed. I will summarize the Dutch system first, and will focus on economic theory next. In section 2.3 I will discuss the statutory minimum wage. Again, I will describe the Dutch system and provide theoretical background next. Last, I will elaborate on the poldermodel and government’s influence. I will start with its history and work back to present time. Also, I will provide a theoretical framework. Finally, I will provide a conclusion.

⁵ My thesis focuses on the ones that directly influence the labour market in this aspect. I will not consider indirect influences like the progressive tax system, regulations considering working conditions, etc.

⁶ Werkloosheidsuitkering

2.1 Social welfare and redistribution

In the Netherlands the Dutch government tries to maximize the total utility of the Dutch people. To achieve this goal they apply the concept of social welfare with diminishing marginal utility. Diminishing marginal utility means that every subsequent euro a person receives (has) yields a lower utility than the second-last euro. The utility of a population given total income is thus maximized, when all persons receive the same amount of income. Since the height of an individual's wage is (merely) determined by skill-level, the income of individuals will differ. Total levelling of income would eliminate incentives to perform better than anyone else. Hence, communistic situations would occur. Therefore, the Dutch government – as many governments in the world today – chooses to redistribute income to some (marginal) extent. In the Netherlands, the government tries to achieve this redistribution (mainly) by the progressive tax system and with several institutions in the labour market, which I will discuss in detail in the next sections.

In the Netherlands a mild form of the Rhineland-model⁷ is applied. As a result, a progressive tax system, several poverty subsidies, social benefits and a statutory minimum wage are put in place to redistribute income. Although the Rhineland-model itself is disputed,⁸ I will accept the idea of redistribution as a political choice, which is made in the Netherlands (Visser, 1998). Therefore, I accept the argument of diminishing marginal utility of wealth (income) as a market failure rationale for the redistribution of income by the government. Hence, government believes that individuals are not able to redistribute income in a less costly way through private initiatives, so government decided to take on the task of redistributing income itself. In this case, I assume that government intervention is less costly than the market solution.⁹ However, such redistribution should not cost society more than strictly necessary.

2.2 Assistance benefit

First, I will summarize the Dutch system of the assistance benefit. Next, I will state relevant economic theory considering the assistance benefit.

2.2.1 The Dutch system

The assistance benefit has its origin in the “Poor Law”¹⁰ that was already put in place in 1894. The assistance benefit as we know it today has been introduced by the “General

⁷ The Rhineland-model is a model based upon corporatism, redistribution and a social safety net.

⁸ See for instance Bolkestein (1999). For more general critique on government duties see Freedman and Freedman (1990), for instance.

⁹ Several market solutions exist. However, I do not mention them, since this is beyond the scope of my thesis.

¹⁰ Armenwet

Assistance benefit Law¹¹ from 1963, as has been subject to considerable changes in 1996. In order to receive the benefit the beneficiary needs to meet a number of conditions. First, a person's income and wealth needs to be below a certain threshold. Furthermore, people who receive the benefit need to apply for jobs regularly and need to accept any job, even if the skill-level of the job is lower than their own. In recent history a debate about the job-apply regulation existed, since evading this condition appeared to be quite easy. Nowadays, enforcement has been strengthened. For the sake of argument, I assume that the enforcement works perfectly, hence everyone who receives a benefit is entitled to one and all jobs that come available are taken by people who receive a benefit. In reality, fraud and friction occurs. The assistance benefit amounts up to € 898.70 net per month in 2009 for singles¹², including an extra benefit for rental support of € 256.77.

The Netherlands is a typical example of a welfare state. The inhabitants of the Netherlands have chosen to support the poor and needy financially. They have voted for parliament in such a way that the government instituted regulations like the one described above. Apparently, the Dutch population is under the opinion that the assistance benefit is just sufficient for a person to live a normal live, as is construed to be the minimum income. That minimum income is available for people who are willing to comply with regulation. In other words, people receiving income either have a job or are looking for one.¹³

2.2.2 Economic theory

It is common knowledge that economic theory considers a trade-off between wages and leisure time. Each individual has his¹⁴ individual hourly earning power (i.e. possible wage) and each individual values leisure time differently. With those values he chooses an optimum number of hours to work. So, for a certain set of wages¹⁵ labour supply is fixed in the short run. If the wage levels of the set of wages increases, labour supply will increase as well, since leisure time will become more expensive. On the other hand, if leisure time becomes cheaper, labour supply will decrease. Receiving an assistance benefit makes leisure time cheaper, since the income difference between working and not working becomes smaller, so labour supply will decrease. The second order effect is, however, that wages will rise, due to

¹¹ Algemene Bijstandswet

¹² More categories exist for people living together, having children and elderly.

¹³ Please note that I disregard people who receive other social benefits, like those for the less able. People who are receiving an unemployment benefit are in the same position as people who receive an assistance benefit according to my opinion, so I do not consider them separately, as mentioned before. Especially, now that current regulation is changed to the aspect that people who are receiving an unemployment benefit has to accept any other job, even with a lower skill-level than their own.

¹⁴ I have chosen to use "he" and "his", please read "he/she" and "his/her".

¹⁵ With a set of wages I mean that every individual might get paid differently, because of differences in skill-level. However, these wages are linked to each other in the sense that the higher the skill-level, the higher the wage.

the smaller supply. Those higher wages will cause, in turn, a higher labour supply. The total effect, however, will be negative, as can be shown in figure 1. There, P_1 and Q_1 depict the former equilibrium. Due to the assistance benefit supply will shift, such that labour supply decreases towards Q_2 (first order effect). Next, demand will adapt as well, causing the new equilibrium price (P_2) and quantity (Q_3) (second order effect). As you can see, a higher price with a lower level of employment results.

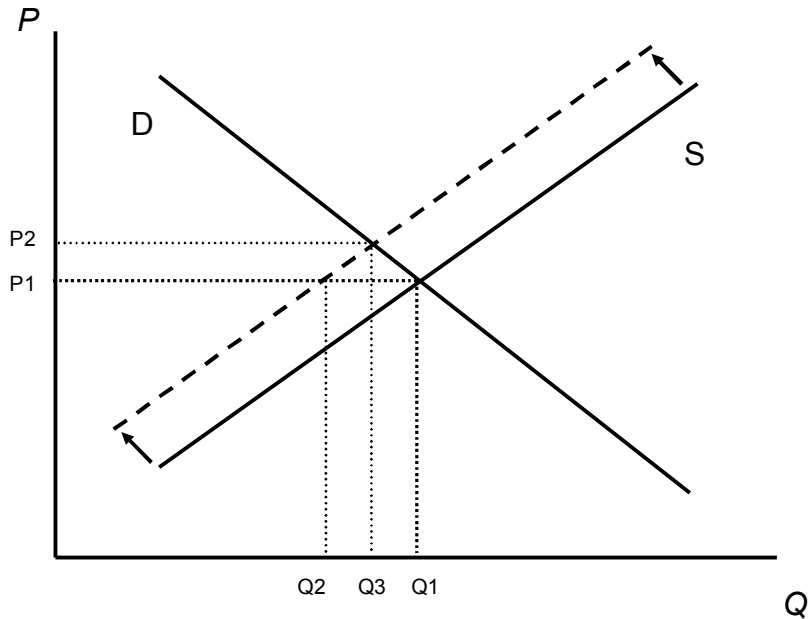


Figure 1: Effect of the assistance benefit on the labour market

Furthermore, the assistance benefit is not a benefit that is received while choosing to have leisure time. As I have mentioned above, the assistance benefit only becomes paid if a person is (actively) looking for a job. So, it is not really a reward on leisure time. Therefore, the assistance benefit can be seen as a reward for participation in the job market, which decreases the effort of job-searchers at the same time, since not finding a job is ‘rewarded’ (Shapiro and Stiglitz, 1984). As a result, more people are unemployed than in a situation where no assistance benefit exists.

2.3 *Statutory minimum wage*

In this section I will describe the Dutch system on the statutory minimum wage. Also, I will state relevant economic theory.

2.3.1 *The Dutch system*

The “Law on the minimum wage and minimum holiday allowance”¹⁶ was introduced on 27 November 1968. The law stipulates a minimum wage for employees of the age of 23 and above.¹⁷ The current (June 2009) minimum wage for employees of 23 and above is € 1,381.20 gross per month, excluding an 8% statutory holiday allowance. The minimum wage is adapted to inflation twice a year. In 1999 about 5% of the labour population earned the minimum wage (SER, 1999).

The SER (1965) mentions in his advice on the minimum wage, that it is meant to provide a reasonable income for a family with two children. Therefore, it aims to provide a higher level of income than the assistance benefit. The government stated that their proposal to introduce a minimum wage was based upon the idea that every working person should earn enough to live a normal life, taking the general welfare of the Netherlands into account.¹⁸ Also, they mention that the labour unions as well as employer’s organizations asked for such regulation. At that time (1967) only 1% of the labour population was ought to be affected by the statutory minimum wage. Interestingly, no political discussion has taken place to create such a minimum income through a government subsidy.¹⁹ Also, the effect on the labour market (i.e. unemployment) and the competitive position of the Netherlands is not mentioned. Studies in the United States indicate that poor families receive only 19% of the earnings increase due to a minimum wage increase (Ehrenberg and Smith, 2006). So, the minimum wage does not raise the income of the poor much.

2.3.2 *Economic theory*

Conventional economics, like Ehrenberg and Smith (2006), suggest that instituting a minimum wage (or raising it) will decrease employment in the low-wage sector. The minimum

¹⁶ Wet minimumloon en minimumvakantiebijslag

¹⁷ The law also stipulates a minimum youth wage for persons of the ages of 15, 16, 17, 18, 19, 20, 21, and 22. I disregard these categories, since I would like to discuss the minimum wage itself as a concept. Also, these categories are only temporarily; if the employees becomes older he will ‘grow’ into the next category, the employer has no influence on this event.

¹⁸ Kamerstukken Tweede Kamer 1967-1968, 9574, nr. 3, Regelen inzake een minimumloon en een minimumvakantiebijslag, Memorie van Toelichting. (Minutes of the Dutch parliament)

¹⁹ Please note that a subsidy is the same as a lower/negative tax. In the remainder of my thesis I will use both terms, since sometimes one seems to be more appropriate or applicable than the other, but the effect remains the same.

wage will prevent the labour market from reaching market-clearing levels (Johnson, 1980). The higher price for labour (i.e. the statutory minimum wage) will decrease demand.

The effect of a statutory minimum wage is depicted in figure 2. There, P_1 and Q_1 depict the equilibrium when no minimum wage exists and wages can reach market-clearing levels. A statutory minimum wage will set wages from P_1 to P_2 . As a result, demand will drop from Q_1 to Q_2 , while supply will increase from Q_1 to Q_3 . As you can see, an increase in unemployment will be the result.

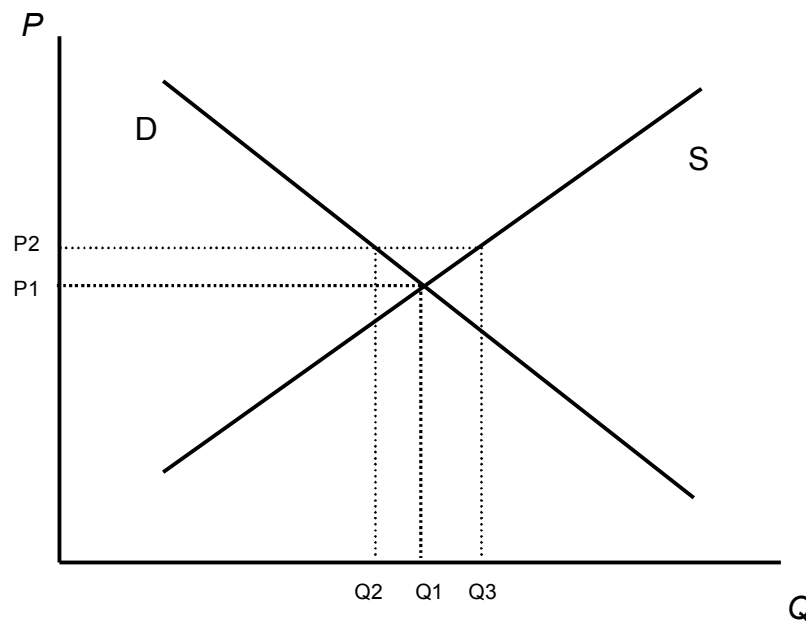


Figure 2: Effect of unions on the labour market

However, Card and Krueger (1995) find that a statutory minimum wage has a small or negligible effect on employment. They observed the increases of the minimum wage in California (1988), New Jersey (1992), and the federal increases in 1990 and 1991. De Fraja (1999) builds a model on these findings. He states that a minimum wage has a spill-over and bunching effect. The spill-over effect causes wages above the (new) minimum wage to increase as well. The bunching effect is the fact that a lot of employees will be employed at the (new) minimum wage. This is caused by the assumption that employers can alter working conditions, so an increase of the wage floor will cause employers to alter conditions in such a way that employees earn their marginal revenue again, at the expense of other benefits and working conditions. Therefore, employment levels will not fall (much). De Fraja concludes that working conditions worsen due to a minimum wage; so the minimum wage “hurts the ones it is instituted to help”.

Neumark *et al.* (2004) come up with new evidence. They separate the influence of a minimum wage on the wage level, hours worked, employment and labour income. Especially, by measuring the influence of the minimum wage on hours worked they differentiate from existing literature. They conclude that a minimum wage has a negative effect on employment and hours worked. Neumark *et al.* also come to the conclusion that the combined effect on employment and hours worked on the income of low-wage workers is larger than the positive effect of a minimum wage (raise) on their total income. The decrease in hours worked is in my opinion a sort of part-time unemployment. So, the statutory minimum wage has a negative effect, since the total decrease in employment (fulltime and part-time) is larger than the increase in wages.

To me, the research from Neumark *et al.* sounds more convincing compared to the results of Card and Krueger, since they include more factors. Neumark *et al.* not only look at the effect on the employment ratio, like Card and Krueger, but also observe the hours worked of former and new employees. Such an observation seems to be more complete. However, theory and practice seems unable to provide a sound conclusion. In the Netherlands, research has been done as well. The SER (1999) indicates, based upon various other researches, that the negative effect of the minimum wage on unemployment in the Netherlands exists. They also conclude that this effect is larger in the Netherlands than in other countries. This is due to the fact that changes in the statutory minimum wage have a spill-over effect on the social benefits and the low-skilled incomes – which are centrally agreed – and the other way around. Recent research on Germany shows that the institution of a minimum wage will cause an increase in unemployment as well (Ballegeer and Duvillier, 2009). They base their results upon several statistical studies on the German labour market, which indicate severe job loss, an increase of income inequality, and an increase of government expenditure.

I conclude that a statutory minimum wage has a negative effect on employment. According to Neumark *et al.* such legislation has a negative effect, on net, on the income of low-wage workers. As a group, they will earn less labour income after the institution of a minimum wage legislation than before.

2.4 The Poldermodel

I will start with the history of the poldermodel and work back to present time. An economic framework will follow.

2.4.1 What's in a name?

While the poldermodel is a consensus model, ironically no consensus about its origin exists. Actually, three different views exist. The first one even goes back to the Middle Ages. Back then the polders of the Netherlands were created, below sea-level pieces of land that were protected by dikes. Lords, farmers, and citizens had to work together to protect their land against the water; several cities and villages had to cooperate in order to keep their feet dry. In such a situation of cooperation no major disputes within a certain polder could arise, because it would endanger their cooperation. Instead, an environment of cooperation and discussion was established.

The second theory is based upon the rebuilding of the Netherlands after the Second World War. All major political parties, labour unions and employers' organisations worked together to rebuild the Netherlands and its economy. Important Dutch institutions, like the Social Economic Council²⁰ were established in this period.

Third, the most contemporary theory on the origin of the poldermodel is the accord of Wassenaar²¹ of 1982, created by the Foundation of Labour²², which embodied employers' organisations and labour unions. In a period of severe unemployment these parties agreed upon a trade-off between wage moderations and the shortening of working hours.

In its current meaning the poldermodel is referred to as the consultation between employers' organisations, labour unions and the government. This practice of cooperation is mainly the result of the accord of Wassenaar and several pieces of legislation which favour the labour unions, which were put in place a long time ago.

2.4.2 In the beginning...

Around 1900 the most important unions and employers' organisations were created in the Netherlands.²³ In 1927 the Wet op de Collectieve Arbeidsovereenkomst²⁴ is put into action,

²⁰ Sociaal-Economische Raad (SER) (Social Economic Council)

²¹ Het akkoord van Wassenaar

²² Stichting van de Arbeid

²³ FNV, the biggest labour union is created in 1906 and VNW, the most important employers' organisation is created in 1899.

stipulating that any agreement between an employer – sometimes through an employers' organisation – and a labour union also applies to employees that are not a member of that union and even to the members of other unions. The 1937 Wet op de Algemeen Verbindendverklaring²⁵ gave the Dutch Minister of Social Affairs and Employment the power to declare a collective agreement applicable to the whole sector, provided that 55 percent of that sector signed the agreement. So, an employer who is not a member of an employers' organisation and his employees can be bound by an agreement that they did not explicitly agreed upon. These two pieces of legislation are the most important legal cornerstones for the poldermodel.

Only shortly after the liberation of the Netherlands in 1945 the Foundation of Labour was founded as a place for discussion between the unions and employers' organisations. In the beginning the Foundation of Labour discussed various social-economic topics and published several proposals. Out of its concern for the Dutch economy the government and the Foundation of Labour created the SER in 1950, which became the most important government advisor on social economic policy, as it still is today. The Foundation of Labour remained in existence for the purpose of negotiations between the labour unions and employers' organisations. The SER is a tripartite organisation that includes, besides the labour unions and employers' organisations, the government itself.

In the aftermath of the war the Buitengewoon Besluit Arbeidsverhoudingen²⁶ of 1945 created a Board of Government Conciliators that could set wages and had to agree with a collective agreement before it could be put in place. This board had to obtain the advice of the Foundation of Labour on matters of general importance. In that way they became the heart of the system (Zoetewij, 1955), together with the SER, from 1950 onwards. In reality, wage policy was controlled by the government up until 1960. Visser (1998) believes that the policy of wage restraints ended due to the EEC membership and the Kennedy rounds of the early 1960s. Others²⁷ argue that it is the result of the government's prohibition on businesses to take the wage increase into account when calculating their prices. Fact of the matter is that the first government without socialists abandoned the policy of wage restraints, and allowed for differentiated wage growth (Visser, 1998).

²⁴ Collective Labour Agreements Act

²⁵ Law on Extension and Nullification of Collective Agreements

²⁶ Extraordinary Decree on Labour Relations

²⁷ The FNV, the largest union in the Netherlands, for instance.

In 1970 the *Noodwet Arbeidsvoorziening*²⁸ gave government the power to impose a standstill on negotiations or to suspend contracts in case of an economic emergency. This law also gave the responsibility to set wages back to the unions and employers' organisations (Borghans and Kriechel, 2007). However, between 1970 and 1982 such an *emergency* took place seven times and only in 1972 they were able to reach an agreement without government intervention. However, this agreement had no lasting impact.

2.4.3 Het akkoord van Wassenaar

Three main reasons can be given for the establishment of Het akkoord van Wassenaar. First, in the last years before the agreement unemployment rose steeply, especially following the second oil crisis in 1981. In 1982 the unemployment of the labour force reached 13 percent, while the broad unemployment rate mounted up to 28 percent (OECD, 1982). Second, the membership rate of labour unions fell during the past few years, giving the unions a sense of urgency to justify their existence. Third, both parties knew by then that government would intervene and impose an agreement upon them if they were not able to reach one themselves. The incoming centre-right Dutch government had already put forward that it might reduce the number of working hours in compensation for a wage restraint as was recently done in France and Belgium (Visser, 1998).

The agreement²⁹ itself is just over one page long, but had a huge impact. The employers' organisations and labour unions merely agreed that they advised the negotiators of sector and company agreements to suspend the cost-of-living adjustments in favour of a cost-neutral introduction of shorter working hours. While this was only an advice, it was broadly followed. Average real wage fell by 9 percent, while the working hours were reduced from 40 to 38 hours (i.e. 5 percent) between 1983 and 1986 (Griffiths and van Zanden, 1988).

The new government led by Ruud Lubbers took some far-reaching decisions about the statutory minimum wages, social benefits and public-sector wages. Government first froze and then even reduced the civil servants' wages, the statutory minimum wage and the social benefits in the following years. Since the unions had accepted the wage moderations, these decisions were easier to sell than they would have been without the accord (Wellink, 1987).

Until this time the increase of the wages of civil servants and the social benefits were linked to the outcome of the annual wage negotiation between the employers' organisations, the unions and (frequently) the government. By the end of the 1970s, 60 percent of the annual

²⁸ Emergency Law Labour provision

²⁹ The agreement can be found in appendix 1.

budget was spent on these wages and benefits. Therefore, the government had great interest in the outcome of the negotiations, since large wage increases would have a great effect on the government budget (Albeda, 1987). As a result of the policy of reducing the civil servants' wages, that would maintain for years, the public sector had fallen behind by 10 percent in 1990 relative to private sector wages and the statutory minimum wage. Social benefits even fell behind by 15 percent in the same period (Visser, 1998).³⁰

2.4.4 Present time

Nowadays, the poldermodel is still in place. Labour unions, employers' organisations and the government negotiate so-called collective labour agreements.³¹ After these negotiations the Minister of Social Affairs and Employment makes these agreements applicable to the whole sector. Within these negotiations not only the wage increase is discussed, but fringe benefits, and even socio-economic aspects are considered as well. For instance, recently the pension age is discussed.³² To a large extent, not much has been changed in the negotiations and the applicable legislation since the accord of Wassenaar.

2.4.5 Economic theory

In this section I will put the information from above about the poldermodel and especially about the labour unions in a theoretical perspective.

General economic theory agrees that unions try to increase the reward on labour,³³ while they also care about the level of employment. As is well-known, a trade-off between wage and employment exist. Unions try to optimize this trade-off, mostly by limiting the labour supply. Some argue that unions can be seen as a monopoly (Checchi *et al.*, 2002). Like a monopoly unions set a price and determine demand in that way. Although we have several unions in the Netherlands, they have to operate as (nearly) one, since they face the threat of exclusion. Therefore, the comparison of the labour unions with a monopoly is better than comparing them to a cartel.

In order to fully understand the bargaining power of the unions, I would like to put forward the following distinctions. In general, two kinds of labour unions exist: the closed shop and open shop unions. Closed shop arrangements are common in the United States (Gordon, 2004). In such an arrangement, a specified percentage of the employees of a company can

³⁰ This would even mount up to 20 percent in 1996.

³¹ Collectieve Arbeidsovereenkomsten (CAO's)

³² NRC Handelsblad, 22 juli 2009, "Jongerius oppert flexibele AOW".

³³ Please note that this reward not only includes wage, but also fringe benefits. Considering them separately, would not make my analysis any different. Throughout my thesis I will simply refer to this reward as the wage of employees.

unionise that company. As a result, that company can only hire members of the union and wages are set between the union and the employer. Open shop arrangements are common in Europe. The Netherlands has an open shop arrangement. In such a system union membership does not lead to a higher wage for a specific group of employees, since the outcome of the bargaining will be applied to all employees. Unions have to provide additional services in order to 'stay in business'. In open shop arrangements the bargaining power of the labour unions is less. Therefore, they will not be able to raise wages as high as in a closed shop arrangement.

Second, I would like to draw attention to the fact that centralized bargaining is used in the Netherlands. Government, employers' organisations and labour unions bargain together on several aspects, including wage increase. By doing so, they can take into account several consequences of pay raises. I have not found any literature on such a threefold relationship, that I can relate the poldermodel to. Therefore, I would like to consider the relation between unions and employers' organisations and between unions and the government separately.

Layard and Nickell (1990) modelled unions bargaining with employer's organisations in two states; when they only bargain over wages and when they bargain over wages and employment. They find that the equilibrium wage is actually higher when unions bargain over employment as well. The intuition is that if unions can bargain over employment and wages, they have more bargaining power, than in the situation in which they can only bargain over wages. As a result, they choose to secure higher wages. Their result is limited to the effect that it requires a Cobb-Douglas production function with elasticity of substitution of at least unity. However, they do demonstrate that wages will increase and employment will fall, if unions and employers' organisations bargain over wages or over wages and employment, compared to the laissez-faire state, because unions are able to limit labour supply.

Dur (2001) models three economies; laissez-faire, wage-setting by company and industry unions, and wage-setting by a central union. He also introduces government, where the median voter sets the tax level. In my opinion, wage-setting by a central union can be compared by centralized bargaining like is done in the poldermodel. Dur proves that such centralized bargaining yields a higher total utility than the wage-setting by company and industry unions. The intuition is that under centralized bargaining the union internalises the effect of their wage-setting decision. So lower wages lead to more employment and, therefore, lower benefits and tax levels. Company and industry unions do not take the subsequent government decisions into account, since their effect on the tax rate is negligible. Furthermore, he also proves that centralized bargaining leads to a less optimal outcome than

the laissez-faire setting. In the laissez-faire setting there will be no tax, since no unemployment exists, due to the fact that wages can reach market-clearing levels. Checchi *et al.* (2002) also mention that centralized bargaining induces less unemployment via wage moderation, as is happening in the poldermodel.

The various facts and circumstances described above sometimes have opposite effects. However, it is clear that labour unions cause wages to be above market-clearing levels. Figure 2 is applicable here as well. Unions will try to increase wages from P1 to P2. As a result demand will drop from Q1 to Q2, while supply will increase from Q1 to Q3. Unemployment will be the result. In this setting government regulation in favour of the unions will have the following result. Such regulation increases the bargaining power of the unions and therefore will increase P2. Such an increase will cause the distance between Q2 and Q3 to grow, causing even larger unemployment.

Last, I would like to make the following statement about unions in general. Johnson (1980) states that, while statutory minimum wages prevent the labour market of low-skilled jobs to reach market-clearing levels, unions do the same for middle-skill jobs. As I mentioned before, I will focus my thesis on the low-income levels. Therefore, including labour unions in my thesis seems to be controversial. However, because the Netherlands use a system of centralized bargaining, also low-skilled jobs – with low-wages – are included in the bargaining as well. The SER (1999) states that 82 percent of the employees are affected by a central agreement in which the lowest income scale has a maximum of only 105% of the statutory minimum wage. The central agreements cover 83 percent of all employees (Borghans and Kriechel, 2007), including sectors with typical low-skill jobs like agriculture, industry, and cleaning.³⁴ Therefore, unions do affect the wages of low-skilled workers. Card (1996) has proven, using data from the U.S.A., that unions raise wages more for low-skilled workers, than for higher skilled. Checchi *et al.* (2002) emphasize that the more people are influenced by the collective agreements, the more bargaining power the unions have. So, the Dutch labour unions have substantial bargaining power, also on low-wage sectors, since they influence the wages of 83 percent of all employees.

The above leads to the following conclusion. The poldermodel causes wages of low-skilled jobs to be above market-clearing levels. While centralized bargaining tempers the effect, the practice of declaring central agreement applicable to all employees in a certain sector worsens the effect. As Visser (1998) states, “the practice of public protection of collective

³⁴ See http://cao.szw.nl/index.cfm?fuseaction=dsp_document&link_id=116615 for a complete list of all current central agreements in the Netherlands.

agreements helps to prevent the emerge of a non-union sector based on low wages ... , which would otherwise be possible...” In such, government intervention helps to cause the wages of low-skilled jobs to be above market-clearing levels. If those interventions would be absent, low-skilled wages would be lower and low-skilled employment would be higher.

2.5 Conclusion

Government tries to maximize social welfare by redistributing income. It has chosen a range of policies to achieve such redistribution. Above, I have discussed the assistance benefit, the statutory minimum wage and the poldermodel. The assistance benefit causes wages to increase, but also causes a higher level of unemployment. Also, unemployed people will put less effort in their job-search, due to the assistance benefit. The statutory minimum wage causes wages to be above market-clearing levels, such that a higher level of unemployment results. Also, as a group low-income employees will earn less due to such legislation. The effect of the government on the poldermodel is mainly through the institution of several pieces of legislation that increases the bargaining power of labour unions. Those unions also cause wages to be above market-clearing levels. By doing so, they increase unemployment.

Therefore, I can conclude that the regulations regarding collective agreements (poldermodel), social benefits and the statutory minimum wage disturb the labour market. The argument to do so is redistribution. However, I am under the opinion that redistribution is not reached efficiently in this way and income is not really redistributed among the neediest (former) employees at all. Of course, the assistance benefit is a clear redistribution policy, but the effects of the statutory minimum wage and poldermodel are not that clear.

First, labour unions as well as the statutory minimum wage increases the income of some employees, those who remain employed, but also decreases the income of others, those who lose their job. As a result, the wage inequality between those who become unemployed and the rest of the wage distribution increases, due to the fact that the former employees lose their income.

Second, as Neumark *et al.* (2004) conclude, the whole group of low-wage employees, on net, suffers from the legislation on the labour unions and the statutory minimum wage. Although the remaining employees receive an increased wage, the loss of income for the new unemployed will be larger.

3 Subsidized labour

3.1 Introduction

As I mentioned before, government tries to maximize social welfare by redistributing income. The three policies I discussed above influence the labour market to a considerable extent. The assistance benefit, statutory minimum wage and the poldermodel have two main influences on the labour market. First, they all cause wages to increase and thereby employment to fall. The statutory minimum wage and the poldermodel (through the influence that the government has on the bargaining power of unions) cause wages to be above market-clearing levels. As a result, unemployment levels will increase. Second, the assistance benefit cause unemployed people to put less effort in their job-search. As a result, unemployment levels will be higher than they would be without such a benefit.

These policies are instituted to cause redistribution. Redistribution is based upon the idea that income should be taken from the wealthier and given to the poor. However, in my opinion, two aspects should be taken into account. First, obviously, redistribution should be achieved by those policies. So, the income distribution should be made more equal. Second, this redistribution should be done in the most efficient way.

In my opinion, redistribution is not resulting from these policies. An example may stress my point of view. Say that five employees are working for a company. Next, government introduces a minimum wage.³⁵ That minimum wage is set higher than the current wage of the employees. The company cannot pay the minimum wage, since it would not be profitable anymore. However, they can employ four persons and let one go. This example is in line with theory: a minimum wage causes employment to fall. Two effects take place: first, the former employee is worse off. Second, the four employees are better off, due to their higher wage. However, their working conditions might be worsened, due to the bunching effect mentioned in section 2.3.2.

The argument some people make is that after the institution of the minimum wage the five people earn in total more than before. I mention above that Neumark *et al.* (2004) doubt this result, since they find a net loss for the low-income employees. Moreover, income inequality between these five persons has grown. Before the institution of the minimum wage, those five persons earned the same. Now, four are earning minimum wage, while the fifth lost his

³⁵ I use the minimum wage for my example. However, similar examples can be given with the assistance benefit and the poldermodel.

income. In my opinion redistribution is not achieved by this policy. The poldermodel has similar effects. Although the assistance benefit does redistribute income, it disturbs the labour market to a considerable extent. On net, the government does not achieve her goal of redistribution very well with these policies.

Moreover, redistribution should be reached in the most efficient way. In general, the free market enterprise system, as is more or less founded by Adam Smith (1776), is the starting point. Government should only set-up institutions when a market failure rationale exists, like I mention in section 2.1. Although doubt can be raised, whether or not diminishing marginal utility of wealth (income) is such a rationale, I presume it is. Therefore, I would like to redistribute income such that everybody is able to make a reasonable living for himself. Although Dutch government tries to use these principles, the three discussed policies also have side-effects. The policy measures do not only change the net income of persons, as is the *only* objective of redistribution, but also cause disturbances on the labour market. Those disturbances do not serve the objective of redistribution, although any policy measure based upon redistribution will have inefficiency. More importantly, these policies are, according to my opinion, more inefficient than other possible policy measures could be.

Government should be looking for a more efficient way to achieve redistribution. I have shown by now that the assistance benefit, the statutory minimum wage and the legislation favouring labour unions are not causing redistribution in an efficient way, if they cause redistribution at all.

3.2 *Subsidized labour in the Netherlands*

I have looked for a way to achieve redistribution better and/or in a more efficient way. In my opinion subsidized labour can provide an alternative. Subsidized labour attaches an extra reward to labour; besides your wage, you will also receive a subsidy. Providing a subsidy based upon someone's wage causes only a small disturbance on the labour market, which I will address later. Such subsidy can cause redistribution to take place. At the same time, the policies mentioned above should be abolished. As a result wages will move towards market-clearing levels and employment will rise.

The subsidy on labour I have in mind should have the following four characteristics. First, nobody should earn less than a certain minimum income, which I set at the former assistance benefit. I do not discuss the level of that minimum income, since it is arbitrary. If full employment is the result of the abolishment of the government policies, that minimum income can be assured by the subsidy. Second, the subsidy should be such that a person's

wage plus his subsidy is at least equal to the former assistance benefit. Next (3), to me, it seems logical that no subsidy is awarded for wages at or above the former statutory minimum wage, since – although arbitrary as well – this level of income is construed to be a minimum level of income as well. Last (4), the subsidy should be such that total net income (including subsidy) will rise if gross wage rises. As a result, people will have an extra incentive to find a job. Furthermore, people will have an incentive to make productivity-enhancing investments, like schooling.

Full employment might not be reached in the new situation, for one reason or another. This fact weakens the effect of the subsidy, but does not have a negative effect. For the unemployed two solutions can exist, depending on the subsidy. Either, they receive the maximum subsidy, which is equal to the former assistance benefit, or the former assistance benefit will be upheld, providing them income. In both situations, unemployed will be as good off as in the old situation.

One possible critique on the abolishment of the three policies is that it will cause a very low equilibrium wage. According to this critique, the former unemployed will only acquire jobs with very low wages. Also, former low-income employees will see their wages lowered (to a large extent) as well. As a result, government expenditure on the new subsidy will be larger than the expenditure on the assistance benefit was. For this critique to be valid, two conditions have to hold.

First, the bunching effect has to be very large. The bunching effect is the effect that employers worsen working conditions as a result of an institution (or rise) of a statutory minimum wage for employees that will else not be profitable anymore. As a result of the worsened conditions employers can justify the remuneration with the minimum wage for these employees. So, a lot of people have to suffer from worsened working conditions in the original situation in order to justify their minimum wage. In my opinion, this group can not be very large, since working conditions can only be worsened to some extent. So, if the working conditions of only a small range of people can be worsened, only that range of people can be bunched. Also, although these people will earn less under subsidized labour, they will face better working conditions as well.

Second, the market is not able (or willing) to provide (enough) new employment opportunities and wages of existing jobs can therefore be lowered. In such a situation employers of existing jobs will see their profits rise. In my opinion this will result in new entrants, such that labour demand will increase, through which wages will increase. Also, ideas that were not

profitable under a statutory minimum wage will become profitable without one. Those new enterprises will cause labour demand to increase as well, and wages will follow. I believe that those mechanisms are strong enough and the creativity of the Dutch is large enough to cause equilibrium wages to be at a reasonable level.

Of course, some employees who earned minimum income will see their wage lowered. However, on the one hand they might see their working conditions improved; and on the other hand some former unemployed person will see his income increased. It might be that those three effects cancel each other out, such that social welfare will be the same; although I believe that the subsidy will have a positive effect. In section 4 it is demonstrated that subsidized labour indeed cause social welfare to increase.

Government expenditure will be more or less equal in my opinion. Although some employees who received the minimum wage will now receive a subsidy beside their (lower) wage, former unemployed receiving the assistance benefit will now receive a (lower) subsidy and a wage. I believe that those two effects *at least* cancel each other out. In section 4 I demonstrate that subsidized labour can be introduced while government expenditure remains the same or will be lower.

A subsidy on labour works the same as a negative tax on wages. Such a negative tax for low-income employees causes a kind of progressive tax system. In the Netherlands we already have a progressive tax system, although at this point the tax rate cannot be negative. Introducing a subsidy on labour can quite easily be implemented into the progressive tax system. That tax system will only become more progressive.

Redistribution will be achieved by such a subsidy. First, less income inequality will exist between people with low-skills. Also, according to the structure of the subsidy and the new equilibrium wage, the whole group of low-skilled people will benefit, having on net a larger income than before. I believe that the subsidy can meet this condition and not raise government expenditure, as I have indicated above. Therefore, in my opinion, subsidized labour is a better solution to increase social welfare, than the assistance benefit, the statutory minimum wage, and the legislation favouring labour unions are.

Subsidizing labour is not new. Friedman (1962) came up with the idea of subsidized labour in the form of a negative income tax, to provide incentives to work. He mentions that such a system has several benefits; (1) subsidy is provided only on the bases of income, (2) providing cash, (3) able to substitute current social benefits, and (4) less costly to

administrate. However, Friedman does not demonstrate a concrete example, like I do. Van de Ven and Vitányi (1988) introduced the idea of subsidized labour in the Netherlands. They think that subsidizing labour, instead of social benefits, will increase social welfare. However, they argue in favour of a subsidy that is based upon unemployment levels and that is paid to the employer. I deviate from their idea by introducing a subsidy based upon wages and paid to the employee. Also, I take the statutory minimum wage and the labour unions into account.

Subsidized labour has even been introduced in the Netherlands, although in a small, specific job-based form. In 1994 the Melkert-job³⁶ was introduced, named after the former Minister of Social Affairs and Employment Ad Melkert. The Melkert-job was a subsidized job for low-skilled people to let them gain work experience. The Melkert-job was abolished in 2003, following the advice of the SER in 2002 and with support of the labour unions.³⁷ The abolishment was mainly the result of the low unemployment rate at that time. In 2002 the unemployment rate was at one of its lowest points at only 4.1 percent.³⁸ Only, the Melkert-job regulation was only open for specific sectors and jobs. My form of subsidized labour is only based upon income, instead of a specific job.

Derksen (1998) states that the Melkert-job has three disadvantages compared to more general policies. First, job-specific subsidies cut out regular jobs, where a general policy can be spread over all jobs. Second, only a proportion of the low-skilled group will get a subsidized job, the rest does not benefit. Again, a general policy can be spread over the whole low-skilled group. Last, more bureaucracy is needed with specific policies compared to general policies. My form of subsidized labour is such a general policy, in my opinion, although it focuses on the low-income group.

3.3 EITC

The Earned Income Tax Credit (EITC) that exists in the United States applies to everyone with a low income. Although the level of the tax credit is also based upon private elements, such as marriage and children, the structure is the same for all cases. The lowest income levels receive a tax credit equal to some proportion of their income, the so-called phase-in stage. Then, the tax credit is fixed for the next set of low income levels. With the last set of income levels the tax credit will gradually decrease, the so-called phase-out stage. Figure 3 provides an example and shows the EITC for 2006 for a married couple with one child. As

³⁶ Melkertbaan

³⁷ Het Financieele Dagblad, 19 February 2002.

³⁸ Source: Centraal Bureau voor de Statistiek

you can see the total amount of subsidy first increases, then equalizes, where after it declines.

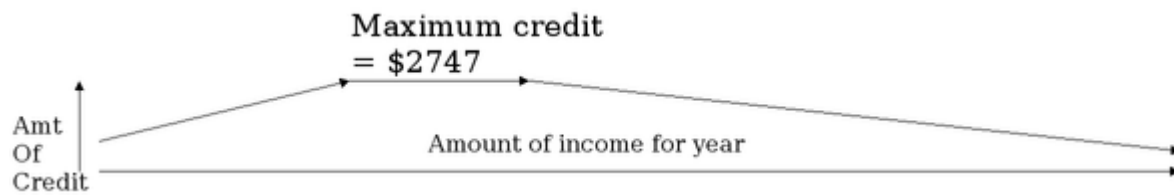


Figure 3: The EITC for 2006³⁹

The EITC was created in 1976, out of the idea of Milton Friedman for a negative income tax for the poorest families, such that it would encourage workforce participation (Trampe, 2007). The program was expanded in 1984, 1986, 1988, 1993, and 2001.

The EITC has been subject of various researches. Textbook economic theory suggests that (as I described in section 2.2.2) increases in return to work – due to the tax credit – will increase labour supply. However, labour supply can be increase in two ways; the labour force participation could increase and the number of hours worked can increase. Studies by Eissa and Liebman (1995 and 1996), Liebman (1998) and Eissa and Hoynes (2005) indicate that the EITC favours labour market participation. They find that the subsequent expansions of the EITC have (large) positive influences on the participation rate of (single) women with children; the group that is affected by the EITC the most. Studies on the effects of the EITC on hours worked are less conclusive. Scholz (1996) finds that families in the phase-out range will decrease their working hours substantially. Meyer and Rosenbaum (2001) have mixed results and Eissa and Liebman (1995) find no decrease in the hours worked, but they do not consider the phase-out range. Trampe (2007) focuses on the phase-out stage and finds a negative effect on hours worked, although he acknowledges that the aggregate effect of the EITC is positive. Meyer (2002) concludes that the EITC mainly has (positive) influence on the participation margin and not so much on the hours worked. He calls for further research on the fact that the EITC seems not to increase hours worked, although according to economic theory it should. However, all research has concluded that the overall effect of the EITC on poor families is positive in the sense that it increases total income. In section 4 I will use an EITC-like subsidy to try to increase social welfare.

³⁹ Source: Wikipedia

3.4 Conclusion

The assistance benefit, statutory minimum wage, and the legislation favouring the bargaining power of unions do not achieve their goal of redistribution (efficiently). Moreover, the policies cause serious disturbances on the labour market. I introduce the concept of subsidized labour, while abolishing these policies. Such a subsidy can achieve the goal of redistribution, without causing (much) disturbance on the labour market. Employment will grow, thus total production will grow, while a minimum income for everyone is guaranteed. Government expenditure will more or less remain equal, because newly subsidized people replace former allowances of the assistance benefit. Employment growth and newly introduced ideas will cause the equilibrium wage to stabilize at a reasonable level.

In section 4 I will prove that subsidizing labour will increase social welfare, while total expenditure on the subsidy will not be larger than the former government expenditure on the assistance benefit. Those models are set in the most general form, such that they apply to a whole range of situations.

4 Models on subsidized labour

In this chapter I will model several situations. I will try to approach several aspects of the real world in these situations and formulate subsidies that can improve social welfare. In general, I will formulate a starting situation, a new situation and compare both. I will start with formulating the most general starting situation, with an assistance benefit and a statutory minimum wage. Then, I will introduce a declining subsidy (i.e. the higher the wage, the lower the subsidy) such that the level of the assistance benefit is construed to be a minimum income. The next model of subsidized labour considers an EITC-like subsidy and upholds the assistance benefit to some extent to assure people of a minimum income. The third model of subsidized labour includes cost of work with an EITC-like subsidy. Until this point working was free of cost. Since this is rather unrealistic, cost of work is introduced. Next, I consider the bunching effect mentioned by De Fraja (1999). Again, a declining subsidy is used to improve the situation. Last, I will provide a conclusion.

I have chosen these situations for the following reasons. The first model is to indicate that in this very general setup, a subsidy will increase social welfare. I use an EITC-like subsidy, because positive influences are found in the U.S.A. with such a subsidy. It is interesting to see, whether or not such a subsidy will work in the Netherlands as well. Next, I introduce cost of work, because I am under the opinion that indifference between being unemployed – leisure time – and being employed is one of the most extreme assumptions in my model, besides the assumption that someone can not influence his productivity. Using the bunched effect from section 2.3.2 in one of the models is done since this effect doubts a negative employment effect of the minimum wage. Demonstrating a raise in total social welfare due to abolishing of the minimum wage and the institution of a subsidy, under the assumption of the bunched effect, will support my argument in section 3.

4.1 Starting situation

Everybody in the labour force has a productivity⁴⁰ $a_i \in [0, \bar{a}]$, which is distributed along $f(a)$. People cannot influence their a_i , so no moral hazard exists. Government cannot observe a_i . I assume that firms only use labour as input and produce with constant returns to scale. Therefore, a firm will produce $q_i = a_i$. Firms will earn profits, defined by $\pi = pq_i - w_i$. Assuming perfect competition ($\pi = 0$) and equalizing price (p) to 1, wages are determined by $w_i = a_i$. Until this point everybody will find a job and receive a wage depending on their

⁴⁰ Productivity includes effort, ability, as well as skill-level and so on.

productivity. Now, I will introduce a wage floor (\underline{w}) and an assistance benefit (b), which are given exogenously, where $\underline{w} > b$. As a result, all persons with $a_i < \underline{w}$ will be unemployed and will receive b . At the margin I have an individual with ability \underline{a} earning \underline{w} . The assistance benefit will be paid by the government through a lump-sum tax (T).⁴¹ Income (y) is defined as the total income before tax of any person and can therefore contain wage, assistance benefit and/or subsidy, which I will introduce later; so $y_i = w_i + b + s_i$. As I indicated above, I will use the concept of social welfare with diminishing marginal utility. Therefore, utility of a person can be defined by $U_i = U(y_i - T)$ with $U' > 0$ and $U'' < 0$. I assume that the social welfare function is additive. So, total social welfare of the population is defined by:

$$SW = \int_0^{\underline{a}} U(b - T) f(a) da + \int_{\underline{a}}^{\bar{a}} U(w_i - T) f(a) da \quad (1)$$

Furthermore, total tax income must equal the assistance benefit expenditures:

$$\int_0^{\underline{a}} T f(a) da = \int_0^{\underline{a}} b f(a) da \quad (2)$$

The gross income distribution can be found in figure 4. The black line is the gross income of employees, where the red line depicts the assistance benefit that is received by all unemployed.

⁴¹ For the all the models mentioned in my thesis I use a lump-sum tax. For an example of a proportional tax, please see appendix 2.

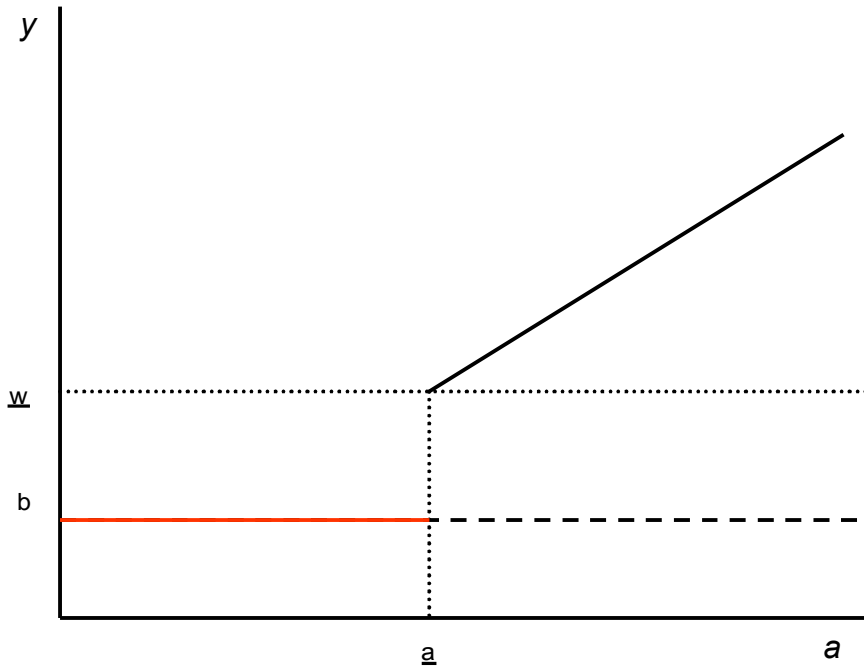


Figure 4: Income distribution of starting situation⁴²

4.2 Subsidized labour

In this part subsidized labour is introduced; the assistance benefit is changed into a subsidy, which supports employees up until the point where that person earns the wage floor. The wage floor itself is abolished, so that firms can offer people a job for any wage. This will change the model above as follows. Everybody will be able to find a job and receive a wage equal to their productivity; $w_i = a_i$. Since working involves no additional costs, everybody will acquire work. A subsidy, paid by government, is introduced depending on an employee's wage. Since one's wage equals someone's productivity, the subsidy (s) is given by:

$$s_i = b\left(1 - \frac{w_i}{\underline{w}}\right) = b\left(1 - \frac{a_i}{\underline{a}}\right) \quad (3)$$

For people with $a_i \geq \underline{w}$ no subsidy is rewarded, so nothing will change in their gross income. However, all employees with a lower productivity will receive some amount of subsidy; with $w_i + s_i < \underline{w}$.⁴³ Their total income will change and therefore their utility level. Figure 5 shows

⁴² Please note that all figures in section 4 are stylised.

⁴³ The fact that $w_i + s_i < \underline{w}$ will be applicable to whole section 4. This assumption is made to avoid a loss of income at the point that no subsidy is appointed anymore. A so-called 'armoedeval' in the Netherlands.

the new income distribution; the black line depicts the gross wages, the red line the subsidy, and the blue total gross income.

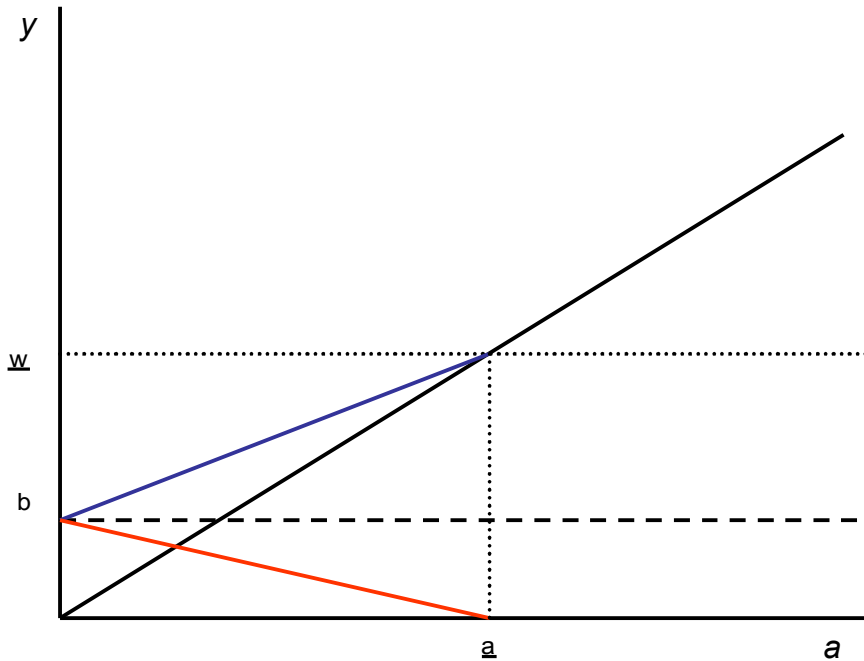


Figure 5: Income distribution with subsidized labour

As a result of these changes, social welfare will mount up to:

$$SW = \int_0^{\underline{a}} U(w_i + s_i - T) f(a) da + \int_{\underline{a}}^{\bar{a}} U(w_i - T) f(a) da \quad (4)$$

Total tax income will equal total expenditures on the subsidy:

$$\int_0^{\bar{a}} T f(a) da = \int_0^{\underline{a}} s_i f(a) da = \int_0^{\underline{a}} b \left(1 - \frac{a_i}{\underline{a}}\right) f(a) da \quad (5)$$

4.2.1 Comparison

Comparing the social welfare functions of both situations two changes exists. First, obviously, the welfare function itself for all $a_i < \underline{a}$ has changed. Second, the height of the lump-sum tax differs, since government expenditure differs.

Comparing the first terms of formula's (1) and (4), I can simplify up to:⁴⁴

$$w_i + b\left(1 - \frac{a_i}{\underline{a}}\right) - b \stackrel{?}{=} 0 \longrightarrow a_i \left(1 - \frac{b}{\underline{a}}\right) \stackrel{?}{=} 0 \quad (6)$$

Since $\underline{w} = \underline{a} > b$, formula (6) will be larger than zero. So people who only received the assistance benefit will now receive a wage and a subsidy, which is *in sum* larger. As a result, they will gain income and, therefore, gain utility.

Comparing government expenditure, I have for all $a_i \geq 0$, that $b > b\left(1 - \frac{a_i}{\underline{a}}\right)$, so total government expenditure will be smaller than in the starting situation. Since government expenditure will be lower, tax can be lower, from which everybody will benefit. So, those with an income above the wage floor will experience a net gain, since taxes will be lowered and their income will be the same. As a result, they will yield a higher utility. The low-skilled people will gain utility as well, due to the tax decrease.

The level of social welfare with subsidized labour will thus be larger than the level of social welfare in the starting situation. Income will rise for every $a_i > 0$ in the new situation. Last, the utility of all $a_i < \underline{a}$ utility will grow more than for those $a_i \geq \underline{a}$, since the first group not only profits from lower tax, but also gains income. Hence, income is redistributed towards the people with lower incomes. Last, since the total income of the low-skilled (i.e. those with $a_i < \underline{a}$) has been increased, social welfare has increased even more due to diminishing marginal utility, because the lower incomes have a higher marginal utility than the higher incomes.

4.3 An EITC-like subsidy

In the model above no unemployment exists. Since this is rather unrealistic, I will formulate a model that results in some level of unemployment next. The assistance benefit will be upheld, to provide a minimum income. Furthermore, I will introduce an EITC-like subsidy, with two differences: the subsidy will run from zero to \underline{a} (being zero at both ends) and will be smooth⁴⁵ instead of angular. Such a subsidy can be formulated as:

⁴⁴ Since I have not specified the welfare function, I can not compare welfare functions in full. I can, however, note the income differences and the trends they cause. Please keep this in mind for the remainder of my thesis.

⁴⁵ I have chosen to smoothen the subsidy for two reasons. First, it requires only one formula, instead of defining characteristics for all three parts. Second, Trampe (2007) mentions income tax filings that are deliberately

$$s_i = \max\left(0, -1/2 \alpha w_i^2 + \beta w_i + \gamma\right) \quad (7)$$

with $s_i' = -\alpha w_i + \beta$, $0 < \alpha < 1$, $\beta \geq 0$, $\gamma > 0$ and $s_i'' < 0$ causing the parabola as you can see in figure 6. See appendix 3 for a specified example of such a subsidy. As a result, a fluent total gross income line exists, running from the assistance benefit (red line), towards the subsidized labour income (blue line) and ends with the normal wage line (black line), for those earning above the minimum wage. Like in formula (3), w_i can be read as a_i . I define \underline{a} such that $b = \underline{a} + s_i(\underline{a})$. As a result of the fact that $\alpha < 1$, total gross income will rise along with a_i . Also, $w_i + s_i < \underline{w}$ for all $\underline{a} < a_i < \underline{a}$.

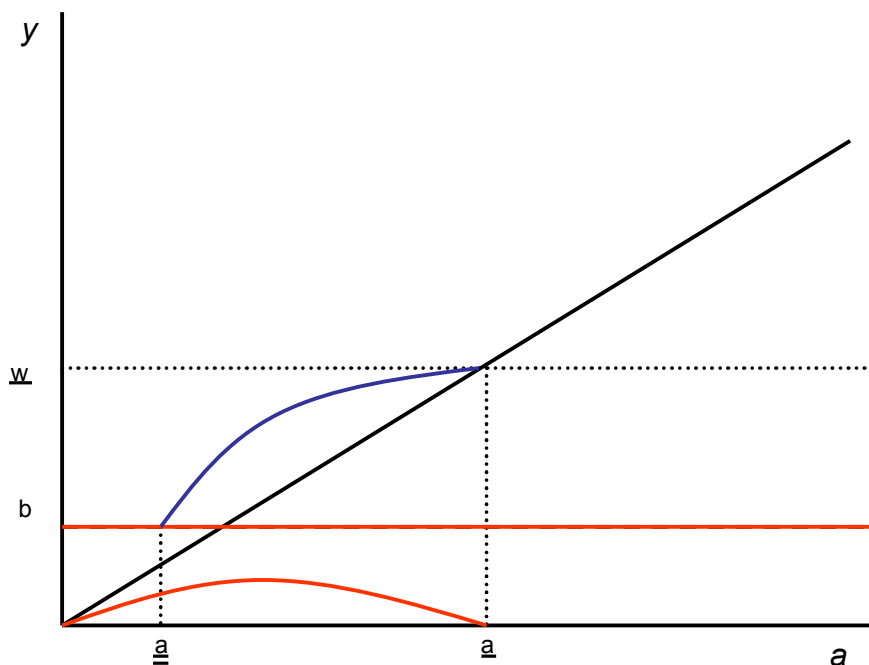


Figure 6: Income distribution with EITC-like subsidy

too high or too low to be able to claim the most EITC. By smoothening the EITC there is no absolute turning point, so incentives to misreport income are decreased.

The social welfare function changes as follows:

$$\begin{aligned}
 SW = & \int_0^{\underline{a}} U(b - T)f(a)da + \int_{\underline{a}}^{\underline{a}} U(w_i + s_i - T)f(a)da \\
 & + \int_{\underline{a}}^{\bar{a}} U(w_i - T)f(a)da
 \end{aligned} \tag{8}$$

The budget balance of the government is depicted by:

$$\int_0^{\bar{a}} Tf(a)da = \int_0^{\underline{a}} bf(a)da + \int_{\underline{a}}^{\underline{a}} s_i f(a)da \tag{9}$$

4.3.1 Comparison

Again, the social welfare functions as well as the height of the lump-sum tax differ.

Comparing the social welfare functions (1) and (8), the difference will depend on the second term of formula (8), since the other parts do not differ from the starting situation. Hence, if for all $\underline{a} < a_i < \underline{a}$ total income ($w_i + s_i$) is larger than b , social welfare will rise, *ceteris paribus*.

Since $b = \underline{a} + s_i(\underline{a})$ and $w_i + s_i$ increase along with a_i , it can easily be shown that

$b < (w_i + s_i)$ for all $\underline{a} < a_i < \underline{a}$. So the employees with $\underline{a} < a_i < \underline{a}$ will receive a higher income and thus yield a higher utility, if the lump-sum tax remains equal.

The difference in the amount of the lump-sum tax will depend on:

$$\int_{\underline{a}}^{\underline{a}} bf(a)da \stackrel{?}{=} \int_{\underline{a}}^{\underline{a}} s_i f(a)da \tag{10}$$

Since nothing changes for the unemployed, all $a_i \leq \underline{a}$ receive b in both situations. For reasons of simplicity, I will assume that the equations above *at least* equal each other; if not the right hand side is the smaller one. This is a reasonable assumption, since the subsidy depends on the difference between the wage floor and the assistance benefit. That difference will not be very large, since both are said to be some kind of minimum income. For

instance, assuming that $\underline{w} = 2b$ – a rather large difference – the maximum subsidy still can not be larger than b . Else, total gross income (wage and subsidy) can not be continuously rising. So, assuming that both sides of formula (10) equal each other is actually kind of cautious for the argument I would like to make.

As a result, formula (8) will be larger than formula (1), since income will rise for all employees with $\underline{a} < a_i < \bar{a}$ and no other changes in income or tax occur. Social welfare will thus be increased by the EITC-like subsidy. Also, since the total income of the low-skilled (i.e. those with $a_i < \underline{a}$) increases, social welfare increases even more due to the diminishing marginal utility.

4.4 Extension: fixed cost of work

4.4.1 Starting situation

In the models above people incur no costs for working. Since this is rather unrealistic, I will formulate a model that contains such costs next. I introduce the fixed cost of work (c), which decreases a worker's utility. The unemployed will keep receiving the assistance benefit. No other assumptions are changed. Due to the cost of work a person will be employed, if, and only if:

$$U(w_i - T) - c \geq U(b - T) \quad (11)$$

Furthermore, at \underline{a} someone is indifferent between work and unemployment; in the absence of a subsidy I assume that $\underline{a} < \bar{a}$. Therefore, the situation from figure 4 is still applicable. The social welfare function will change into:

$$SW = \int_0^{\underline{a}} U(b - T) f(a) da + \int_{\underline{a}}^{\bar{a}} [U(w_i - T) - c] f(a) da \quad (12)$$

The government budget function for this model is not different from the original model, so formula (2) is still applicable.

4.4.2 An EITC-like subsidy

Now that I have introduced cost of work, an income 'jump' will occur, since the employee has to earn a certain amount of money more, compared to the unemployed stage before he starts to work, due to the cost of work. In this model the assistance benefit will remain in place as well, to provide income for the unemployed. Also, I will use a subsidy that is comparable to the EITC, like the one in the previous section. It will be smoothed as well. So, again, the subsidy is defined by:

$$s_i = \max\left(0, -1/2 \alpha w_i^2 + \beta w_i + \gamma\right) \quad (13)$$

where α , β , and γ are set such that $s_i(\underline{w}) = 0$. People with low productivity will receive the assistance benefit, while people with a higher productivity will receive their wage and a subsidy. As I mentioned, an income 'jump' occurs since the utility of the income of working has to be so much larger than the utility of being unemployed that it is at least equal to the disutility of the cost of work. Only with such an income difference people will choose to work instead of being unemployed. Furthermore, I define \underline{a} to be such that:

$$U(\underline{a} + s_i(\underline{a}) - T) - c = U(b - T) \quad (14)$$

with $\underline{a} < a$. So, up until \underline{a} people receive b and the subsidy (s_i) will be rewarded from \underline{a} up until a ; thereafter it will be zero. The next figure (7) shows the income distribution. Again, the red lines depict the assistance benefit and the subsidy, black is (possible) wage, and blue is the total gross income. As you can see, the relevant income line makes a jump at \underline{a} .

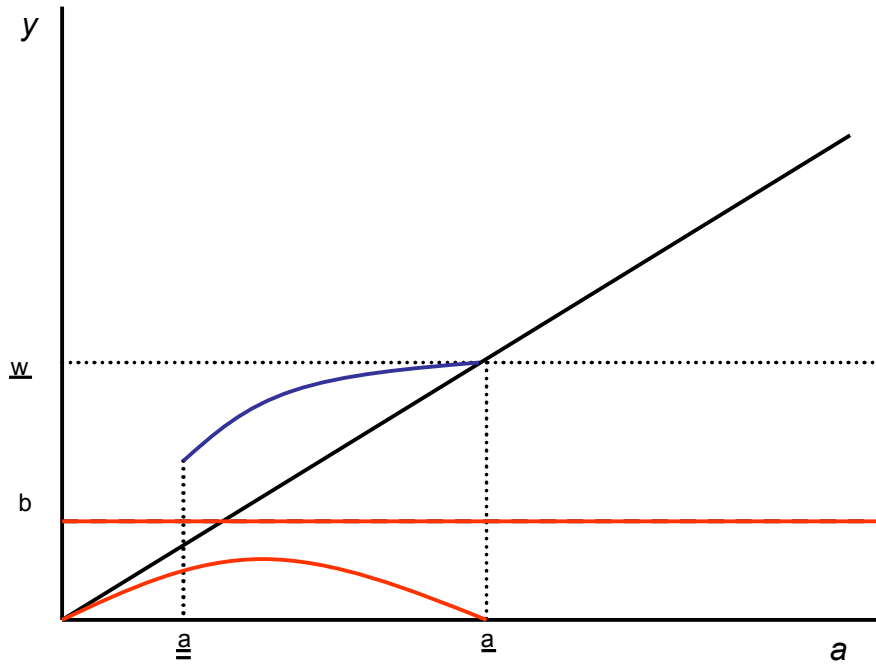


Figure 7: Income distribution with subsidized labour and cost of work

In this scenario social welfare can be defined as:

$$\begin{aligned}
 SW = & \int_0^{\bar{a}} U(b - T) f(a) da + \int_{\bar{a}}^a [U(w_i + s_i - T) - c] f(a) da \\
 & + \int_{\bar{a}}^a [U(w_i - T) - c] f(a) da
 \end{aligned} \tag{15}$$

The government budget is:

$$\int_0^{\bar{a}} T f(a) da = \int_0^{\bar{a}} b f(a) da + \int_{\bar{a}}^a s_i f(a) da \tag{16}$$

4.4.3 Comparison

Of course, the social welfare functions differ, as well as the government expenditure, as is clear by now. Comparing the formula's (11) and (15), the difference will depend on the second term of formula (15), since the other parts do not differ from the starting situation.

Hence, if for all $\underline{a} < a_i < \bar{a}$ total income ($w_i + s_i$) is larger than b , social welfare will rise, *ceteris paribus*. Since $b < \underline{a} + s_i(\underline{a})$ and $w_i + s_i$ increase along with a_i , it can easily be shown that $b < (w_i + s_i)$ for all $\underline{a} < a_i < \bar{a}$. So the employees with $\underline{a} < a_i < \bar{a}$ will receive a higher income and thus yield a higher utility, if the lump-sum tax remains equal.

When comparing the difference in the amount of the lump-sum tax, the same reasoning as in section 4.3.1 can be applied. That difference will depend on:

$$\int_{\underline{a}}^{\bar{a}} bf(a)da \stackrel{?}{=} \int_{\underline{a}}^{\bar{a}} s_i f(a)da \quad (17)$$

Since nothing changes for the unemployed, all $a_i \leq \underline{a}$ receive b in both situations. For reasons of simplicity, I will assume that the equations above *at least* equal each other, if not the right hand side is the smaller one. This is a reasonable assumption, since the subsidy depends on the difference between the wage floor and the assistance benefit. That difference will not be very large, since both are said to be some kind of minimum income. For instance, assuming that $\underline{w} = 2b$ – a rather large difference – the maximum subsidy still can not be larger than b . Else, total gross income (wage and subsidy) can not be continuously rising. So, assuming that both sides of formula (17) equal each other is actually kind of cautious for the argument I would like to make.

As a result, formula (15) will be larger than formula (11), since income will rise for all employees with $\underline{a} < a_i < \bar{a}$ and no other changes in income or tax occur. Social welfare will thus be increased by the EITC-like subsidy. Also, since the total income of the low-skilled (i.e. those with $a_i < \underline{a}$) increases, social welfare increases even more due to diminishing marginal utility.

4.5 *Extension: bunching*

4.5.1 Starting situation

In this section I will consider the bunching effect, as described in section 2.3.2. The bunching effect is the effect that employers worsen working conditions as a result of an institution (or rise) of a statutory minimum wage for employees that will else not be profitable anymore. As a result of the worsened conditions employers can justify the remuneration with the minimum

wage for these employees. I assume that some portion (δ) of the people below \underline{a} are affected by this bunching effect, their working conditions are worsened as to create the possibility to pay them with the wage floor. As a result all persons between $\underline{a} - \delta$ and \underline{a} will earn \underline{w} as well. Although De Fraja (1999) assumes that the bunched employees are worse off, they are actually better off in my model, due to their higher level of income. If a subsidy can improve social welfare, the effect on the real world situation will be even larger, since such subsidy will then improve working conditions as well.

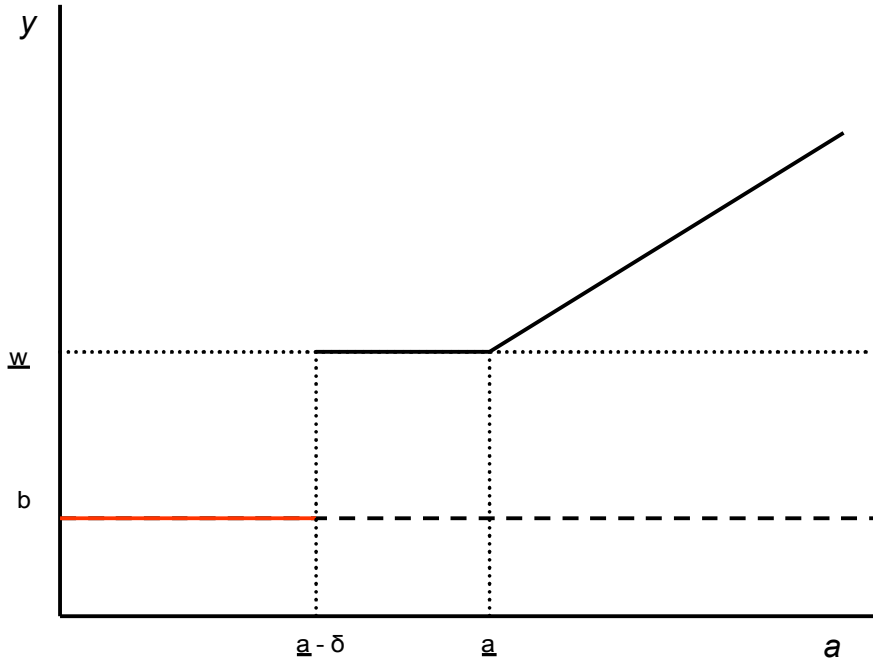


Figure 8: Income distribution with bunching

Figure 8 shows the relevant income distribution. The social welfare function will change as follows:

$$\begin{aligned}
 SW = & \int_0^{\underline{a}-\delta} U(b-T)f(a)da + \int_{\underline{a}-\delta}^{\underline{a}} U(\underline{w}-T)f(a)da \\
 & + \int_{\underline{a}}^{\bar{a}} U(w_i - T)f(a)da
 \end{aligned}
 \tag{18}$$

The total expenditure on the assistance benefit will be lower than in section 4.1, since more people are employed:

$$\int_0^{\underline{a}} Tf(a) da = \int_0^{\underline{a}-\delta} bf(a) da \quad (19)$$

4.5.2 Subsidized labour

If the wage floor is abolished and wages will thus be flexible, the bunching effect will not occur anymore, since there is no reason to increase someone's profitability by worsening their working conditions anymore. Again, like in section 4.2 all persons will earn according to their productivity; $w_i = a_i$. Also, to assure that nobody receives less than the net assistance benefit, the subsidy of section 4.2 is applied here as well. Therefore, formula's (3), (4), and (5) apply. Figure 4 shows the relevant income distribution in this case.

4.5.3 Comparison

In order to compare the social welfare functions (4) and (18), I would like to stress that two changes take place. First, all persons with a_i between 0 and $\underline{a} - \delta$ will gain income, as has been indicated in section 4.2.1. After the subsidy has been introduced, their income will be above the assistance benefit that they received before. Second, all persons with a_i from $\underline{a} - \delta$ until \underline{a} will lose income, since $w_i + s_i < \underline{w}$. If an increase of income due to the first effect equals an income decrease due to the second effect, the net effect on total social welfare will be positive, since all persons have diminishing marginal utility. This is caused by the fact that poorer people experience a larger increase in utility when they become richer than the decrease in utility experienced by richer people if they become poorer by the same amount.

I have not specified the exact utility functions. Therefore, I will make my argument *a fortiori*. I will search for that δ that equalizes both income effects. If I can demonstrate that the income increase (first effect) is *at least* equal to the income decrease (second effect), total social welfare will increase. As you can see in figure 9, the relevant income lines lie in the square that is bound by the parameters 0, \underline{a} , b , and \underline{w} .

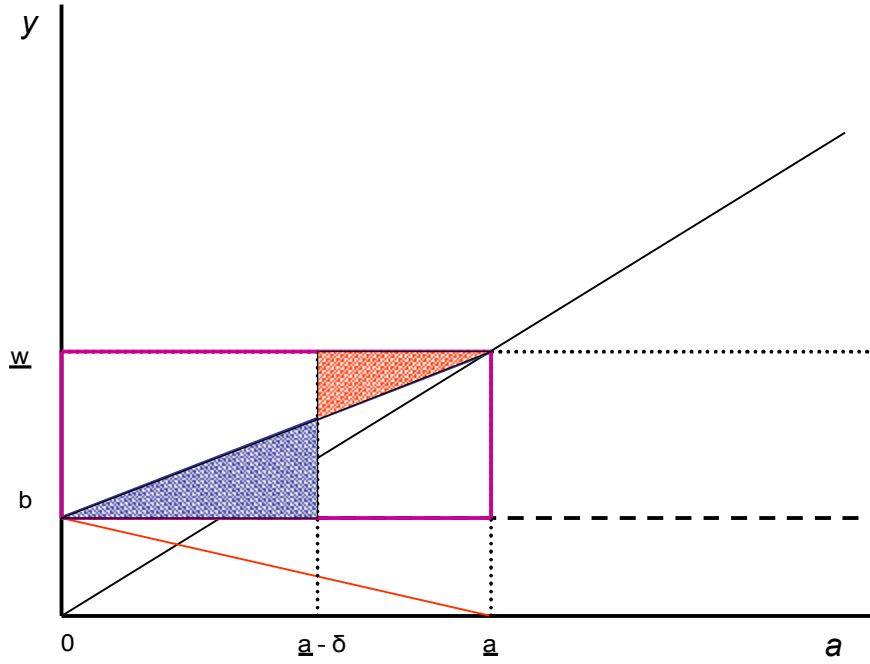


Figure 9: Income effects of subsidized labour with bunching

Assuming that $f(a)$ is distributed uniformly, the positive income effect for the former unemployed is defined by:⁴⁶

$$\Delta I = \frac{1}{2} * (\underline{a} - \delta) * \left(1 - \frac{\delta}{\underline{a}}\right) (\underline{w} - b) \quad (20)$$

The negative income effect can be defined as follows:

$$\Delta I = \frac{1}{2} * (\underline{a} - (\underline{a} - \delta)) * \left(\frac{\delta}{\underline{a}}\right) (\underline{w} - b) \quad (21)$$

Equalizing and solving these two equations results in the following formula:

$$\begin{aligned} (\underline{a} - \delta) \left(1 - \frac{\delta}{\underline{a}}\right) &= \delta \left(\frac{\delta}{\underline{a}}\right) \longrightarrow \\ \underline{a} - \delta - \delta + \frac{\delta^2}{\underline{a}} &= \frac{\delta^2}{\underline{a}} \longrightarrow \\ \delta &= \frac{\underline{a}}{2} \end{aligned} \quad (22)$$

⁴⁶ Please note that I just defined the surface of the left triangle. For clarification, I separated the base and height by multipliers. Also note that $(\underline{a} - \delta)/\underline{a} = 1 - \delta/\underline{a}$.

This implies that if δ is equal to half \underline{a} the positive and negative income effects will be equal. If δ becomes larger, the positive income will become smaller, and the negative effect larger, and the other way around. So, running from δ equal to half \underline{a} , the subsidy will have a positive effect on social welfare.

Comparing the tax expenditure functions, the difference will depend on (5)-(19):

$$\int_0^{\underline{a}} s_i f(a) da - \int_0^{\underline{a}-\delta} b f(a) da = 0 \quad (23)$$

Formula (5) can be rewritten as:

$$\int_0^{\underline{a}} T f(a) da = \frac{1}{2} b (\underline{a} - 0) \quad (24)$$

Also, (19) can be rewritten as:

$$\int_0^{\underline{a}} T f(a) da = b [(\underline{a} - \delta) - 0] \quad (25)$$

Extracting a function for δ out of the tax difference from (24)-(25) gives me:

$$\Delta T = -\frac{b\underline{a}}{2} + b\delta \longrightarrow \delta = \frac{\underline{a}}{2} \quad (26)$$

Interestingly, the same condition for δ results from the tax difference, as from the income effects. Since both depend on the introduced subsidy, this is actually quite intuitively. For the lump-sum tax it is true that if δ is larger than half \underline{a} total subsidy is larger than the former expenditure on the assistance benefit and the lump-sum tax will rise, while if δ is smaller than half \underline{a} total subsidy will be smaller and tax lower.

With both changes, the income effect and the tax difference, δ has to be equal to or smaller than half \underline{a} to have a positive effect on social welfare. Or, in other words, the subsidy can only have a (possible) negative effect on social welfare if more than half of the people with productivity below \underline{a} are bunched.⁴⁷ In that case taxation will be increased and the negative income effect will be larger than the positive one. Due to the fact that I have not specified the utility functions, an exact turning point cannot be given. However, it is clear that with any $\delta < \underline{a}/2$ social welfare will increase due to the three aspects mentioned earlier. First, taxation will be lowered, from which everyone will benefit. Second, the positive income effect will outweigh the negative income effect, so total income will increase; thus total utility will increase. Third, due to the diminishing marginal utility, social welfare will increase, since income is redistributed in the direction of those with $a_i < \underline{a}$.

4.6 Conclusion

I have specified several starting situations, in various ways relating to the Dutch labour market. In a general defined situation, a situation with fixed cost of work and one with bunching social welfare can be improved by introducing a subsidy on labour. I have used a declining subsidy, such that nobody receives less than the assistance benefit and I have used an EITC-like subsidy while the assistance benefit was upheld as minimum income. Both subsidies are able to improve total social welfare, while redistributing at the same time. Although the labour market in the Netherlands is more complex than my models, I demonstrate that a subsidy is able to improve social welfare if I take the mayor institutions in that labour market into account.

Of course, limitations exist. For one, I assume the absence of moral hazard. In reality, people might try to fake a lower productivity, so that they will receive the assistance benefit, for instance. Moral hazard is caused by the government policies, which alter incentives. However, government policies exist in both the original and the subsidized labour situation. Therefore, incentives are altered in both situations. Moral hazard will affect the outcomes of both situations, such that policies are less efficient than they are assumed to be. However, exact consequences of moral hazard can not be given. As a result, the effects of the introduction of moral hazard are not conclusive.

Second, one's productivity is fixed in these models. In reality, people will try to improve their productivity. Looking at the low-skilled group in the original situation, only the people with a

⁴⁷ To me, this seems not very realistic in the real world, since it would mean that as many people are bunched as there are people receiving the assistance benefit.

productivity close to \underline{a} have an incentive to increase their productivity to a level at or above \underline{a} . When subsidized labour is introduced, all low-skilled people have an incentive to increase their productivity, because their income will increase.

Third, as I mentioned before, a subsidy can be compared to a negative tax. In my models, although productivity cannot be observed by the government, wages indicate productivity perfectly. Therefore, people are taxed upon their wage as well as productivity. This is caused by the assumption that firms can observe productivity and pay according to productivity. The literature on optimal taxation, starting with Mirrlees (1971), relaxes this assumption. Subsequently, they try to find a way to tax someone's income-earning potential (i.e. productivity in my model). By taxing someone's income-earning potential incentives of that person are not changed by the tax. However, only real income can be observed. Therefore, in order to be able to tax someone's income-earning potential, while only real income can be observed, strong assumptions have to be made.

5 Conclusions and suggestions for further research

Does the introduction of subsidized labour increase social welfare in the Netherlands? What effect will subsidized labour have on the redistribution of income? What effect will subsidized labour have on the efficiency of such redistribution?

In order to answer the problem statement I have first focussed on three main policies. I have determined how the assistance benefit, the statutory minimum wage and the poldermodel work out in the Netherlands. In my opinion, the statutory minimum wage and the poldermodel fail to achieve their goal of redistribution. For the part that the three policies do achieve redistribution, they do so in a too inefficient way.

The assistance benefit has a complex effect on the labour market. The first order effect of such a benefit is negative; leisure time becomes cheaper, so (voluntary) unemployment will rise. The second order effect, however, is positive; due to less labour supply, wages will rise, leisure time becomes more expensive, and labour supply will rise again. On net, wages and unemployment will rise. Also, job-searchers will lower their effort due to such a reward. As a result, the unemployment levels will be even larger. So, the assistance benefit redistributes income to some extent, but causes employment levels to fall.

The statutory minimum wage sets a wage floor, such that market-clearing levels cannot be reached. As a result, unemployment levels will rise. Although not all studies agree fully on the employments effects, they do agree that the welfare of low-skilled employees on net is lowered. Some studies (Card and Krueger, 1995, and De Fraja, 1999) find a bunching effect; instead of firing low-skilled employees, their working conditions are worsened to justify the minimum wage. I find the study of Neumark *et al.* (2004) more convincing, who demonstrate that a statutory minimum wage lowers employment levels. However, I did include the bunching effect in one of my models, to make my argument more convincing.

The poldermodel has influence on the labour market mainly through the labour unions. The bargaining power of the labour unions is determined to a large extent by the applicable legislation. The Dutch legislation provides the labour unions with a considerable amount of bargaining power. As a result, they raise the wage floor for all different kinds of employees, including low-skilled ones, by limiting labour supply. Such an increase causes unemployment levels to increase as well.

Especially politically, the reasoning is that the above policies are designed to improve welfare of the poorest, by redistribution. In fact, only the assistance benefit causes redistribution clearly, in my opinion, while all three policies cause serious inefficiencies. They cause unemployment levels to increase, mostly among low-skilled (thus low-income) employees. Therefore some employees will receive a lower income due to these policies due to the fact that they lost their job. On net, as Neumark *et al.* (2004) indicate, the whole group of low-skilled workers sees their utility decreased.

I provide an alternative for these policies. Subsidizing labour can achieve redistribution is a (more) efficient way. I indicated that such subsidy will increase employment, provide incentives to find a job, and will still be able to assure people of a minimum income. I state that the risk of very low equilibrium wages and a large increase of government expenditure is not very real. Of course, some people will lose income, but others will gain income. On net, three effects of subsidized labour result. First, total income will grow due to higher levels of employment. Second, income is distributed more evenly among the low-skilled. Third, income is redistributed towards the low-skilled in a more efficient way. In the United States subsidized labour has been introduced a long time ago. I provided the EITC as an example.

In section 4 I have formulated several models. I use three setups: one general setup, one taking fixed cost of work into account, and the last considering the bunching effect. In each I remove the wage floor, so I abolish the statutory minimum wage and the labour unions favouring legislation. Also, I try to abolish the assistance benefit as much as possible. I define as subsidy, either declining or EITC-like, to achieve redistribution in a more efficient way. After comparing before and after the subsidy, I conclude that social welfare will rise in almost all situations. With the bunching effect, social welfare will rise most probably.

I accept that limitations of these models exist. First, I have assumed that moral hazard is absent. Although moral hazard will cause government policies to be less efficient, since people's incentives are altered, it will do so in both situations. As a result, the consequences are inconclusive. Second, one's productivity is fixed. In the real world people will try to improve their productivity, but they will try to do so in both the original and the subsidized labour situation. However, in the subsidized labour situation all low-skilled persons will have incentives to increase their productivity, while in the original situation only a small group has such incentives. Third, government is able to tax productivity. In the real world, as has been tried to model in the optimal taxation literature, friction exists. However, optimal taxation schemes are subject to strong assumptions, while my models are more flexible.

I conclude that the Dutch labour market can be improved by introducing some sort of subsidized labour. However, I only used general models to test subsidized labour of the Dutch system. In order to determine what kind of subsidized labour would improve the Dutch labour market the most, more research is needed.

The effects of the poldermodel, the statutory minimum wage, and the assistance benefit have to be quantified. Then, the effects of a subsidy can be studied more closely. Also, the bunching effect and the lasting unemployment (sections 4.3 and 4.4) have to be quantified. The progressive tax system has to be taken into account as well. Furthermore, it should be tried to take the limitations of my model into account. Overall, I strongly believe that a system with subsidized labour, instead of a statutory minimum wage and legislation favouring labour unions, will redistribute income towards the low-skilled (low-income) and will improve social welfare.

Appendix 1: Het Akkoord van Wassenaar

Stichting van de Arbeid

CENTRALE AANBEVELINGEN

INZAKE

ASPECTEN VAN EEN WERKGELEGENHEIDSBELEID

's-Gravenhage, 24 november 1982

De in de Stichting van de Arbeid vertegenwoordigde centrale organisaties van werkgevers en van werknemers:

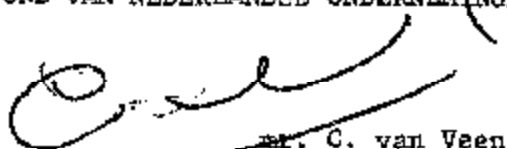
- overwegende dat essentieel voor een structurele verbetering van de werkgelegenheid is:
herstel van economische groei, een stabiel prijspeil, versterking van de concurrentiekracht van ondernemingen en in samenhang daarmee verbetering van de rendementspositie;
- overwegende dat een daarop in positieve zin gericht **meerjarenbeleid** op sociaal en economisch terrein op alle niveaus noodzakelijk is;
- overwegende dat het ook bij herstel van de economische groei het op middellange termijn niet mogelijk zal zijn de gehele beroepsbevolking, alsmede de aanwas daarvan in de komende jaren aan werk te helpen;
- overwegende dat daartoe in samenhang met het bovengenoemde beleid een **beleidsaanpak** over meerdere jaren is geboden, gericht op een betere **verdeling** van de bestaande werkgelegenheid; een aanpak waarin meerdere vormen van herverdeling van werkgelegenheid in aanmerking komen, zoals **arbeidsduurverkort**ing, deeltijdarbeid, bestrijding van **jeugdwerkloosheid**;
- overwegende dat in samenhang met de door c.a.o.-partijen te maken afspraken over vorm, fasering en werkgelegenheidseffecten als een van de uitgangspunten dient te **gelden** dat, mede gelet op de zwakke financiële positie van de bedrijven, een betere verdeling van de bestaande werkgelegenheid niet tot een verhoging van de kosten mag leiden;
- overwegende dat er naar gestreefd moet worden om zo'n beleid in het jaar 1983 een reële aanzet te geven, waarbij over een mogelijke andere **besteding** van reeds in de c.a.o.'s vastgelegde loonaanspraken uitsluitend op c.a.o.-niveau in vrijheid dient te kunnen worden onderhandeld;

- I. doen een beroep op c.a.o.-partijen de voorwaarden te creëren om zo spoedig mogelijk een beleid in deze zin tot stand te brengen;
- II. spreken uit dat er daarnaast aanleiding bestaat om in de Stichting van de Arbeid ter zake van een aantal aspecten met betrekking tot de herverdeling van arbeid en de bestrijding van de jeugdwerkloosheid overleg te voeren met de bedoeling om daarover **vóór 1 januari 1983** aanbevelingen te doen;
- III. spreken de wenselijkheid uit - met behoud van ieders opvattingen en gevoelens met betrekking tot de beleidsvoornemens van het nieuwe kabinet - dat op basis

van de hierboven genoemde overwegingen en beleidsintenties, de c.a.o.-onderhandelingen 1983 in de ondernemingen en bedrijfstakken op korte termijn worden gestart en doen een dringend beroep op het kabinet om het mogelijk te maken dat partijen op basis van bovenstaande aanbevelingen in vrijheid op c.a.o.-niveau kunnen onderhandelen. Zij verbinden daaraan de bereidheid om in de loop van het voorjaar 1983 het kabinet te informeren over de feitelijke ontwikkelingen in en uitkomsten van de c.a.o.-onderhandelingen.

De Voorzitters van de in het Bestuur van de Stichting van de Arbeid vertegenwoordigde centrale organisaties van werkgevers en van werknemers:

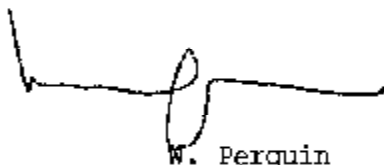
VERBOND VAN NEDERLANDSE ONDERNEMINGEN.


C. van Veen

NEDERLANDS CHRISTELIJK WERKGEVERS-
VERBOND


J.J. van Eijkelenburg

KONINKLIJK NEDERLANDS ONDERNEMERS-
VERBOND


W. Perquin

NEDERLANDS CHRISTELIJK ONDERNEMERS-
VERBOND

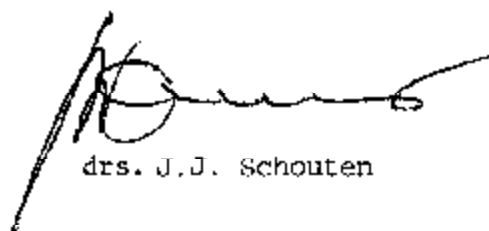

S. Veninga

KATHOLIEKE NEDERLANDSE BOEREN- EN
TUINDERSBOND

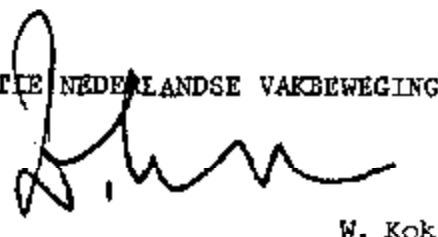
Mede namens:

KONINKLIJK NEDERLANDS LANDBOUW COMITE

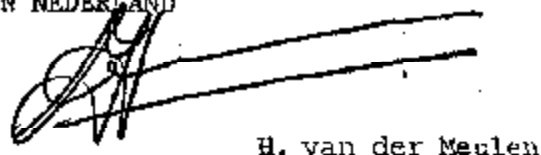
NEDERLANDSE CHRISTELIJKE BOEREN- EN
TUINDERSBOND


drs. J.J. Schouten

FEDERATIE NEDERLANDSE VAKBEWEGING


W. Kok

CHRISTELIJK NATIONAAL VAKVERBOND
IN NEDERLAND


H. van der Meulen

VAKCENTRALE VOOR MIDDELBAAR EN
HOGER PERSONEEL


drs. H. van der Schalie

Appendix 2: Proportional tax

Starting situation with proportional tax

I will use the assumptions from section 4.1. Only here, tax is defined as a portion of someone's income, so $T = ty_i$. Net income of the unemployed and employed are, respectively, $(1-t)b$ and $(1-t)w_i$. As a result, social welfare is given by:

$$SW = \int_0^{\underline{a}} U[(1-t)b]f(a)da + \int_{\underline{a}}^{\bar{a}} U[(1-t)w_i]f(a)da \quad (27)$$

Government budget changes into:

$$\int_0^{\underline{a}} tbf(a)da + \int_{\underline{a}}^{\bar{a}} tw_i f(a)da = \int_0^{\underline{a}} bf(a)da \quad (28)$$

Subsidized labour with proportional tax

As in all the other models, the wage floor is abolished. The assistance benefit is changed into a subsidy defined by formula (3). All other assumption of section 4.2 are applied here as well. Social welfare is defined by:

$$SW = \int_0^{\underline{a}} U[(1-t)(w_i + s_i)]f(a)da + \int_{\underline{a}}^{\bar{a}} U[(1-t)w_i]f(a)da \quad (29)$$

Total tax income will equal total expenditures on the subsidy:

$$\begin{aligned} \int_0^{\underline{a}} t(w_i + s_i)f(a)da + \int_{\underline{a}}^{\bar{a}} tw_i f(a)da &= \int_0^{\underline{a}} s_i f(a)da \\ &= \int_0^{\underline{a}} b(1 - \frac{a_i}{\underline{a}})f(a)da \end{aligned} \quad (30)$$

Comparison with starting situation with proportional tax

Comparing the government budget of both situations, I can apply the same reasoning as in section 4.2.1. Again, since $a_i \geq 0$, $b > b(1 - \frac{a_i}{a})$ total government expenditure will be smaller than in the starting situation. Since government expenditure will be lower, tax can be lower, from which everybody will benefit. Only, in this situation richer people benefit more from the lower tax level, due to the fact that tax is proportional. However, since I have not specified an exact utility function, it can not be determined which group – those below or above \underline{a} – benefits more. The lower income levels experience a larger growth of utility, than the higher income levels, due to the diminishing marginal utility. In this situation, where the higher income levels gain more net income than the lower income levels, the resulting effect cannot be given. On net, the lower tax level will have a positive effect on the utility of both groups, compared to the starting situation.

In order to determine the full effect of the subsidy the income effect of the former unemployed has to be determined as well. Again, the reasoning of section 4.2.1 applies here as well; as determined there formula (6) is larger than zero, so the unemployed will gain income. As a result, everybody will gain income and social welfare will rise. Due to the subsidy, the lower income levels (i.e. $a_i < \underline{a}$) will gain income; due to the difference in tax level both income levels will gain income, although the higher income levels will gain more. Therefore, it cannot be determined which group enjoys a larger utility-gain.

Appendix 3: Specified example of an EITC-like subsidy

Various examples of an EITC-like subsidy exist. The EITC itself is not symmetric. However, I would like to demonstrate the formula of an EITC-like subsidy with the following characteristics. At both zero and \underline{a} the subsidy will be zero. Also, it will be a smooth parabola with the maximum exactly in between. Furthermore, its maximum will be defined by γ . Also, as is indicated in section 4.3 α has to be between 0 and 1, to assure that total income will rise along with w_i . Such a subsidy is defined by:

$$s_i = \max\left(0, -1/2\alpha\left(w_i - \frac{\underline{a}}{2}\right)^2 + \gamma\right) \quad (31)$$

Calculating α with the fact that the subsidy is zero at zero gives me:

$$\begin{aligned} s_i &= -1/2\alpha\left(0 - \frac{\underline{a}}{2}\right)^2 + \gamma \\ 0 &= -1/8\alpha\underline{a}^2 + \gamma \\ \alpha &= \frac{8\gamma}{\underline{a}^2} \end{aligned} \quad (32)$$

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