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Work involvement in the valuation of unemployment

Teun Zijlmans

Student number: 0142409

Thesis Master Economics & Social Sciences

Supervisors: Dr. Loek Groot & Prof. Dr. Ruut Veenhoven

Utrecht School of Economics

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Foreword

A Dutch saying is "een geluk bij een ongeluk" (a happy event is taking place during an unhappy situation). This saying is appropriate to my thesis and the credit crisis since autumn 2008. When I started to write my thesis in summer 2008, my supervisor Loek Groot told me at one of the meetings with him that unemployment is not a serious issue in the socio-economic debate these days as it was a few decennia ago. But then things changed since the credit crisis of autumn 2008. Although it is likely that the credit crisis is a temporary downturn of the economy and that it does not result in long-term unemployment, friends around me became more interested in my thesis topic that is again an important issue in the current socio-economic debate.

Also without the increase in unemployment due to the credit crunch, the phenomenon unemployment may remain an important topic in the economic debate. Unemployment rates may continue to be high in development countries (personal announcement Loek Groot) and theories of unemployment may also be applied to individuals who are (partial) disabled for work (Hoff, 1998).

It was mentioned by Loek Groot too that the prospect of an ageing society will result in a lower unemployment rate due to larger shortages on the labour market. Because the economics of ageing were a large part of the content of my master at the Utrecht School of Economics, I would like to comment on the relationship between unemployment and ageing. First of all, it has to be remarked that the effects of ageing on the unemployment rate are underinvestigated (personal announcement Bas van Groezen, assistant professor at the Utrecht School of Economics). In contrast to the theory that ageing will result in less unemployment, there remain economic theories that ageing will result in more unemployment. These theories that explain a higher unemployment rate due to ageing may be for example:
-An ageing society disattracts investors due to the lower productivity of older workers (Sinn, 2005).
-An ageing society has fewer entrepreneurs because entrepreneurs are often young. Fewer entrepreneurs may result in a higher unemployment rate (Ibid.).
 -An older workforce is less flexible to reeducate and to move between jobs.
-Unemployment benefits may be used as early retirement schemes (Euwals, De Mooij, Van Vuuren 2009).
-There may be large demand shifts in different sectors in the economy due to ageing (personal announcement Bas van Groezen). For example, the demand to health care for older people will increase while demand to goods and services for younger people will decrease. This may result in sectoral unemployment.
It can be concluded that the effects of ageing on the unemployment rate are still ambiguous. Because unemployment is a relative big bad for the happiness in our society (Veenhoven interviewed in Mulder and Koster, 2008, ch.6), a statement can be made that the economics of ageing should give more attention to its effects on unemployment.

I also like to comment on how I obtained the topic of this masterthesis. I was sure that my paper should be about happiness and economics. This because I was attracted to happiness research and economics since a few years and this research field perfectly fits the interdisciplinary approach of economics and social sciences at the Utrecht School of Economics. My opinion was also that the topic should be innovative and applicable to the context of my master economics and social sciences, which investigates arrangements and trends of modern welfare states. This involved a quest for a thesis topic and I found one in the significant relationship between unemployment and happiness. This relationship, however, had to be expanded if the paper was meant to be innovative. The additional innovative character was brought by the idea that preferences may affect happiness. In spring 2008 I learnt why preferences such as positional concerns have an effect on happiness, and I considered the effect of positional concerns (concerns about own wealth / position compared to those of others) on happiness as an alternative thesis topic (see Frey, 2008, for an overview about the topic of positional externalities). This alternative thesis topic hit me upon the idea to incorporate a preference in the valuation of unemployment. You can see the result right here in this paper about the role of work involvement in the valuation of unemployment.

My acknowledgements in this paper are for my two supervisors Loek Groot and Ruut Veenhoven and their useful comments on this paper. I hope that Loek Groot has learnt more about happiness and Ruut Veenhoven has learnt more about economics by this paper. Also I would like to acknowledge all other friends, relatives and co-workers of the World Database of Happiness who supported me by showing their interest in my thesis. Many of them really liked my stories about happiness studies and I am convinced that happiness studies will be a topic of conversation for the rest of my life.

Summary

In this study the relationship between happiness and unemployment is investigated. Unemployment decreases significantly the happiness of individuals. This lower happiness is caused by the lower income during the unemployment spell and caused by psychological factors apart from the lower income. Examples of these psychological factors are the social stigma of being unemployed, the lack of social contacts provided by the work floor and an innate human need to perform a work activity.

Since recently, economists have tried to attach a monetary value to unemployment by means of happiness surveys. The question which is tried to be answered by this method is how money much should be given to unemployed individuals to make them equally happy as if they were employed. It is possible to calculate this amount because the happiness of individuals can be measured. The size of the positive effect of money on happiness and the negative effect of unemployment can be estimated by regression analysis. There are few studies that have calculated this income compensation for unemployment. In these studies the income compensation is split in a part for the decrease in happiness due to the lower income, the financial costs of unemployment and a part for the psychological costs of unemployment.

One of the psychological factors is also work involvement. Work involvement can be defined as a measure for how important work in general is for the happiness of individuals. According to the theory of mental incongruence individuals with a high work involvement suffer more from unemployment than individuals with a low work involvement. This can be explained by the mismatch between the relative high preference to have a job and a situation of involuntary unemployment.

In the empirical part of this paper the psychological costs of unemployment are calculated for individuals with a low and high work involvement. The dataset used for this calculation is the German Socio Economic Panel (SOEP) for the years 1998 and 1999. In this dataset the same respondents are asked the following questions in the two years:

-How satisfied the respondent is with life in general on an eleven point scale, from 0 (completely dissatisfied) to 11 (completely satisfied). This is the measure of happiness.

-How important the respondent considers work for his well-being and contentment. Respondents could answer whether work is 'very important', 'important' or 'not important' for their well-being and contentment. This question is used to measure work involvement.

-Whether the respondent is employed or unemployed.

-How high the monthly household income of the respondent is.

These questions are used to calculate the effect of income and unemployment on happiness. A change in the monthly household income of € 1000 is estimated to increase life satisfaction by 0.048 points on average at the eleven point scale. A change from being employed to being unemployed lowers life satisfaction by 0.337 points for individuals who considers work not important for their contentment whereas individuals who consider work very important face a decrease in happiness of 0.811 points. This is a confirmation of the theory of mental incongruence that high work involved individuals suffer more from unemployment compared to low work involved individuals.

Income compensations can be calculated by means of these marginal effects of income and unemployment on happiness. These compensations will be large because the marginal effect of income on happiness is relative small and the marginal effect of unemployment is relative large. To offset this decrease in happiness due to unemployment the monthly income compensation is € 7.021 for low work involved individuals and € 16.896 for high work involved individuals. In these amounts, respectively 94 % and 97 % can be seen as the psychological costs of unemployment. According to the theory of mental incongruence, the psychological costs are much higher for high work involved individuals compared to low work involved individuals.

The psychological and financial costs of unemployment can be indicators how much society should spend to labour market policies. The division in psychological and financial costs is similar to the division in social security expenditures for active labour market policies (psychological costs) and passive labour market policies (financial costs). Passive labour market policies refer to the financial benefits to keep unemployed individuals out of poverty, while active labour market policies refer to all kind of programs to reemploy the unemployed individuals. From a theoretical point of view, high work involved unemployed persons should receive more active labour market policies, because the psychological costs of unemployment are much higher for them. Also it can be concluded that the calculations in this paper suggest that current public expenditures for labour market policies, especially the expenditures for active labour market policies, are too low to compensate individuals for their loss in happiness due to unemployment.

Samenvatting

In deze studie wordt de relatie tussen geluk en werkloosheid onderzocht. Werkloosheid vermindert het geluk van personen significant. Dit lagere niveau van geluk vloeit voort uit het lagere inkomen gedurende de werkloosheid en uit psychologische oorzaken anders dan het lagere inkomen. Voorbeelden van deze psychologische oorzaken zijn het sociale stigma van het werkloos zijn, het ontbreken van sociale contacten die anders door het werk verschaft kunnen worden en een menselijke behoefte om arbeid te verrichten.

Recentelijk hebben economen geprobeerd om een waarde uitgedrukt in geld toe te kennen aan werkloosheid door middel van geluksonderzoek. De vraagstelling die men door middel van deze methode probeert te beantwoorden is hoeveel geld gegeven zou moeten worden aan werklozen om zich even gelukkig te doen voelen als wanneer ze werkzaam zouden zijn. Het is mogelijk om dit bedrag te berekenen omdat het geluk van personen gemeten kan worden. De omvang van het positieve effect van geld op geluk en het negatieve effect van werkloosheid kunnen worden geschat door middel van regressie-analyse. Er zijn enkele studies die deze inkomenscompensatie hebben berekend voor werkloosheid. In deze studies wordt de inkomenscompensatie gesplitst in een gedeelte voor de afname van geluk door het lagere inkomen, een deel voor de financiële kosten van werkloosheid en een gedeelte voor de psychologische kosten van werkloosheid.

Een van de psychologische oorzaken is ook arbeidsethos. Arbeidsethos kan gedefinieerd worden als een maatstaf voor hoe belangrijk arbeid in het algemeen is voor het geluk van individuen. Volgens de mentale incongruentietheorie lijden individuen met een hoog arbeidsethos meer onder werkloosheid dan individuen met een laag arbeidsethos. Dit kan verklaard worden uit de combinatie van een relatief hoge voorkeur om een baan te hebben en een situatie van werkloosheid.

In het empirisch gedeelte van deze studie worden de psychologische kosten berekend voor personen met een laag arbeidsethos en personen met een hoog arbeidsethos. De data die voor deze berekening gebruikt worden, zijn afkomstig uit het Duits Sociaal Economisch Panel (SOEP) voor de jaren 1998 en 1999. In deze dataset zijn de respondenten de volgende vragen gesteld in deze twee jaren:

-Hoe tevreden de respondent is met het leven als geheel op een schaal met elf punten, van 0 (volledig ontevreden) tot 11 (compleet tevreden). Dit is de meting van geluk.

-Hoe belangrijk werk is voor het welzijn en de tevredenheid van de respondent. Respondenten konden antwoorden of werk 'erg belangrijk', 'belangrijk' of 'niet belangrijk' is voor hun welzijn en tevredenheid. Hiermee wordt hun arbeidsethos gemeten.

-Of de respondent werkzaam of werkloos is.

-Hoe hoog het maandelijks huishoudinkomen van de respondent is.

Deze vragen worden gebruikt om het effect van inkomen en werkloosheid op geluk te berekenen. Er wordt geschat dat een stijging van het maandelijks huishoudinkomen van € 1000 de levenstevredenheid gemiddeld verhoogt met 0.048 punten op de schaal van elf punten. Een verandering van werkzaam naar werkloos verlaagt de levenstevredenheid met 0.337 punten bij individuen die vinden dat werk niet belangrijk is voor hun tevredenheid, terwijl individuen die werk erg belangrijk vinden worden geconfronteerd met een afname in geluk met 0.811 punten. Hiermee wordt de mentale incongruentietheorie dat personen met een hoog arbeidsethos meer lijden onder werkloosheid dan personen met een laag arbeidsethos bevestigd.

De inkomenscompensaties kunnen berekend worden door middel van deze marginale effecten van inkomen en werkloosheid op geluk. De compensaties zullen groot zijn omdat het marginale effect van inkomen op geluk relatief klein is en het marginale effect van werkloosheid relatief groot. Om de vermindering in geluk door werkloosheid te compenseren, is er een maandelijkse compensatie nodig van € 7.021 voor personen met een laag arbeidsethos en € 16.896 voor personen met een hoog arbeidsethos. Van deze bedragen kunnen respectievelijk 94 % en 97 % worden gezien als de psychologische kosten van werkloosheid. Volgens de mentale incongruentietheorie zijn de psychologische kosten veel groter voor personen met een hoog arbeidsethos dan voor personen met een laag arbeidsethos.

De psychologische en financiële kosten van werklozen kunnen indicatief zijn voor het bedrag dat een maatschappij aan arbeidsmarktbeleid zou moeten besteden. Het onderscheid tussen psychologische en financiële kosten correspondeert met het verschil qua uitgaven voor sociale zekerheid uitgaven tussen een activerend arbeidsmarktbeleid (psychologische kosten) en een passief arbeidsmarkt beleid (de financiële kosten). Met een passief arbeidsmarktbeleid wordt gedoeld op uitkeringen bedoeld om werklozen voor armoede te behoeden, terwijl het bij een activerend arbeidsmarktbeleid gaat om allerlei beleidsprogramma's om werklozen aan het werk te helpen. Vanuit een theoretisch oogpunt zouden werklozen met een hoog arbeidsethos van meer activerende arbeidsmarktprogramma's gebruik moeten kunnen maken, omdat de psychologische kosten voor deze groep veel groter zijn. Ook kan geconcludeerd worden dat de berekeningen in deze studie erop wijzen dat de huidige publieke uitgaven voor arbeidsmarktbeleid, vooral de uitgaven voor activerend arbeidsmarktbeleid, te laag zijn om individuen te compenseren voor hun achteruitgang in geluk door werkloosheid.

1 Introduction

1.1 Motivation for the investigation and research question

In the seminal article of Clark and Oswald (1994) about happiness and unemployment, the hypothesis is questioned whether unemployment is voluntary or involuntary. Clark and Oswald reject the hypothesis that unemployment is voluntary because unemployed individuals show a large decline in happiness compared to employed individuals.

This is in contrast to the neoclassical economic perspective about unemployment. The neoclassical perspective states that unemployment is voluntary because individuals make a choice between utility derived from paid labor and leisure time. The utility derived from labor and leisure depends on their preferences. Individuals with a low work involvement derive relative much utility from leisure time and they like to work a relative low number of hours compared to individuals with a high work involvement. This preference for a low number of working hours may result in voluntary unemployment in case of high unemployment benefits or if incomplete labour markets do not offer opportunities for a low number of working hours.

In contrast to Clark and Oswald, Winkelmann and Winkelmann (1998) looked also at the reasons why labour contracts ended and individuals became unemployed. Individuals were split up in a group which became unemployed voluntary and involuntary. Their findings suggest that voluntary unemployment is often not a rational choice for an individual because it is also associated with a significant decrease in happiness.

If voluntary unemployment is not an improvement for the happiness of an individual, it is interesting to look at how individuals experience their unemployment situation with respect to work involvement. Work involvement may result in different types of unemployed individuals with a low and high work involvement. Individuals with a low work involvement and a relative high preference for leisure time derive less disutility from their unemployment status. Hence they should be happier than unemployed individuals with a higher work involvement. This hypothesis is already empirically confirmed by Shamir (1986) and in the meta-analysis in McKee-Ryan et al (2005) and in Paul and Moser (2006).

Some studies about happiness and unemployment have calculated the compensating income variation for unemployment state. Income compensations are monetary compensations for the loss in happiness due to the negative effects of intangible goods, bad situations or externalities present in the life of individuals. It can be interpreted as the amount of money which individuals are willing to pay to avoid the bad situation. But because no direct market value can be attached to intangible goods, economists have to find alternative valuation methods. Since the end of the last century

several economists have calculated income compensations for all kind of intangible goods by means of happiness surveys. The valuation method by means of happiness surveys is argued to be superior to the other two valuation methods of intangible goods, the stated and revealed preferences methods. In these two methods utility is estimated from stated preferences and behavior in the market. When measures of happiness are used as a proxy for utility, more accurate estimations can be made about the marginal utility derived from income and the disutility obtained from the intangible good or bad situation.

But not earlier has any study calculated compensating income variations for individual preferences. This paper is innovative because it incorporates a preference in the valuation of unemployment. As stated earlier, individual preferences with regard to work involvement may be important in the personal experience of unemployment. A lower work involvement moderates the negative effects of unemployment on happiness. From here the hypothesis in this paper is derived: Unemployed individuals with a low work involvement need less income compensations than unemployed individuals with a high work involvement.

Studies that have calculated compensating income variations for unemployment have also split the income compensation in psychological costs and financial costs of unemployment. The financial costs of unemployment arise from the fact that unemployment is associated with a decrease in income. Furthermore, it will be investigated in this paper whether the income compensation of the psychological and financial costs differ between individuals with a low or high work involvement.

1.2 Practical applicability of the investigation

The practical applicability of a distinction between individuals with a low and high work involvement can be used in several situations. First of all, if society wants to maximize mean national happiness from a classic Utilitarian perspective and under the constraint that jobs are scarce, jobs should be given to those individuals with the highest work involvement. These individuals derive the most disutility from their situation of unemployment and there should be given more social rights to them to work than to individuals with a low work involvement. This is called the theory of job rationing. However, from the investigation of Shamir (1986) it appears that individuals with a low work involvement are still unhappy in their situation of unemployment and also they need labour market policies to relief their situation.

The distinction between unemployed individuals with a low and high work involvement can be used to differentiate between different levels of active and passive labour market policies. In this paper it is assumed that active and passive labour market policies are similar to the income

compensation for respectively the psychological and financial costs of unemployed individuals. Because unemployed individuals with a low work involvement suffer less from unemployment compared to individuals with a high work involvement they need less income compensation. Hence the amount of labour market policies should differ between the high and low work involved unemployed individuals. This differentiation of labour market policies for unemployed individuals fits in the development of the welfare state towards more individualized arrangements and the incorporation of the manufactured (voluntary) risks in unemployment insurance. Different labour market policies for unemployed individuals with a low work involvement and with a high work involvement may capture a part of the socio-economic debate whether unemployment is either manufactured (voluntary) or involuntary.

An example of the practical application of different levels of labour market policies for different unemployed individuals is a costs and benefits analysis of reintegration programs. In the report of Kok, Hollanders and Hop (2006) and Centraal Plan Bureau (2007) it is stated that the social return of active labour market policies is lower when the individual monetary value attached to leisure time is higher. This higher (positive) value of leisure time is due to the fact that individuals with a low work involvement attach a larger value to leisure time than individuals with a high work involvement. When low work involved individuals become reemployed, they loose relative much utility derived from leisure time. The result is that their individual benefits of reintegration programs are lower with the result that the total social benefits of the reintegration programs are lower too. This is because the individual benefits are part of the total social benefits.

When it is economically efficient for labour market policies to distinguish low and high work involved individuals from a theoretical point of view, it can questioned whether current labour market policies may take work involvement as criterion to distinguish groups of unemployed individuals. At the end of this paper a few remarks are made about this issue.

1.3 Set up of the paper

This paper focuses at the significant decline in happiness due to unemployment. An overview of the causes of unemployment is beyond the scope of this paper. Also this paper will not discuss the reliability and validity of measures of subjective well-being and the methods to obtain these measures. Happiness is measured by subjective well-being. More information about measures of subjective well-being can be found on the webpage of the World Database of Happiness (http://worlddatabaseofhappiness.eur.nl/).

Chapter 2 starts with an investigation of the relationship between happiness and unemployment. In paragraph 2.1 the sources of unhappiness among the unemployed are discussed.

Valuations methods of unemployment are discussed in paragraph 2.2. It is argued that the valuation of intangibles by means of happiness surveys may be superior to the other methods. The results of earlier studies that used this method are discussed in paragraph 2.3. Paragraph 2.4 summarizes the literature what of kind labour market policies actually make unemployed individuals happy.

Chapter 3 discusses the relationships between happiness, work involvement and unemployment. In paragraph 3.1 a definition of work involvement is given and in paragraph 3.2 different types of unemployed individuals are described by their preference for work involvement. Different degrees of work involvement may result in differences in the disutility individuals derive from unemployment. This is the scope of paragraph 3.3. The neoclassical economic model of income and leisure is described to explain the theory of mental incongruence. The theory of mental incongruence states that individuals with a high work involvement have a higher disutility in an unemployed state compared to individuals with a low work involvement. After this relationship between work involvement and happiness among unemployed individuals is described, paragraph 3.4 will discuss the relationship between unemployment and work involvement. It is discussed why unemployed individuals have a somewhat lower work involvement. This is explained by adaptation to unemployment by means of a lowered work involvement and self-selection of low work involved individuals into unemployment.

In chapter 4 a theoretical regression model is developed. First a base model of unemployment is described and the method about the calculation of the compensating income variations is given in paragraph 4.1. The base model and the calculation method are further expanded in paragraph 4.2 by adding a term for work involvement.

The regression model is tested in chapter 5 by means of the German Socio Economic Panel (SOEP). Many studies use longitudinal household panels such as the SOEP for the calculation of compensating income variations. In the SOEP there is also a usable indicator of work involvement available. In chapter 6 income compensations are calculated by means of the results from chapter 5. The income compensations are used to answer the hypothesis in this introduction and to make remarks with regard to the practical applicability of the results in labour market policies.

2 Literature about unemployment and unhappiness

2.1 The sources of unhappiness

In their literature review about happiness and unemployment, Frey and Stutzer (2002, ch.5) discern three sources of unhappiness due to individual unemployment: 1) financial factors 2) social factors 3) psychological factors. These three sources of unhappiness from Frey and Stutzer are described below. It has to be emphasized that these three sources provide a general picture that can differ between individuals dependent on their personal characteristics.

Financial factors

About one third of the loss in happiness due to unemployment is attributed to the financial costs (Ibid.). The financial costs refer to the decline in income that occurs due to unemployment. Unemployed individuals have generally a lower income than if they would be employed. This is because the payments from the unemployment insurance and benefits are smaller than the income of the earlier paid work. As a result of the lower income, the unemployed individual will be less happy ceteris paribus. Frey and Stutzer notice that individuals who loose a certain income due to unemployment may experience a larger difference in happiness compared to individuals that gain the same income. This is because people value in general a certain loss more heavily than the same increase in income.

Social factors

Frey and Stutzer mention that the happiness of unemployed individuals is affected by the social norm to work. If the performance of work activities is valued as important in society, unemployed individuals may face a social stigma due to their unemployment status. The strength of this social stigma is influenced by the general unemployment rate. High rates of unemployment would increase the acceptability of unemployment.

Especially the unemployment rate in the social network of the unemployed may be important for the happiness of the unemployed individual. A higher unemployment rate within the social network has a positive effect, since it increases the acceptability of unemployment among peers. Also a higher unemployment rate in the social network results in more opportunities for the unemployed individual to have social contacts instead of having these contacts at work (personal announcement Jan Ott, PhD-student at the World Database of Happiness).

Psychological factors

In the literature review by Frey and Stutzer (2002, ch.5), psychological costs are described in terms of the lower mental health of the unemployed individuals. This is explained by the utility or happiness people derive from work itself. They point out that work satisfaction can be derived from intrinsic features and extrinsic features of the work activity. Utility from extrinsic features comes from the environmental conditions in which the work activity is performed and rewarded. Extrinsic features are for example, pay (income), working conditions, status obtained from the work and job security. Utility from intrinsic features comes from performance of the work itself, for example, from opportunities for personal control, "utilizing one's skills", "variety of work tasks", "supportive or controlling supervision" and social contacts at work (Ibid.).

It is possible that these intrinsic features have the origin in the innate human need for human beings to perform a work activity (Ibid.). This may imply a flaw in the neoclassical economic theory of leisure and consumption. The neoclassical economic theory assumes that individuals derive utility from consumption and leisure. According to this theory, a job creates consumption possibilities because it generates income, but it does at the costs of less leisure time. But utility can also be derived from work itself, in addition to income. The result will be that the opportunity costs of leisure time are increased (Centraal Plan Bureau, 2007).

Individuals can have different personality characteristics that determine the amount of utility they derive from intrinsic and extrinsic features which work provides. This may determine how much labour they will supply. The preference to perform work and derive utility from it can be characterized as work involvement. Psychological costs will occur if this preference cannot be accomplished due to unemployment. More about this theory of mental incongruence is explained in paragraph 3.3.

The consequences of individual unemployment state on happiness are now discussed. In addition, there can also be negative effects of the general unemployment rate on the happiness of employed individuals (Luechinger, Meier and Stutzer, 2008). These negative effects are caused by:

-A too low demand for labour at the labour market. This labour market pressure increases the threat for employed individuals to become unemployed too. Moreover, the threat of unemployment lowers the bargaining position of employees in negotiations of labour contracts. The result is that wages and terms of employment are under pressure and this lowers happiness.

-A higher financial tax burden. This is due to higher state expenditures which are needed for tackling and relieving unemployment by active and passive labour market policies.

-A higher chance for public bads. Public bads such as poverty, inequality and criminal activity may increase due to unemployment.

This paper emphasizes the consequences of unemployment state on happiness at the level of the individual and there is not much attention is paid to the general effects of unemployment. In the next sections it will be discussed how a monetary value can be attributed to the negative effects of unemployment.

2.2 Valuation of unemployment

In paragraph 2.1 it was argued that unemployment has negative effects on individual happiness when an individual becomes unemployed or when the general unemployment rate has a negative effect on the happiness of the employed. For these reasons individuals are willing to pay unemployment premiums and taxes to alleviate the negative effects by means of labour market policies. How much individuals are willing to spend on labour market policies depends on how individuals value the disutility obtained due to unemployment in monetary terms. Because no direct market value can be attached to leisure and the immaterial benefits of work in the valuation of unemployment (see e.g. Kok et al., 2006), unemployment has to be valued using methods for the valuation of intangible goods. In this paragraph these methods are discussed (mentioned e.g. in Wilms, 1984; Frey, 2008, ch.12).

Stated preference methods

In these methods respondents are asked for the (monetary) value they attach to unemployment by means of the amount they are willing to pay to avoid unemployment. This can be done by for example by interviews of individuals (an example is the study of Vos (1981) who looks at the willingness of unemployed individuals to make travel costs to a new job). It is also possible to pool the opinions of many individuals. This can be done by pooling the outcomes of the individual interviews or by referenda (e.g. Atkinson, 1999, ch.5, gives an example of referenda about unemployment policies). This pooling of opinions is used for public policy purposes to determine the preference of the average individual.

There are some drawbacks in these methods. A first drawback is that individuals may have limited capability in performing these interviews correctly. This is because they may not be able to access correctly the disutility they derive from unemployment or the utility they derive from spending money to alternative goods instead of labour market policies. In this respect it is important to note that the chance of becoming unemployed and hence the chance of experiencing a disutility may not be correctly assessed by individuals too. Also individuals may express attitudes rather than true preferences when they are asked to value specific intangible goods.

Frey (2008, ch.11) gives an overview of the causes why the axioms of classic economic theory that individuals are completely informed about their preferences and are able to maximize their utility may not hold in reality. These causes can be made clear by the fact that individuals frequently overestimate the utility they think to derive from a higher income level. A first explanation for this fact is that individuals ignore that they will adapt to a higher consumption level. A short time after an increase in consumption possibilities, individuals get used to that higher consumption level. The utility will decrease in the direction of the utility level before the increase in consumption possibilities. Another explanation may be that individuals overestimate the utility they will derive from extrinsic attributes in consumption while they underestimate the utility they will derive from intrinsic attributes in consumption. This is due to the fact that the utility obtained from extrinsic attributes like e.g. money is easier to remember and to rationalize in numbers contrary to the utility derived from intrinsic attributes like e.g. leisure and other intangible goods.

The second drawback of the stated preference methods it that individuals may not give answers according to their preferences but answers to influence the outcome of the survey. It is stated that individual preferences may be pooled together to derive estimations for public expenditures. But rational individuals may state strategic answers instead of true preferences if they are aware that they can influence the outcome of the pooled interviews and hence can influence public policy.

Revealed preference methods

In these methods the valuation of unemployment is derived from actual behaviour of individuals who can be observed in the market. It is assumed that the behaviour of the individuals in the market is aimed at to maximize utility and that markets are complete competitive.

An example is the travel costs unemployed individuals are prepared to make for a new job. The higher the transportation costs are in the new job, the more an individuals values the state of being employed instead of being unemployed. Also self-selecting mechanisms of unemployed individuals to apply to the criteria of being eligible to unemployment benefits may fall within the category of revealed preference methods. For example, unemployed individuals with a high work involvement may self select them from unemployed individuals with a low work involvement by job search behaviour or by taking part in a workfare program.

These methods, however, suffer from the limitation that the observed behaviour of the individuals may be constrained by market failures. Neoclassical economists state that if labour markets are completely competitive, only voluntary unemployment will exist. However, labour markets are not completely competitive and the result is the existence of involuntary unemployment. Involuntary unemployment may constrain the job search behaviour of unemployed individuals if they have low prospects to find a job in the market (Hoff, 1998; Nordenmark, 1999). This means that job search behaviour is not a good indicator of the valuation of unemployment.

Also the existence of poverty traps and credit constraints for unemployed individuals may influence the behaviour of unemployed individuals and no appropriate conclusions from their behaviour can be derived about the valuation of unemployment.

Valuation of unemployment using happiness surveys

In this method subjective well-being is taken as a proxy for the disutility individuals derive from the intangible good (unemployment). It is a relative recent method, because direct measurement of utility was considered problematic in earlier times, but was pointed as a direction of research in the evaluation of public expenditures (Wilms, 1984). The method is similar to the revealed preference methods with respect to the fact that the actual behaviour of individuals is observed. However, the observed behavior is not the behaviour in the market but the outcome of a questionnaire about subjective well-being for many individuals. From the questionnaire there is also information available about the individuals' income and presence of intangible goods. Valuation of the intangible good is the income compensation for the intangible good. The income compensation means that a change in the utility caused by a change in the presence of the intangible good should be compensated by a change in income.

The effect of the intangible good and the effect of income on happiness are calculated by regression analysis. The results of the regression analysis can be used to calculate the income compensation. This is calculated by the ratio of the marginal effect of the intangible good to the marginal effect of income. The ratio is the percentage amount the individual's income has to be increased to compensate for the loss of happiness due to the intangible good.

The use of happiness surveys in the valuation of intangibles has advantages in comparison to the other two methods. First of all, the shortcomings of stated preference methods are that individuals may not accurately assess the utility they will derive from consumption choices or that they may give strategic answers. Happiness surveys provide a solution to these problems. Correlational findings of happiness surveys can provide a reliable estimate of utility derived from actual consumption behaviour (including the consumption of intangible goods). This is a solution if individuals cannot correctly assess the utility they will derive. Also happiness questionnaires may not directly linked by individuals to the aim of investigations if opinions are pooled. Hence strategic answers on happiness questions to influence public policy are less likely (however possible misrepresentation of happiness surveys by individuals to influence public policy is a point put forward by Frey, ch.13, 2008).

The main problem with the revealed preference approach was that the behaviour of the individuals in the market is often constrained by market failures. But happiness measures are affected by all the realized and unrealized behaviour in the market. If the behaviour of an individual is constrained by a market failure (e.g. the existence of involuntary unemployment) than the effect

of this market failure on happiness is measured by a decrease in happiness. The second advantage of the happiness approach over the revealed preference method is that it does focus on experienced utility instead of decision utility. The revealed preference method does observe the actual behaviour in the market by the decisions of an individual. This is in contrast with the fact that the utility that individuals think to derive from decisions in the market may not coincide with the actual experienced utility of the decisions' outcomes. The happiness approach is in this case better than the revealed preference methods because it measures actual experienced utility.

It can be questioned if happiness surveys are also appropriate in the determination of unemployed individuals whether they have either a low or high work involvement (in paragraph 3.3 it will be further explained why happiness is an indicator of low or high work involvement). The answer to this question is negative. Happiness surveys are useful for the determination of the loss in happiness for the average individual. Therefore they are useful for policy purposes policies such as how much money should be spend to labour market policies. But because the determination of low and high work involved types unemployed occurs at the individual level the method is not appropriate. Self-selection mechanisms such as job search behaviour of workfare programs remain necessary to determine if an individual belongs to the high work involved group or to the other low work involved group.

2.3 Compensating income variations for unemployment in other studies

The last method (valuation by happiness surveys) is used by Winkelmann and Winkelmann (1995; 1998) and Knabe and Rätzel (2007) to calculate how much an individual should be compensated for unemployment. This is expressed as a percentage increase of his income. However, because unemployment also lowers his income in general the compensation can be separated in the financial costs of unemployment and the psychological costs of unemployment. Psychological costs both include the social factors and psychological factors as sources of unhappiness, already mentioned in paragraph 2.1.

The income compensations mentioned in the texts of Winkelmann and Winkelmann (1995: 1998) and Knabe and Rätzel (2007) are summarized in box 1. These authors also use the dataset of the German Socio Economic Panel as will be applied later in the empirical part of this paper. From box 1 it becomes clear that the income compensation for unemployed individuals is in the range 117 % to 737 %. Furthermore it can be concluded from box 1 that the income compensation is lower for females compared to males and that the psychological costs of unemployment are larger for males compared to females.

Also two other papers have to be mentioned in the context of compensating income variations for unemployment. Di Tella, MacCulloch and Oswald (2003) calculated income compensations for individual unemployment state and the general unemployment rate across European welfare states. The results of the effect of the general unemployment rate on individual

happiness are negative and frequently significant. This is consistent with the notion that the general unemployment rate may hurt the happiness of employed individuals as stated in paragraph 2.1. The income compensation for the decrease in happiness due to the general unemployment rate may be an indicator how much employed individuals are willing to pay to avoid a percentage increase in the general unemployment rate.

Winkelmann and Winkelmann, 1995
Overall income compensation needed: 168 % (I)   From this income compensation: 81 % psychological costs, 19 % financial costs.   Male income compensation: 415 % (II)   From this income compensation: 91 % psychological costs, 9 % financial costs.   Female income compensation: 372 % (II)   From this income compensation: 73 % psychological costs, 27 % financial costs.
Remarks: (I) Ordered probit regression (II) Fixed effect OLS regression
Winkelmann and Winkelmann, 1998
Overall income compensation needed: 737 %
Remarks: Fixed effect logit regression,   Dependent variable: 1 (high happiness 8-10) and 0 (low happiness, 0-7)
Knabe and Rätzel, 2007
Overall income compensation: 117 % (I)   Male income compensation: 139 % (I)   Female income compensation: 98 % (I)   Overall income compensation: 75 % (II)   Male income compensation: 93 % (II)   From this income compensation: 70 % psychological costs, 30 % financial costs   Female income compensation: 59 % (II)   From this income compensation: 60 % psychological costs, 40 % financial costs
Remarks: All regressions are ordered probit regressions.   (I)　　　Model not controlled for permanent income   (II)　　Model controlled for permanent income

Box 1: Income compensations for unemployment from various studies using the German Socio Economic Panel.

Two conclusions in the paper of Lucas, Diener and Yannis (2004) suggest that the income compensations in box 1 are too low. They state that happiness is already lower in the year before becoming unemployed and that after reemployment, happiness does not return to the old level before the unemployment spell. It is possible that this first effect can be attributed to the foresight of unemployment. If one fears to become unemployed one year before the official unemployment spell starts his happiness will be lower. The second effect has possible different causes. First a depreciation of human capital takes place during the unemployment spell and hence the unemployed individual has to apply for a lower quality job. This lower happiness is also possible if the unemployed individual has to apply for a job that does not match his preferences (personal announcement Jan Ott). A last cause is that an unemployment spell may change the personality trait of a person. This means that a stable happy person is made stable unhappy due to a serious event such as unemployment.

2.4 Labour market policies that make unemployed individuals happy

Earlier it was stated that the compensating income variations should be interpreted as the amount of money individuals are willing to pay to avoid the bad situation of unemployment. This amount times the chance that the individual may become unemployed, can be interpreted as how much an average individual is willing to pay for effective labour market policies. Furthermore it was stated that there is division in the income compensation between the psychological costs of unemployment and the financial costs of unemployment. This division is similar to the division in social security expenditures for active labour market policies (psychological costs) and passive labour market policies (financial costs) as stated in Knabe and Rätzel (2007). Passive labour market policies refer to financial benefits to keep unemployed individuals out of poverty, while active labour market policies refer to all kind of programs to reemploy the unemployed individuals.

The income compensations for unemployment calculated in Winkelmann and Winkelmann (1995; 1998) and Knabe and Rätzel (2007) can be compared to the amounts actually spend on labour market policies. In 1998, 1,16 % of German Gross Domestic Product was spent to active labour market policies and 2,27 % of German GDP was spent to passive labour market policies. The labour market policies were spent to the 4,50 % of the total population who was unemployed in 1998 (OECD, 2009). This means that 25,78 % of current mean income per capita was available for active labour market policies per unemployed individual and 50,44 % of current mean income per capita was available for passive labour market policies per unemployed individual (own

calculation). The necessary additional income compensations in box 1 are larger than these actual amounts spend to labour market policies (notice that for comparability, 100 % has to be added to the income compensations because of box 1 is about the additional increase in income). From this it can the concluded that the current spending to labour market policies is not sufficient to compensate the unemployed individuals for their decrease in happiness. Also relative much money is spend on passive labour market policies whereas the income compensations to cover the psychological costs of unemployment are larger.

However, in the literature about the valuation of intangibles it is not thoroughly questioned if income compensations in general can take away all the psychological problems associated with the intangible good at the calculated price. For example, can active labour market policies like reintegration programs or subsidized jobs take away all psychological costs of unemployment for a price equal or lower than the calculated income compensation? Two additional problems arise from this question:

First, it has not been investigated what kind of unemployment policies make unemployed individuals happy (personal announcement Jan Ott). There are findings indicating that having a daily work activity is more important for happiness than the quality of the job. This would be an argument in favour of workfare programs and the creation of public jobs, although there may be self selection of individuals with a low level of education in these programs and jobs (Koch, Stephan and Walvei, 2005; Knabe and Rätzel, 2007). Also unemployed individuals may derive happiness from their treatment in labour market programs. This is called procedural utility (Frey, 2008, ch. 10). The quality of the procedure is irrespective of whether the outcome is having work or the benefit level. In Hortulanus, Liemp and Sprinkhuizen (1997, ch.12) and Vink (2007, ch.7) several interviews with unemployed individuals in the Netherlands point out that they are unsatisfied about the treatment by the employment office. There seems to be a lack of trustworthiness between unemployed individuals and the employment office.

A second problem in the assessment of labour market programs for happiness is that it is not clear if these programs can be economically efficient. In case the income compensation focuses on the financial costs of unemployment, efficiency problems may only arise due to transaction costs. Transactions costs are the costs for transfering the unemployment insurance premiums from the contributors to the receivers of the unemployment benefits. However, in case of active labour market policies to alleviate the psychological costs of unemployment, problems are more complicated. Some active labour market policies may create unemployment because reintegration in the labour market of one individual can mean that the job of another person is lost if the number of jobs is limited. Another problem exists that expenditures of active labour market policies may explode when subsidized jobs crowd out unsubsidized jobs in the market (Kok et al., 2006; CPB,

2007). So a trade-off may exist between whether the labour market functions well and whether happiness is increased by more employment. Efficiency of active labour market programs has to be evaluated in the context of a costs and benefits analysis of reintegration programs. If programs are evaluated on financial efficiency only, the marginal costs of programs should not be higher that the marginal saved expenditures of benefits if an individual is reemployed. In case more emphasis is put on employment and happiness instead of financial efficiency, the social return of reintegration programs will be higher than the financial return (Koning, Teulings and Van Den Berg, 2002).

If micro studies do not offer answers what kind of policies make unemployed individuals happy, macro studies can be discussed too. The relationship between the happiness of the unemployed and social security expenditures is investigated by the study of Ouweneel (2002). Ouweneel finds no correlation between the happiness of unemployed individuals and the level of social security spending across different nations. In the study of Di Tella et al. (2003) a positive relationship is found between the benefit replacement rate and the happiness of the unemployed individual across European welfare states. The study of Di Tella et al. may be more reliable than the study of Ouweneel (2002). This because of social security spending consists of many welfare state expenditures which are not targeted at unemployed individuals only.

It can be hypothesized that generous benefits keep individuals unhappy in their situation of unemployment (e.g. argued in Ouweneel, 2002; Frey, 2008, ch. 4). However, this issue has not investigated yet empirically and the financial and psychological costs are too high for the average unemployed individual to stay voluntary in their situation. A related issue from economic theory is that financial poverty traps do not motivate unemployed individuals to work and come out from their situation of unemployment. When an individual comes out of unemployment, his additional financial gains are zero because he looses his unemployment benefits which were means tested. But work pays almost always because the psychological costs of unemployment are relieved.

3 Literature about work involvement of unemployed persons

3.1 Definition of work involvement

Work involvement in the definition of Kanungo (1982) refers to the importance of work in the life of an individual. It is a normative belief how important work is for the personal needs and hence satisfaction. Although work involvement is a personal value, it may, however, depend on socialization and cultural values (Shamir, 1986).Work involvement is also a stable personality characteristic. Therefore it does not depend on temporary employment status and employment conditions.

The concept of work involvement becomes clearer when related concepts are discussed. Measures of these related concepts may be correlated with measures of work involvement.
-Job involvement refers to how important the current job is for the well-being of an individual. It differs from work involvement in two respects. First of all, it refers to a specific work activity. This is contrary to work involvement, which refers to work in general. Secondly, it refers to the current situation whereas work involvement is a stable personality characteristic that is not changed in different situations.
-Organizational commitment has the same properties as job involvement although it refers to the attitude of the individual towards the current organization at the job (Kanungo, 1982).
-Protestant work ethic is defined as "a dispositional variable characterized by a belief in the importance of hard work and frugality which acts as a defence against sloth, sensuality, sexual temptation and religious doubt. It reflects a belief that hard work is good as an end in itself and that personal worth and one's morale status are to be gauged on willingness to work hard" (Shamir, 1986, p. 27). Although protestant work ethic refers also to work in general and it is relatively stable over time, it is not the same as work involvement. Work involvement as an individual value may depend on protestant work ethic socialization but also on other kinds of socialization (Kanungo, 1982). The work ethic of society influences the social factors as sources of unhappiness mentioned in paragraph 2.1.
-"Employment commitment" in the definition of Warr (e.g. 2007, ch.3) is the degree to which individuals want to be engaged in paid employment. Closely related is the concept of "work orientation" (Warr, 1978), which is the desire of unemployed individuals to find a paid job. These two concepts differ from work involvement because they are related to a temporary situation of unemployment and are not stable personality characteristics (Shamir, 1986).

-Job search behaviour of unemployed individuals is different from work involvement because the former refers to an activity whereas the latter refers to a value. From an economic perspective, job

search theory explains the search behaviour of unemployed individuals by financial incentives such as the income reward for employment (Nordenmark, 1999). However, job search behaviour may also be explained by work involvement. Unemployed individuals with high work involvement derive more utility from work and hence are more inclined to look for a job.

-"Self-serving orientation" and perceived right to benefits (Hoff, 1998, ch. 4): These concepts may give indications about the degree to which unemployed individuals are inclined to free-riding behaviour on collective welfare schemes instead of to contribute to these schemes by working.

Now the concept of work involvement and related concepts are explained, the next paragraph investigates if the literature mentions categories of unemployed individuals along the dimension of work involvement.

3.2 Different types of unemployed persons

In the literature about unemployment a frequently used method to define categories of unemployed individuals is along the two dimensions of the theory of the sociologist Merton (Merton quoted in Hoff, 1998, ch. 2; Hoff and Van Echtelt, 2008). According to the theory of Merton, if individuals face a change in a situation, first they can choose to accept or reject cultural goals defined by society about this situation. Secondly, they can choose to accept or reject institutionalized means defined by society to reach these cultural goals. Several authors have applied this theory of Merton to unemployment. They define different categories of unemployed individuals along the first dimension whether it is expected that an unemployed individual chooses to accept the cultural defined goals of being employed rather than unemployed. This cultural defined goal may be e.g. the concept of Protestant work ethic and other kinds of socialization from paragraph 3.1. And along the second dimension the unemployed are categorized whether an unemployed individual chooses to use the usual ways to reach that goal. Usual ways of unemployed individuals to reach the cultural defined goal are for example labour market programs, unusual ways are illegitimate activities such as black market activities to earn money and moral hazard on social insurance (Ibid.).

Existing typologies of unemployed individuals in the line of Merton have two shortcomings if the concept of work involvement is applied to these typologies. First of all, it is questionable if these typologies are stable over time and do not change over time according to the definition of work involvement in this paper (the problem of the stability of the typologies is also mentioned in Hoff, 1998, ch.2). Secondly, economics focuses on the preferences of individuals and this may conflict with the sociological perspective of Merton. The preference of individuals is not limited to a preference whether to accept or reject cultural defined goals and institutionalized means. Although work involvement may depend on a preference for social goals and social means, it

depends also on individual preferences for work and leisure. Individual preferences may be independent from a preference for social goals and means.

Work involvement is one dimension in the categorization of Hoff and Van Echtelt (2008). Although they were guided by the typologies derived from the theory from Merton, this categorization is useful to define groups of unemployed persons along the dimension of work involvement. They discern four categories of unemployed persons in the Netherlands:

-Unemployed individuals, which have a relative high work involvement. They are actively looking for a new job on the labour market. However, they are relatively less concerned in social activities and participation outside the labour market. This group is called work oriented individuals ("werkgeoriënteerden").

-Unemployed individuals with a relative low work involvement. The job search behaviour of these individuals is relative high and they are relatively much concerned in social activities and participation outside the labour market. The combination of low work involvement and job search behaviour has to interpretated as a confirmation to the institutionalized means of society to look for paid work. They are called socially concerned individuals ("maatschappelijk betrokkenen").

-Unemployed individuals with a relative high work involvement. They are relatively much concerned in social activities and participation outside the labour market. The job search behaviour of these individuals is relative low an it is stated that this group obtains their utility from alternative activities instead of paid work. Therefore they are called "alternatieve zingevers" (utility is obtained from alternative activities).

-Unemployed individuals with a relatively low work involvement. They react negative to paid work and they are relatively less concerned in social activities and participation outside the labour market. This group of "retraitism" (Merton) is relatively small compared to the other groups and their behaviour is sometimes caused by long-term unemployment.

3.3 Relationships between happiness and work involvement

Differences in happiness of unemployed individuals can be explained by the theory of mental incongruence. This theory states that if the current situation does not fit the preference of an individual, then there is an 0oincongruence between preference and situation. This incongruence can be apparent in a situation of employment if individuals have a low work involvement. Or when unemployed individuals have a high work involvement. This last example of incongruence during an unemployment spell is applied to the neoclassical economic model of the trade-off between income and leisure in this paragraph and the next paragraph. When applied to this model, it has to be assumed that work involvement is contrary to a preference for leisure. Although individuals may derive satisfaction from both income and leisure, they have to choose between income and leisure

because there are time constraints. The time available has to be divided between leisure and working hours which generate income.

In figure 1 it is reflected that an individual can have a maximum of 24 hours of leisure time at the x-axis. At the y-axis income derived from paid labour is denoted. This income is used to create consumption possibilities and generated by trading hours of leisure for hours of work. The budget constraint in the figure is reflected by the line $A^I B$. Individuals can choose from this budget constraint the amount of leisure they want and the corresponding amount of income. The distance OA^{income} in figure 1 refers to unemployment benefits when individuals have no paid work. Unemployed individuals have full leisure time (point A^I) and they obtain their income from benefits. It is important to note that in this neoclassical model, working hours only provide utility from financial income. Other extrinsic and intrinsic sources of utility obtained from working hours are ignored (see paragraph 2.3 for examples for extrinsic and intrinsic sources of utility from work)
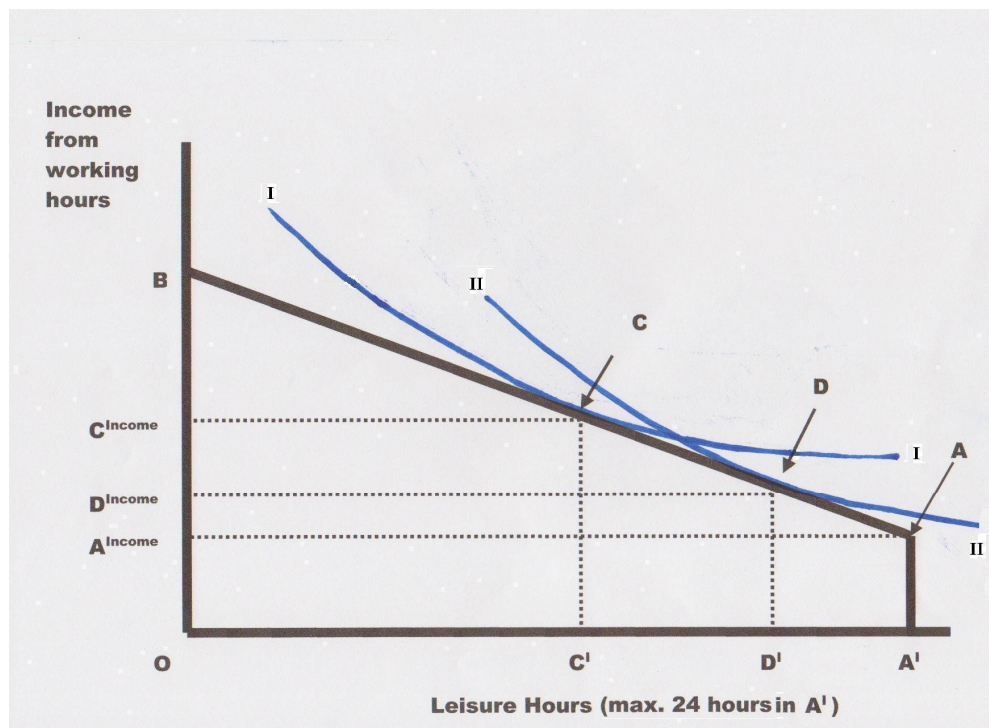
Figure 1: A relative high number of hours leisure is preferred in case of a low work involvement compared to high work involvement.

Indifference curve I in figure 1 reflects the preference of an individual with a high work involvement. This individual wants to trade one hour of leisure for a relative small increase in income. This is contrary to the individual with a low work involvement reflected by indifference II. This individual wants to trade one hour of leisure for a relative high increase in income. Thus the opportunity costs of leisure are larger for the low work involved individual compared to the high work involved individual. Both individuals like to work a preferred number of hours at the point of tangency between the indifference curves and the budget constraint. This point of tangency is C for

the high work involved individual and D for the low work involved individual. The corresponding preferred number of working hours are C^I and D^I.

Figure 2a: Indifference curve of high work involved individual moves much downward in case of unemployment
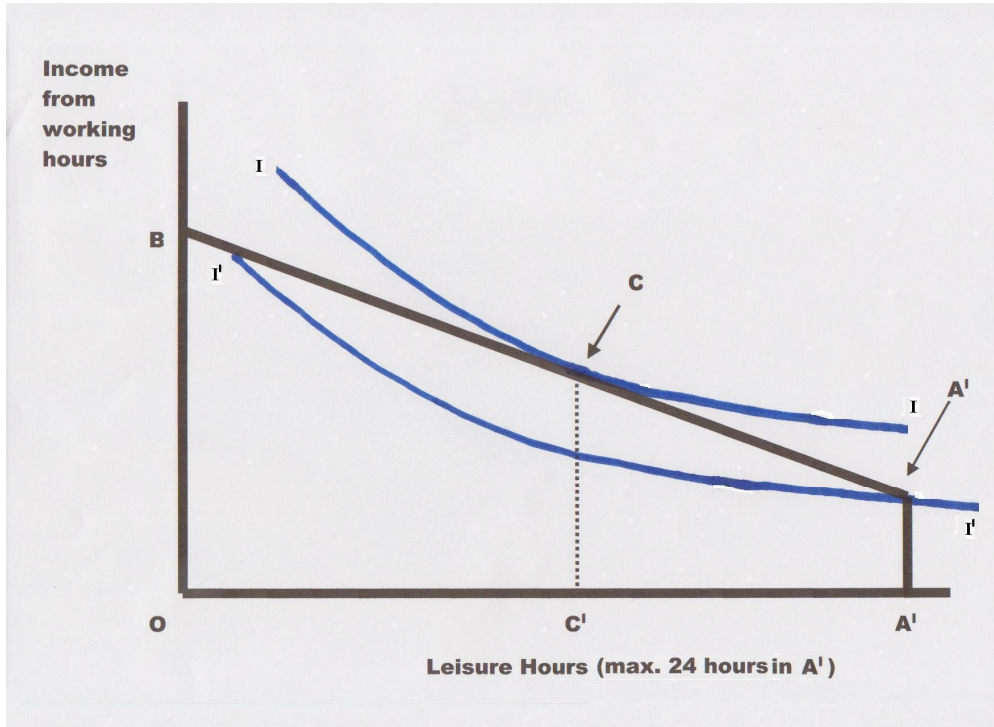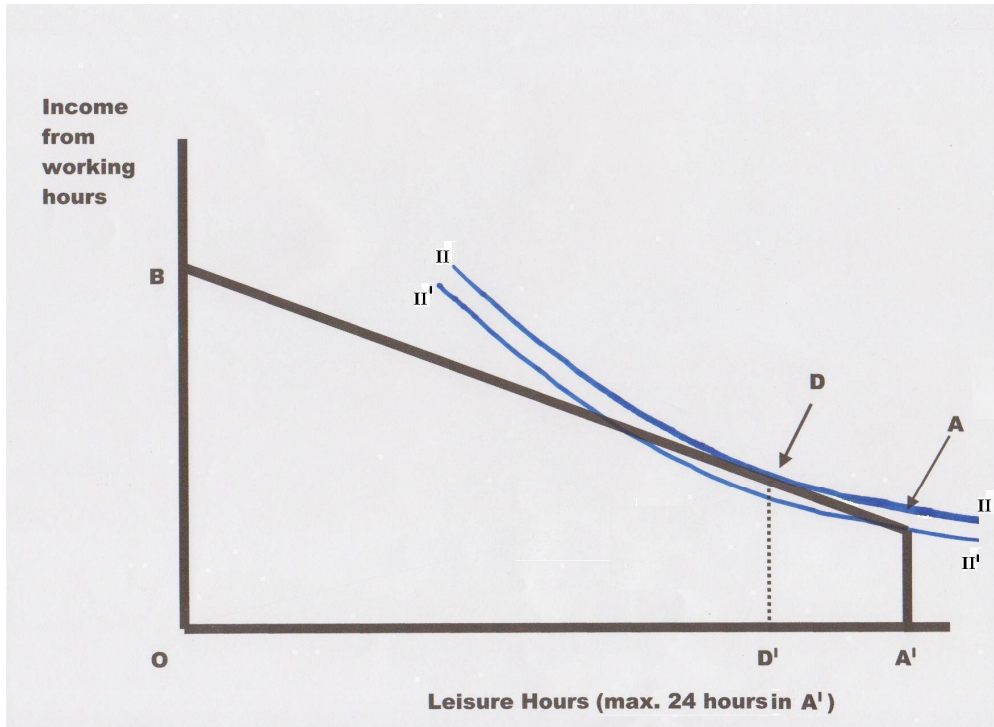

Figure 2b: Indifference curve of low work involved individual moves slightly downward in case of unemployment

A situation of involuntary unemployment is reflected in figure 2a and figure 2b. In these cases the unemployment state in point A has to be reached by the indifference curves. In figure 2a the indifference curve of the high work involved individual moves downward from I to I[I]. In figure 2b the same happens for the low work involved individual. To reach point A the indifference curve II has to move downward to indifference curve II[I]. A lower indifference curve means lower utility for an individual and thus a decrease in happiness. However, indifference curve I in figure 2a moves much more downward than indifference curve II in figure 2b. This means that if utility could be measured cardinally, than the decrease in utility is larger in figure 2a compared figure 2b. Hence the high work involved individual faces a larger decrease in happiness than the low work involved individual. This is the same as hypothesized by the theory of mental incongruence.

Many studies try to test the theory of mental incongruence and often significant relationships are found. However, only a few articles are appropriate for a discussion of their findings because the studies need to satisfy three properties, which are of the core this paper:
-These are the studies which have unemployed individuals as the public in the dataset. As stated earlier, the mental incongruence theory can also be applied to employed individuals.
-Studies need to deal about work involvement as a stable personality characteristic according to the definition in paragraph 3.1. Temporary characteristics as employment commitment or work orientation of unemployed individuals do not suffice.

-There is one single indicator of subjective wellbeing. Studies do not have to have indicators of subjective well-being which are part of a broader General Health Questionnaire score. Also 'happiness indicators' measured by symptoms of mental distress do not suffice.

After this selection three studies remain. The first is the study of Shamir (1986). In this study unemployed individuals with a high work involvement had a significant lower happiness. Work involvement was measured by the work involvement scale of Kanungo (1982) and happiness was measured at a five-point scale by the question "On the whole, how is your general mood these days?" (coded in the World Database of Happiness as A-AOL/c/sq/v/5/d). Correlations were -0,31 and -0,27 (both significant) between happiness and work involvement. So individuals with a higher work involvement suffered more from unemployment. Another finding of this study is that individuals with a high work involvement who became unemployed suffered a relative large loss of happiness (correlation –0,03) and high work involved individuals who were reemployed gained a relative large increase in happiness (correlation +0,07). Because happiness may be a predictor of unemployment, these correlations were controlled for initial happiness in the period before the change in employment status.

The two other studies are the meta-analyses of McKee-Ryan et al. (2005) and Paul and Moser (2006). In these studies significant negative correlations are presented between life satisfaction and work involvement among unemployed individuals. These findings should be treated with caution. It is difficult to determine whether 'life satisfaction' fulfils the property of one single measure of subjective wellbeing in all studies concerned in the two meta-analyses. In the same way it is not clear whether 'work involvement' fulfils continuously the property of a stable personality characteristic. But this is no problem to interpret the results qualitatively. Unemployed individuals with a lower 'work involvement' suffer less from unemployment.

The effect of work involvement on the happiness of unemployed individuals may also be measured by the effect in subgroups of individuals. These subgroups differ in work involvement. For example, in the regression analysis of Winkelmann and Winkelmann (1998) the effect of unemployment for different age groups is measured. If effects are found for different age groups, these effects may be attributed to differences in work involvement across age groups. Work involvement is also gender specific. The lower income compensation for females mentioned in paragraph 2.2 may be due to the lower work involvement of women. One should keep in mind, that there is in this case no direct relationship found between happiness and work involvement. Only an indirect relationship between happiness and work involvement is found via the happiness of subgroups of unemployed individuals.

3.4 Relationships between work involvement and unemployment

In the literature about unemployment and work involvement it is stated that work involvement is generally somewhat lower among unemployed individuals compared to employed individuals. However, it should be emphasized that the differences in work involvement between these two groups are small (see e.g. Nordenmark, 1999 and findings of several studies mentioned in Hoff, 1998, ch.2; VanDoorne & De Witte, 2003; Paul & Moser, 2006).

The causes of this somewhat lower work involvement among unemployed individuals may be explained by two theories. The first explanation is called the theory of reduction of mental incongruence, an extension from the theory in paragraph 3.3. If individuals experience a transition from a situation of employment to a situation of unemployment they will lower their work involvement in order to reduce the mental incongruence accompanied by unemployment. This change in work involvement may also happen during a situation of long-term unemployment.
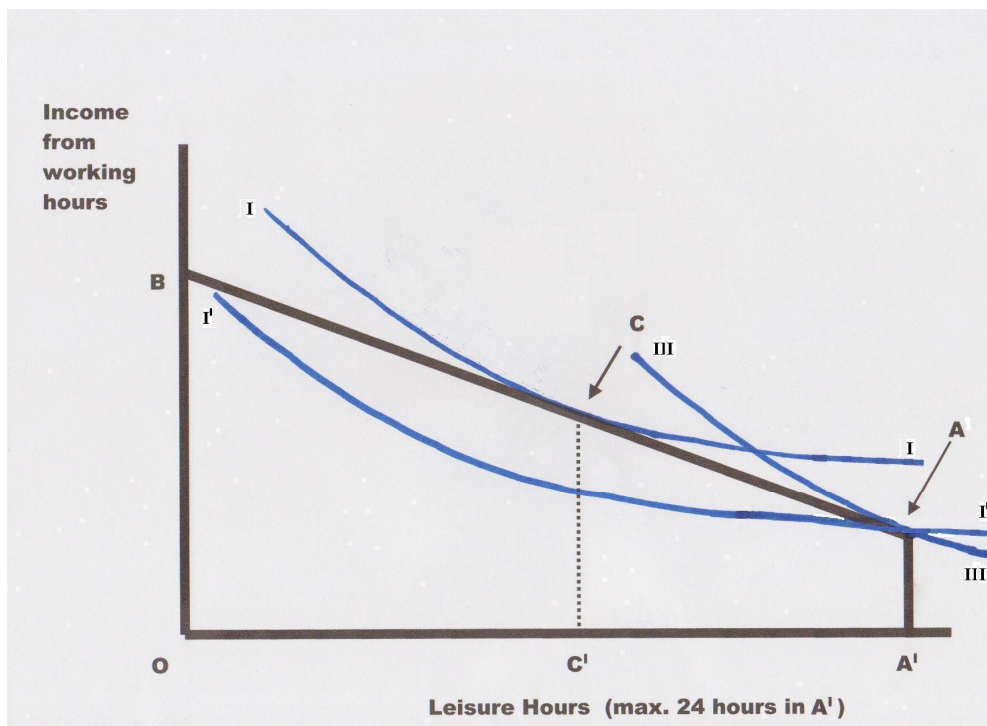

Figure 3: Individuals adapt to unemployment by a change in their in their indifference curve from II[I] to III.

In figure 3 this process can be explained by the fact that the unemployed individuals change their preference from indifference curve I[I] to indifference curve III. Indifference curve III reflects a very

low preference for income and a high preference for leisure. In the example of figure 3, a situation of unemployment completely fits the individual, because indifference curve III is tangent to the budget constraint in point A. The result is that when the preference is changed from indifference curve I^I to indifference curve III, the unemployed individual attains a higher level of utility and there is an increase in happiness. This adaptation of preferences is contrary to the stability characteristic of work involvement and contrary to the axiom from classic economic theory that preferences are stable. However, behavioural economics and happiness research does not reject that preferences are not stable (see e.g. Royo, 2007).

The second theory which explains the somewhat lower work involvement among unemployed individuals is that work involvement can be a predictor of moving into and out of unemployment. It can be hypothesized that individuals with a low work involvement will easier move in unemployment and move out of unemployment more difficult. This can also be explained by means of the economic model.

In figure 2 it was stated that individuals with a low work involvement generally prefer a lower number of working hours than individuals with a high work involvement. The problem is that the labour market often does not offer possibilities for the individual preferred amount of working hours (announcement Jan-Dirk Vlasblom during lecture economics of labour and care). Individuals may have a lower utility and happiness if the preferred amount of working hours does not coincide with the actual amount of working hours (Conen, 2005). Suppose that point E^I in figure 4 reflects the number of working hours offered by the market and point D^I reflects the preferred number of working hours for a low work involved individual with indifference curve II. When this low work involved individual applies for jobs in the market, the utility would decreases from II to II^{II}. A slightly higher indifference curve II^I is attainable if the individual chooses to be unemployed in point A rather than to be employed in point E.

A second explanation of this process of self-selection may be explained by the existence of poverty traps. In figure 5 the poverty trap is reflected by the horizontal part of the budget constraint from point A up to the line FF^I. When an individual comes out of unemployment, his additional financial gains are zero up to the line FF^I. The income of the individual will not increase if he trades leisure hours for income generated by working hours. In this model it is again assumed that working hours only provide utility from financial income and do not provide other extrinsic and intrinsic sources of utility. So in reality the poverty trap may not exist because work always provides other sources of utility apart from income.

In figure 5, there is no budget constraint tangent to indifference curve II due to the poverty trap. For this reason, the individual has to lower its utility to indifference curve II^I. A state of unemployment is now optimal for the individual. The low work involved individual also chooses not to work at point F. This is because point F is an even a lower level of utility at indifference curve II^{II}. The conclusion from the models in figure 4 and 5 is that the low work involved individual

will prefer unemployment to many working hours if the labour market does not offer a small number of working hours or in the case of a poverty trap.
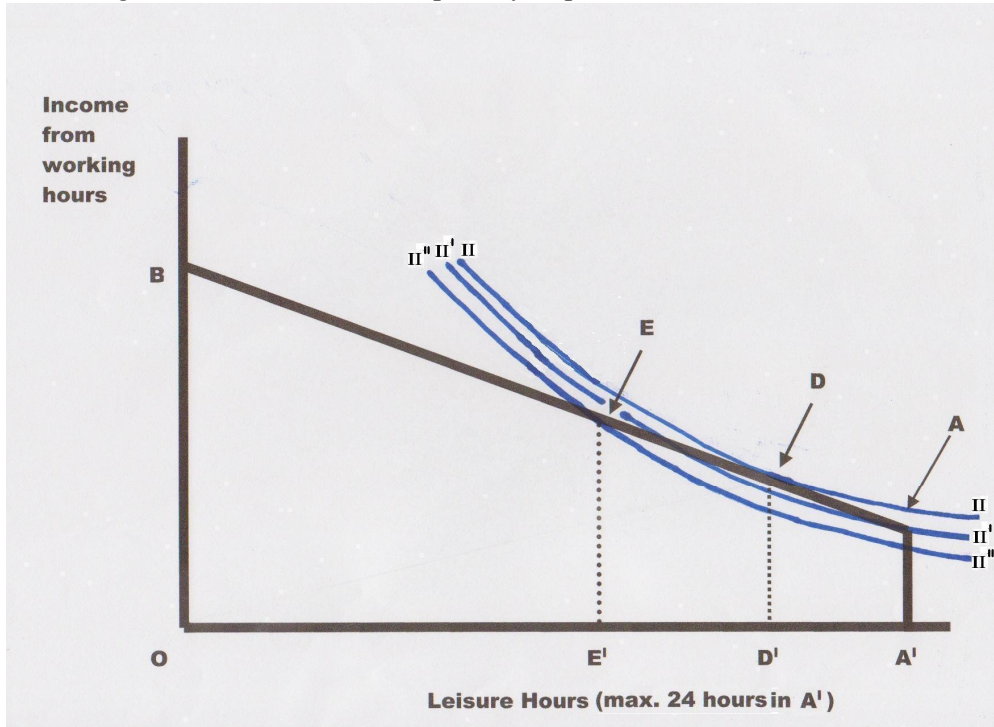

Figure 4: If no jobs are offered at D working hours the low work involved individual of indifference curve II prefers unemployment in A to E working hours.
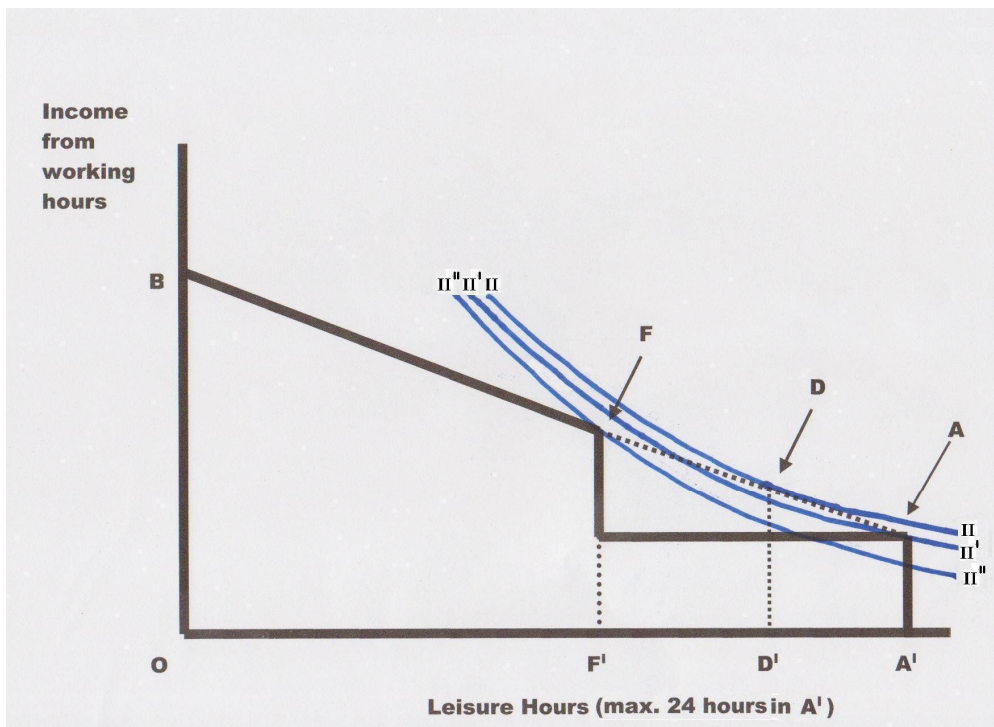

Figure 5: A poverty trap causes that the low work involved individual chooses to be unemployed rather to be employed.

These two theories of adaptation and self-selection can distort an empirical investigation of the valuation of work involvement. When adaptation occurs the assumption that work involvement is a stable personality trait fails and this may have consequences for the method used in the empirical investigation. Later on, it will be argued that self-selection will also give biased results in the empirical estimation of a natural experiment.

For these reasons it is important to look for empirical evidence of these two theories. Hoff (1998) and Paul and Moser (2006) find in their meta-analysis that there is no to a small adaptation of work involvement when individuals become unemployed or when they are unemployed over time. It can be concluded that work involvement is a quite stable personality characteristic and not much weight has to be put to the theory of reduction of mental incongruence. There are indications that unemployed individuals become less unhappy the longer is the unemployment spell. This, however, should not necessary be attributed to the adaptation by changing individual work involvement. Another cause such is the "shock effect" of immediate unemployment (Frey, 2008, ch.4). The preference for work of persons who become unemployed does not change, but they may e.g. be upset and confused by their new time structure and financial situation.

Lower work involvement among long-term unemployed individuals compared to short-term unemployment individuals may also to be explained by self selection. This self selection occurs because individuals with a higher work involvement move out of unemployment more easily and low work involved employed individuals may move into unemployment more easily. There are no empirical findings about the relationship between work involvement and becoming unemployed, but there are several investigations about the relationship between work involvement and becoming reemployed. Van Echtelt and Hoff (2008) state that work involvement has no effect on "the chance of having a want to work" and that almost every unemployed individual wants a job. According to Hoff (1998) the work involvement of unemployed individuals has a positive effect on job search intensity, but this job search intensity is limited to the extent unemployed individuals have the prospects to be reemployed.

Nordenmark (1999) investigated the relationship between the effect of both work involvement and job search intensity on the chance of becoming reemployed. His findings are that job search intensity has a positive significant effect on the chance of becoming employed and there was no significant effect of work involvement on the chance of becoming reemployed. From Nordenmark it can be concluded that there may be an indirect relationship between work involvement and the chance of becoming reemployed via job search intensity. But no direct relationship between work involvement and the chance of becoming reemployed is found. The fact that work involvement does not affect the chance of becoming reemployed and that the main problem for unemployed individuals is a limited supply of jobs in the labour market (Ibid.) may

also be confirmed by the characteristics of unemployed individuals in the Netherlands which have a relative high work involvement. These individuals are young or very old (so not of middle age), are low educated or are part of ethnic minorities (Hoff, 1998). These groups of individuals with a relative high work involvement have often worse possibilities on the labour market compared to other groups of individuals with a lower work involvement.

The conclusions from the literature are that deviations from the stability condition of work involvement are small. Also self-selection of (un)employed individuals with a low work involvement into (or out of) unemployment occurs on a small scale. It is expected that the stability condition and self-selection are not serious problems for the empirical investigation in the next chapters.

4 Econometric model for the valuation of unemployment and work involvement

This chapter connects the theoretical part and the empirical part of the paper.
In this chapter the econometric model is developed how to value unemployment and work involvement by means of the happiness approach. As argued in paragraph 2.2, this method is considered to be superior to the stated and revealed preference methods.

4.1 Base model for the valuation of unemployment

First of all, it is assumed that Utility U comes from Income I, Unemployment status UN, a set of other observed control variables X and a set of unobserved personal characteristics A. For the utility function U = U (I, UN, X, A) the following regression model (1) can be developed. In regression model (1) the subscript i means the i-th individual in the population at time t, c denotes a constant and u is an error term which is independently identically distributed.

(1) $U_{it} = c + \beta_1 I_{it} + \beta_2 UN_{it} + \gamma X_{it} + A_{it} + u_{it}$

This regression model has its problems. First of all, running this model will result in an endogeneity bias. This means that there is a reverse effect from utility on the explaining variables. There are indications that happiness expressed by utility U has a positive effect on earning capabilities and hence income I (see e.g. Di Tella, Haisken-De New and MacCulloch, 2007), happiness may have an effect on unemployment status UN (Winkelmann and Winkelmann, 1998) and happiness may have an effect on other observed characteristics V like e.g. health status (see for the empirical evidence of health Veenhoven, 2007).

Apart from this possible endogeneity bias in model (1), there are also many unobserved personal characteristics captured by the variables A. Unobserved individual characteristics are e.g. personality traits like happiness. These personality traits may be correlated with observable independent variables and this may offer an explanation of the endogeneity bias. To solve for these problems it makes sense to make use of the first differences or alternatively the fixed effects estimation procedure in determining utility U. In these methods it is assumed that the unobserved personal characteristics A are stable over time (Ferrer-i-Carbonell and Frijters, 2004).

(2) $\Delta U_i = \beta_1 \Delta I_i + \beta_2 \Delta UN_i + \gamma \Delta X_i + \Delta u_i$

In model (2) a change in utility U is explained by a change in income ΔI_i, a change in unemployment status ΔUN_i and changes in other observable characteristics ΔX_i (Δ indicates a change over time) This can be written as: $\Delta U = \Delta U (\Delta I, \Delta UN, \Delta X)$. From this function, it becomes clear that a change in the unemployment status (ΔUN) should be compensated by a change in income status (ΔI) to keep utility constant. This income compensation can be calculated by means of the coefficients β_1 and β_2 out of model (2). β_1 denotes the marginal effect of income ($\partial U/\partial I$) on utility and β_2 the marginal effect of unemployment status ($\partial U/\partial UN$). The combination of these two marginal effects, $\partial I/\partial UN$, is the marginal rate of substitution between unemployment and income. This marginal rate of substitution is the same as the shadow price of unemployment ($\partial U/\partial UN$) / ($\partial U/\partial I$). If in model (2) the relationship between income and happiness is lineair, then the shadow price of unemployment can be calculated by (β_2 / β_1) times the monetary scale of the income variable (method derived from Powdthavee, 2008). The income of the individual has to increased by this shadow price to make the individual equally happy when becoming unemployed.

This shadow price of unemployment serves as the total income compensation for unemployment. Earlier it was argued that when an individual becomes unemployed, the individual faces a decrease in income and the psychological costs of unemployment. So the income compensation has both a financial component and a psychological component. The financial and psychological costs are the following in case of a lineair relationship between happiness and income. The financial costs are the average decrease in income before and after becoming unemployed. And the psychological costs are calculated by subtracting these financial costs of unemployment from the total income compensation.

A caveat is that one might argue that in regression model (2) the effects of unemployment on happiness (coefficient β_2) are only the psychological costs of unemployment because there is controlled for income. This is incorrect because coefficient β_2 has to be interpreted as the average effect of unemployment across all income groups in society. The shadow price captures both the financial and psychological costs of unemployment.

4.2 Adding a term for work involvement

In paragraph 3.3 it was discussed that in the literature a significant effect of work involvement on the happiness of unemployed people is shown. A relative lower work involvement will result in a smaller decline in happiness when individuals become unemployed. Therefore a lower compensation is needed for unemployment in case of a lower work involvement. To capture the effect of work involvement, regression model (2) is modified by adding a dummy variable which measures high work involvement:

(3) $\Delta U_i = \beta_1 \Delta I_i + \beta_2 \Delta UN_i + \beta_3 \Delta UN_i * HW_i + \gamma \Delta X_i + \Delta u_i$

From model (2) to model (3) an interaction term of unemployment UN times a dummy variable for high work involvement HW is added. An interaction term is chosen because work involvement as a stable personality characteristic disappears when first differences are applied to model (1). The dummy variable for high work involvement has value one if an individual has a high work involvement and zero otherwise. The effect of a high work involvement on happiness is only measurable when there is a change in unemployment status. When an individual becomes unemployed and has a high work involvement, the decline in happiness is $\beta_2 + \beta_3$ and when the individual has a low work involvement the effect is β_2. This additional decrease in happiness is in line with the theory of mental incongruence in paragraph 3.3. Vice-versa is the increase in happiness higher when a high work involved unemployed individual becomes reemployed. As stated in paragraph 3.2, Shamir (1986) looked in the same way at the effect of work involvement and change in employment status.

     For individuals with different degrees of work involvement different income compensations can be calculated. The following method is applied if the relationship between income and happiness is lineair. For a low work involved individual the income compensation is (β_2 / β_1) * 'monetary scale of the income variable' and for a high work involved individual this is $((\beta_2 + \beta_3) / \beta_1)$ * 'monetary scale of the income variable'. The psychological costs are higher for a high work involved individual compared to a low work involved individual because of the theory of mental incongruence. The psychological costs of having a high work involvement instead of a low work involvement is calculated by (β_3 / β_1) * 'monetary scale of the income variable'. This is the shadow price of having a high work involvement when becoming unemployed.

5 Empirical testing of the econometric model

In this part of the paper the econometric model from chapter 4 is tested. The data used are the panel data of the German Socio-Economic Panel (SOEP), 1984-2007, made available at the German Institute for Economic Research, DIW Berlin. Questions about work involvement are asked in the SOEP in the years 1998 and1999 and for this reason these two years are used in the description of the variables (see for the individual questionnaires DIW Berlin, 1998; DIW Berlin, 1999).

First are in paragraph 5.1 the variables from model (3) in chapter 4 and additional control variables described. The described control variables are frequently found in other happiness studies. In paragraph 5.2, the statistics of the variables are discussed. Emphasis is on the correlations between work involvement, unemployment and happiness. Because the properties of the variables measuring work involvement do not fit completely the econometric model from chapter 4, deviations from the model are presented in paragraph 5.3. In paragraph 5.4, the findings of the regression analysis are discussed.

5.1 Description of the data used

Life satisfaction

Life satisfaction is used in this paper as the happiness item that serves as a proxy variable for utility. It is measured in all years of the SOEP by means of the following question: "How satisfied are you with your life, all things considered?" Respondents could answer on an eleven point scale from zero ("complete dissatisfied") to ten ("completely satisfied"). This happiness item is coded in the World Database of Happiness as O-SLW/c/sq/n/11/d.

Income:

Income is defined in the SOEP as total net household income. In the SOEP there is no indicator of total individual net income. In this paper the variable "adjusted monthly net household income (euros)" is used. This variable measuring adjusted household income is derived from questions in the individual and household questionnaire of the SOEP. First income is derived from a question about self-reported total net household income in the household questionnaire. Because self-reported household income may be misreported, household income is adjusted to questions in the individual questionnaires of the household members. These questions are about the receive of monthly wage income and social transfers (DIW Berlin, 2008).

The expected effect of a higher income on happiness is positive but the functional form of the relationship between income and happiness is not clear beforehand. First, happiness may be

regressed on income in the level-form (as e.g. in Powthavee, 2008). Another functional form, which is mostly used in micro studies, is by regressing happiness on the natural logarithm of income (the logarithmic-form) to allow for decreasing returns of a higher income. Decreasing returns means that at higher income levels additional income adds less to happiness compared to lower income levels. However, the use of this logarithmic approach has its problems when compensating income variations are calculated. It may lead to unsatisfactory results because a very large income compensation is needed for a small decline in happiness. This is due to the fact that the logarithm of the income compensation, in addition to the logarithm of an average income, is very small. (Ferrer-i-Carbonell and Frijters, 2004). This problem is frequently neglected in studies which calculate compensating income variations and make use of the logarithm of income. It applies also to studies which calculate income compensations for unemployment mentioned in box 1.

In this paper it is chosen to regress happiness on income in the level-form. This approach may be valid if a sufficient top number of high incomes are filtered out of the regression. Then the relative small effects of the highest income levels on happiness are neglected. The advantage of this approach is that realistic amounts of compensating income variations for unemployment can be calculated (see paragraph 4.1 and 4.2 how to calculate income compensations in a lineair relationship). The downside of this approach is that the income compensations for unemployment in this paper are less comparable to the income compensations calculated by other studies.

Unemployment

Unemployment is measured in all waves of the SOEP by the question: "Are you officially registered as unemployed at the Employment Offiche ("Arbeitsamt")?" Respondents could answer yes or no.

Work involvement

The German Social Economic Panel contains two questions, which can be used as an indicator of work involvement. In the questionnaires for individuals in 1994, 1998 and 1999 (and for 1990, 1991 East Germany only) the following question was asked: "Which of the following are very important, important, less important or not important at all for your well-being and contentment?" The importance for well-being and contentment of different subject had to be valued by the respondents. In 1998 and 1999 these subjects were: work, relatives, friends, income, house, democratic influence, success at work, leisure, health, protection of the environment, religion, neighbourhood and mobility.

The importance of work and the importance of leisure for well-being and contentment may be two measures which reflect work involvement as expressed in paragraph 3.1. The two measures

are valid because the satisfaction individuals derive from work and the opposite leisure are an individual preference and they may depend on work ethic as a social norm. According to Veenhoven (personal announcement) it is not possible to retrieve why certain questions are asked in SOEP questionnaire. An other study which uses the work involvement variables from the SOEP is the study of Beblo and Wolf (2000). In this study, the question about "importance of work for satisfaction" is used to construct a variable "taste for work". This variable "taste for work" was used to estimate hours of labour supply and participation in the labour market.

It is necessary to comment on the reliability of the two measures. Measures of work involvement consisting of multiple items may probably measure work involvement better and have a higher repeat reliability (individual states the same answer after a period). However, these two measures in the SOEP are the best available items in a longitudinal panel dataset with many other variables. Furthermore, it is possible that these measurements of work involvement are somewhat biased because not the right answers are given in questionnaires. First, individuals may give social desirable answers on questions about values and norms. This is because the SOEP is carried out by face to face interviews (own hypothesis confirmed by personal announcement Veenhoven). Also it is possible that individuals are not completely informed with respect to how much satisfaction they derive from work or leisure. The stated preference may diverge from the real utility derived from work as explained in paragraph 2.2. In this paper it is assumed that the causes of these two biases in the measurement of 'importance of work and leisure' do not occur or have a marginal influence.

Control variables

Long-term unemployment
Long-term unemployment is defined as dummy variable with value one if an individual is unemployed for two periods or more and otherwise zero. This variable is the same as applied in Knabe and Rätzel (2007).

Out of the labour force
A dummy variable is created with a value one if an individual is out of the labour force. The following two criteria are used for this variable: Individuals are not full-time or regularly part-time employed and they are not registered as unemployed.

Health Status
Health status is measured by means of the question "Aside from minor illnesses, does your health prevent you from completing everyday tasks like work around the house, employed work, studies,

etc.? To what extent?" Respondents could answer "not at all", "a little", "very so much". There are also other indicators of health status in the SOEP from which the most pronounced may be self assessed health on a quantitative scale. Because this paper is about participation in the labour market, a variable that indicates disability in daily work activities is considered as a more appropriate control variable. This variable is recoded to a dummy variable with value 1, having a little or much problems in daily work activities due to health status and value 0 for respondents who do not have at all problems due to their health status.

Partnered

The situation if the individual has either a partner (value 1) or not (value 0) is measured by the question: "Are you in a serious/permanent relationship?"

Age and sex

In the SOEP questionnaire there are questions about year of birth and sex. In many happiness studies it appears that individuals of middle age are somewhat unhappier than individuals of young and old age. A variable is created for the square of age (age*age), because happiness is a quadratic function of age. Because age (not squared) is a quite stable personality characteristic between two years (the age is almost the same between 1998 and 1999), age (not squared) will not be taken as a control variable in the first differences regression (method derived from Ferrer-i-Carbonell and Frijters, 2004).

Sex is a completely stable personality characteristic. A dummy variable is created with value 1 if an observation is male. From many studies it is known that unemployed men are less happy than unemployed females. This may be due to the lower work involvement of females. In this paper the effect of unemployment on sex is captured by the interaction terms of work involvement and unemployment. There will be no interaction term of sex and unemployment.

Dummy variable for year

This dummy variable has the value 1 if the year of observation is year 1999 and the value 0 if the observation is in the year 1998 (method derived from Koch et al, 2005). This variable may capture all the macro economic events that affect the well-being of the individuals in 1999 compared to 1998. Examples are differences in economic growth, inflation rate, general unemployment rate and political circumstances between the two years.

5.2 Statistics of the data used

The descriptive statistics of the data are calculated after three modifications of the data are performed. First of all, the SOEP dataset of the year 1998 and 1999 is restricted to individuals of working age. Knabe and Rätzel (2007) restrict their dataset to individuals who are 21 to 64 years old and this is also applied here. Second, data about income are modified. To take care for outliers in the income distribution no value is assigned to all the 5 % top incomes. This is a monthly net household income of at least € 4393 for 1998 and € 4507 for 1999. The last modification of the data is that the four categories of "importance of work" and "importance of leisure" for well-being and contentment are changed to three categories. This is due to the fact that the category "very unimportant" has relative few observations. The category "very unimportant" and "less important" are pooled in one category called "not important". Powdthavee (2008) applied the same method of pooling categories with a low number of observations.

In table 1 the summary statistics of all the variables from paragraph 5.1 are given. Notice that statistics of work involvement are given for unemployed individuals since the analysis is restricted to this group. In tables 2 and 3 the distribution of the indicators of importance of work and importance of leisure are given for employed and unemployed individuals. From table 2 it can be concluded that unemployed individuals consider the importance of work somewhat higher at extreme values (very important and not important). Leisure is somewhat less important for the well-being of unemployed individuals (table 3). Test-retest correlations of work involvement and correlations between work involvement, unemployment and life satisfaction are discussed below.

Variable	Mean	Overall Stand. Deviation	Within Stand. Deviation	Observations
Life Satisfaction	6.93	1.74	0.81	21045
Income	2179.10	869.67	368.22	19415
Unemployed	0.09	0.29	0.15	20915
Long-term unemployed	0.05	0.22	0.10	21082
Out of the labour force	0.26	0.44	0.15	21082
Health problem	0.31	0.46	0.21	20991
Partner	0.86	0.35	0.12	21019
Age	41.62	11.85	0.51	21082
Sex	0.49	0.50	0	21082
Observations for unemployed individuals				
Work very important	0.43	0.49	0.20	1975
Work important	0.44	0.50	0.23	1975
Work not important	0.13	0.34	0.14	1975
Leisure very important	0.25	0.43	0.19	1975
Leisure important	0.65	0.48	0.22	1975
Leisure not important	0.10	0.30	0.13	1975

Table 1: Descriptive statistics of data used in the regression analysis

	Employed	Unemployed
Work very important	39.85 %	42.81 %
Work important	48.83 %	43.95 %
Work not important	11.32 %	13.25 %

Table 2: Importance of work for well-being

	Employed	Unemployed
Leisure very important	31.12 %	24.99 %
Leisure important	59.55 %	64.60 %
Leisure not important	9.33 %	10.41 %

Table 3: Importance of leisure for well-being

Test-rest correlations of measures of work involvement

	All individuals	Individuals who become unemployed	Individuals who become reemployed
Importance of work for well-being	0.47***	0.39***	0.44***
Importance of leisure for well-being	0.41***	0.37***	0.29***

Table 4: Test-retest correlation (spearman) of importance of work and leisure.

In table 4 the test-retest correlations (spearman, uncontrolled) of the measures of work involvement are listed. The correlations of the same variables between 1998 and 1999 are relatively low from a scientific point of view. The test-retest correlations of the importance of work are somewhat higher than the importance of leisure. In paragraph 3.1 it is stated that a measure of work involvement must be a stable preference over time irrespective of unemployment status. In table 4 the test-retest correlations are also given for individuals, which change their unemployment status (become unemployed and reemployed) from 1998 to 1999. The lower test-retest correlation compared to all individuals may suggest some adaptation to their new situation.

Work	1999				Leisure	1999		
1998	Very	Important	Not		1998	Very	Important	Not
Very	30.20 %	17.95 %	2.28 %		Very	15.47 %	14.36 %	1.10 %
Important	12.54 %	23.65 %	3.99 %		Important	11.88 %	45.03 %	3.31 %
Not	1.14 %	3.42 %	4.84 %		Not	0.55 %	5.25 %	3.04 %
			N=351					N=362

Table 5: Dynamics of the importance of work and leisure for individuals becoming unemployed.

Work	1999				Leisure	1999		
1998	Very	Important	Not		1998	Very	Important	Not
Very	28.89 %	15.15 %	2.02 %		Very	10.89 %	8.56 %	1.36 %
Important	13.94 %	24.43 %	4.65 %		Important	16.73 %	46.11 %	6.42 %
Not	0.81 %	4.65 %	6.46 %		Not	1.17 %	5.84 %	2.92 %
			N=495					N=514

Table 6: Dynamics of the importance of work and leisure for individuals who become reemployed

In table 5 and table 6 the dynamics of the change in work involvement scale are given for individuals who change their unemployment status. The answers on the questions about the importance of work and leisure in 1998 are depicted in the rows and the answers for 1999 in the columns. From these two tables it can be concluded that the number of individuals who change their preference from 1998 to 1999 by two levels (from not important to very important and vice-versa) is relative low compared to the numbers who do not change or change one group.

Also it is investigated if the categories of importance of work and importance of leisure are correlated. Because it is possible to argue that the importance of work is the inverse of the importance of leisure, it is expected that the correlation has a negative sign. In case of a correlation of -1, the two measures would be complete substitutes. After computation a (spearman) correlation of 0.08 (significant different from zero) is obtained for all individuals. From this correlation it can be concluded that the importance of work and the importance of leisure as measures of work involvement are independent. The two questions measure different concepts and cannot be used as substitutes.

Correlations of happiness with work involvement

In table 7 the mean happiness of unemployed individuals is given for each category of work involvement. From this table the theory of mental incongruence is confirmed. Individuals who consider work very important for their well-being have a lower well-being than individuals who consider work not important. And individuals who consider leisure very important for their well-being suffer less from unemployment than individuals who consider leisure not important for their well-being. An ANOVA-test confirms that the means of life satisfaction at the different degrees importance of work differ significantly from each other. Another ANOVA-test confirms the same for the importance of leisure.

	Mean life satisfaction	Standard Deviation	Number of observations
Work very important	5.49	2.17	822
Work important	5.94	1.87	845
Work not important	6.32	2.00	255
Leisure very important	5.87	2.15	491
Leisure important	5.92	1.94	1270
Leisure not important	5.08	2.07	204

Table 7: Life satisfaction at different degrees of importance of work and leisure for unemployed individuals

5.3 Further considerations about the econometric model

In regression model (3) in paragraph 4.2 one dummy variable indicating high work involvement was used. In paragraph 5.1 and 5.2 it became apparent that work involvement is defined by three categories in the used dataset. For this reason model (3) has to be altered:

(4) $\Delta U_i = \beta_1 \Delta I_i + \beta_2 \Delta UN_i + \beta_3 \Delta UN_i{}^*IW_i + \beta_4 \Delta UN_i{}^*VIW_i + \gamma \Delta X_i + \Delta u_i$

In model (4) work involvement is represented by two categories: VIW, work involvement is very important and IW, work involvement is important. The category 'not important' serves as the reference group in the regression model (coefficient β_2). In this model the effect of unemployment for the category 'important' is the coefficient $\beta_2 + \beta_3$ and for the category 'very important' $\beta_2 + \beta_4$. An alternative option to model (4) is to assume that individuals who are employed are the reference group.

(5) $\Delta U_i = \beta_1 \Delta I_i + \beta_2 \Delta UN_i{}^* LW_i + \beta_3 \Delta UN_i{}^* IW_i + \beta_4 \Delta UN_i{}^* VIW_i + \gamma \Delta X_i + \Delta u_i$

In model (5) there is an additional interaction term $(UN_i{}^* LW_i)$ for individuals who change employment status with a low work involvement. According the theory of mental incongruence, it is expected that the coefficient of individuals with a high work involvement is more negative than the coefficient individuals with a low work involvement ($\beta_2 > \beta_3 > \beta_4$). Also the results from regression model (5) should be same as the results from regression model (4). For example, after running the regressions, $\beta_2 \Delta UN_i + \beta_4 \Delta UN_i{}^*VIW_i$ in model (4) should be roughly equal to $\beta_4 \Delta UN_i{}^* VIW_i$ in model (5).

The low test-retest correlation of work involvement is problematic when regression model (4) and model (5) are run. This because the low test-retest correlation harms the assumption about work involvement as a stable personality characteristic. Four solutions exist to this problem. The first two solutions are about the assumption that either the 1998 or the 1999 work involvement measure gives the right indication of work involvement for every individual in the two years. These methods may be reliable, because there are no large changes of work involvement from one period to another as explained by table 5 and table 6. The next solution is to run the regression model only for the individuals, which have a constant work involvement in both periods. The stability of work involvement is assured in this method. The fourth solution is to create equivalence scales. In this method scores are assigned for 'very important' (score 3), 'important' (score 2) and 'not important' (score 1) with respect to the importance of work and leisure for well-being. For both the years 1998 and 1999, the scores are summed up for every individual in the dataset. This results in a score for

individuals who consider work or leisure on average 'very important' (score 6 or 5), 'important' (score 4) or 'not important' (score 3 or 2).

It is not impossible to incorporate changing preferences in model (4) and (5). Nordenmark (1999) makes use of dummy variables for different degrees of employment commitment, which can change over time. In this method it is possible to take care of the adaptation of individuals to a changed situation as described in paragraph 3.3. This approach, however, is in conflict with the stability assumption of work involvement and for this reason not applied in this paper.

5.4 Prediction of the econometric models

Before the regression models (4) and (5) can be estimated, first remarks have to be made about the process of self-selection mentioned in paragraph 3.3. Regression model (4) and (5) are natural experiments because individuals should at random move into or move out of unemployment and then their change in well-being with respect to work involvement is measured. However, self-selection of individuals with high and low work involvement causes biased results because individuals will not at random take part in the natural experiment (announcement Wolter Hassink during lecture quantitative methods).

(6) $\text{Unemployed}_{i1999} = c + \beta_1 \text{VIW}_{i1998} + \Delta \beta_2 \text{IW}_{i1998} + u$

In regression model (6) the chance to be unemployed in 1999 is explained by the two highest categories of work involvement in 1998 compared to the base group work 'not important' in 1998. The model is estimated separately for individuals who are either unemployed or employed in 1998. The estimations of this linear probability model are given in table 8.

Dependent variable : Unemployment in 1999	Individuals unemployed in 1998	Individuals unemployed in 1998	Individuals employed in 1998	Individuals employed in 1998
Constant	0.503***	0.536***	0.042***	0.042***
Work important	0.001		-0.012	
Work very important	-0.007		0.004	
Leisure important		-0.057		-0.004
Leisure very important		0.013		-0.006
R-squared	0.000	0.004	0.002	0.000
N	1036	1036	6763	6763

Table 8: Regression results of the lineair probability model (6). In the left columns are the regression for unemployed individuals, in the right columns the coefficient for the employed individuals. None of the variables of work involvement are significant, except the constants (*** means a 1% significance level).

None of work involvement dummies in the regression results are significant. From this it can be concluded that there is no self-selection of work involvement in model (6) and that regression models (4) and (5) will not give biased results due to self-selection. The significant constants in table 8 give information about the probability to change unemployment status. Unemployed individuals in 1998 have a probability of about 50 % to be unemployed in 1999, while for employed individuals the probability to be unemployed in the next year is 4,2 %.

Regression model 4 and model 5 are now estimated. Two remarks have to be made about the regression technique. In this paper ordinary least squares (robust to heteroskedasticity) is used as the regression method, although the dependent variable life satisfaction is an ordinal variable. It is allowed to use ordinary least squares instead of ordered probit analysis if the dependent happiness item is measured on a scale of seven or more (personal announcement Justina Fischer, econometrist at the OECD visiting the World Database of Happiness). The relative marginal effects of the coefficients of ordinary least squares analysis are roughly the same as the relative marginal effects obtained from ordered probit analysis (Ferrer-i-Carbonell and Frijters, 2004), so the two methods will not differ much in the calculated income compensations (see as an example Powdthavee, 2008, table 3 for roughly the same results from the two methods.). The second remark is about the choice for first differences instead of fixed effects in model (4) and (5). Although the results may differ between first differences and fixed effects, the results are the same for two time periods (Wooldridge, 2003, ch. 13) as in this paper two time periods are used (1998 and 1999). The regressions are estimated in this paper by the econometric software program STATA.

Baseline model

Dependent variable: Life satisfaction	Pooled OLS (1)	First differences (2)
constant	8.990***	-
Year 1999	0.026$^{\#}$	-0.025
Income / 1000	0.231***	0.048**
Unemployed	-1.023***	-0.637***
Long-term unemployed	0.044	-0.153$^{\#}$
Out of labour force	-0.150***	-0.310***
Health problem	-0.973***	-0.376***
Partnered	0.457***	0.340***
Sex	-0.130***	-
Age	-0.127***	-
Age*age	0.001***	0.001
R-squared	0.141	0.029
N	19093	9060

Table 9: Regression results of baseline model. *** denotes significance at the 1 % level, ** at the 5 % level,* at the 10 % level and # at the 15 % level.

In table 9 the regression results of model (1) and model (2) from paragraph 4.1 are displayed in columns (1) and (2) respectively. Up to this moment no interaction terms of work involvement are included in the model. In model (1) unemployment decreases life satisfaction by (-1.023) points ceteris paribus (all the estimates in the text mentioned are frsom this point onwards ceteris paribus: when the magnitudes of the coefficients are mentioned, it is assumed that the other control variables are kept the same). Model (2) was created in addition to model (1), because unhappy individuals are frequently more unemployed. The coefficient (-0.637) in column (2) states that if there is a change in the unemployment status, the decrease in life satisfaction is (-0.637) for the average individual. The same applies to the coefficients of income. If an individual earns € 1000 more, he is on average (0.231) points happier (column 1). But because happy individuals earn on average more, this estimate is biased. A change in income of € 1000 will affect the life satisfaction of the average individual by an increase of 0.048 points (column 2). In table 9 the results of the control variables are displayed too. These results will not be displayed in the next tables.

Pooled OLS regression results for importance of work and leisure.

In table 10 and 11 the pooled OLS regression results are displayed if regression model 4 and model 5 were run by OLS instead of first differences (assume that from model 4 and 5 the change Δ disappears and the constant returns in the model). In these tables there is not controlled for the reverse effect of happiness on the explaining variables.

From column 1 in table 10 it becomes clear that unemployed individuals who consider work 'not important' for their well-being are on average (-0.560) less happy. If an unemployed individual considers work 'important' the decrease in happiness is -0.889 (-0.560 - 0.329) and if work is considered 'very important', the decrease in happiness is -1.236 (-0.560 - 0.676). These numbers are calculated by the assumption that work involvement in 1998 give the right indication of work involvement for both two years. Comparable numbers are found for the categories 'work not important' and 'work very important' when equivalence scales are used in column (2) instead of work involvement 1998 in column (1). The regression results from model (4) in column (1) and (2) of table 10 are similar to the regression results from model (5) in column (3) and column (4) in the same table. The coefficient of the interaction term 'unem*work very important' (-1.231) in column (3) is similar to the effect of -1.236 (-0.560 – 0.676) in column (1). Remember from paragraph 5.3 that $\beta_2 UN_i + \beta_4 UN_i*VIW_i$ should be roughly equal to $\beta_4 UN_i* VIW_i$.

From column (1) in table 11 it becomes clear that unemployed individuals who consider leisure 'not important' for their well-being, are on average (-1.546) points less happy. If an unemployed individual considers leisure 'important' the decrease in happiness is -0.926 (-1.546 + 0.620) and if leisure is considered 'very important', the decrease in happiness is -1.067 (-1.546 + 0.479). The results in column (1) are comparable to the other columns in table 10.

An important characteristic about the indicator "importance of leisure" seems to be that if unemployed individuals consider leisure 'important' for their well-being they are happier than if they consider leisure 'very important' for well-being. In terms of column (1), the coefficient of 'leisure is important' (-0.926) is larger than the coefficient of leisure is 'very important' (-1.067). This is contrary to the theory of mental incongruence for unemployed individuals. It is expected that the individuals who consider leisure 'very important' suffer less from their unemployment status.

A last remark about table 10 and table 11 is that the results of the equivalence scales are smaller than when work involvement in 1998 as the indicator of work involvement is used. This may be due to the fact that the equivalence scales are composed of a broader spectrum of categories of work involvement in the two time periods. It is unclear why the category 'not important' of the equivalence scales is dropped out of the regression results by the econometric software program STATA.

Dependent variable: Life satisfaction	Work involvement 1998 (1)	Equivalence scales (2)	Work involvement 1998 (3)	Equivalence scales (4)
Income / 1000	0.231***	0.230***	0.230***	0.234***
Unemployed	-0.560***	-0.574***		
Unem*work important	-0.329**	-0.183		
Unem*work very important	-0.676***	-0.682**		
Unem*work not important			-0.597**	dropped
Unem*work important			-0.884**	-0.629***
Unem*work very important			-1.231*	-1.137***
R-squared	0.145	0.146	0.143	0.142
N	19093	19093	19093	19093

Table 10: Pooled OLS regression results. *** denotes significance at the 1 % level, ** at the 5 % level,* at the 10 % level and # at the 15 % level. Controlled for constant, year 1999, long-term unemployed, out of labour force, health problem, partnered, sex, age and age^2.

Dependent variable: Life satisfaction	Work involvement 1998 (1)	Equivalence scales (2)	Work involvement 1998 (3)	Equivalence scales (4)
Income / 1000	0.231***	0.231***	0.231***	0.245***
Unemployed	-1.546***	-1.434***		
Unem*leisure important	0.620***	0.545***		
Unem*leisure very important	0.479***	0.400***		
Unem*leisure not important			-1.549***	dropped
Unem*leisure important			-0.926***	-0.636***
Unem*leisure very important			-1.067***	-0.786**
R-squared	0.144	0.146	0.142	0.134
N	19093	19093	19093	19093

Table 11: Pooled OLS regression results. *** denotes significance at the 1 % level, ** at the 5 % level,* at the 10 % level and # at the 15 % level. Controlled for constant, year 1999, long-term unemployed, out of labour force, health problem, partnered, sex, age and age^2.

First differences results for the importance of work

In table 12 the regression results for the importance of work by means of first differences are given. The regression results of model (4) are in columns (1) to (4) and model (5) in columns (5) to (8). In columns (1), (2) and (4) it becomes clear that the effect of unemployment for the category 'not important' is on average (-0.337) points decrease in life satisfaction. The results are slightly significant. The results of the category work 'important' are not significant in columns (1), (2) and (4) whereas the category 'very important' shows a significant coefficient about -0.477 (average columns) In the next two calculations it is shown that the results of columns (1) (2) and (4) are comparable to the columns (5), (6) and (8):

-The average significant effect of the coefficients 'unemployed *work very important' is (-0.808) in columns (5), (6) and (8). This is comparable to the total average effect of -0.814 (-0.337- 0.477) for 'work very important' in columns (1), (2) and (4).

-In columns (5), (6) and (8) the average coefficient of the interaction term 'unemployed*work important' is -0.475. Although the coefficients for the category 'work important' are insignificant in columns (1), (2) and (4), when they are added up to the effects of the base category (average –0.337), the results are similar to (-0.475): The average of the coefficients 'work important' in columns (1), (2) and (4) is (-0.146) and the total effect is –0.483 (-0.337 - 0.146).

Because the outcomes of columns (1), (2) and (4) and columns (5), (6) and (8) are comparable, it is considered that the average effect (-0.337) of the base category in columns (1), (2) and (4) is a reliable estimator. It does not matter much that this effect is slightly significant in columns (1), (2) and (4) and difficult to compare to the effect of the interaction term 'unemployed*work not important' in columns (5), (6) and (8).

Also remarks have to be made about columns (3) and (7). The results of model (4) and model (5) are comparable when the dataset is restricted to individuals who keep work involvement stable. But the effects seem to be different from the other columns. Individuals, who are completely stable in their answers that work is 'not important', show no significant decline in happiness. This is contrary to the coefficient of all individuals who at least one time stated that work is 'not important' (average: -0.337). And individuals who are completely stable in their answers that work is 'very important' for their well-being show larger coefficients for their decrease in happiness (average -0.857) compared to all individuals who at least one time stated that work is 'very important' (-0.811).

Dependent variable: Life satisfaction	Work involvement 1998 (1)	Work involvement 1999 (2)	Work involvement stable (3)	Equivalence scales (4)	Work involvement 1998 (5)	Work involvement 1999 (6)	Work involvement stable (7)	Equivalence scales (8)
Income / 1000	0.048**	0.047**	0.009#	0.046**	0.048**	0.0472**	0.009	0.049**
Unemployed	-0.357#	-0.322*	0.018	-0.333*				
Unem*work important	-0.161	-0.175	-0.371	-0.103				
Unem*work very important	-0.431*	- 0.538 ***	-0.855***	-0.461**				
Unem*work not important					-0.476*	-0.300	-0.152	dropped
Unem*work important					-0.522***	-0.493***	-0.361***	-0.411***
Unem*work very important					-0.791***	-0.857***	-0.842***	-0.776***
R-squared	0.029	0.030	0.028	0.028	0.029	0.029	0.028	0.029
N	9041	9041	5517	9041	9041	9041	5517	9041

Table 12: First differences regression results. *** denotes significance at the 1 % level, ** at the 5 % level,* at the 10 % level and # at the 15 % level. Controlled for year 1999, long-term unemployed, out of labour force, health problem, partnered and age^2

First differences results for the importance of leisure

The regression results for model (4) and (5) about the importance of leisure are in table 13. The results of 'leisure not important' are mixed. The coefficients of the reference category 'unemployed' in columns (1) (2) and (4) and the interaction term 'unemployed*leisure not important' in columns (5), (6) and (8) have different effects and levels of significance. Hence the estimates of the effect of leisure 'not important' are unreliable.

Also the effect sizes of the interaction terms 'unemployed*leisure important' (average -0.545) and 'unemployed*leisure very important' (average -0.711) in columns (5), (6) and (8) are not consistent similar to the effect sizes in columns (1), (2) and (4). For example, from column (1) the effect of 'leisure important' is -0.483 (-1.202 + 0.719) and in column (2) -0.586 (-0.810 + 0.224) (compare to -0.545). And the effect of 'leisure very important' in column (1) is -0.803 (-1.202 + 0.389) and in column (2) -0.693 (-0.810 + 0.117) (compare to -0.711)

Two final remarks about table 13 are the following. First, the negative effect of unemployment on individuals who consider 'leisure very important' is larger than for individuals who consider leisure 'important'. This finding suggests that the theory of mental incongruence is not valid, just as in table 11. It becomes clear from F-tests, that the results of these two categories are not significant different from each other. The second remark is about the effect of individuals who have completely stable answers on importance of leisure for well-being (columns (3) and (7)). The same as in table 12, the negative effect sizes of these categories are larger and seem not comparable to other columns of table 13.

Dependent variable: Life satisfaction	Work involvement 1998 (1)	Work involvement 1999 (2)	Work involvement stable (3)	Equivalence scales (4)	Work involvement 1998 (5)	Work involvement 1999 (6)	Work involvement stable (7)	Equivalence scales (8)
Income / 1000	0.049**	0.048**	0.064**	0.048	0.0486**	0.0485**	0.064**	0.051**
Unemployed	-1.202***	-0.810***	-1.999**	-0.711				
Unem*leisure important	0.719***	0.224	1.466***	0.111				
Unem*leisure very important	0.389	0.117	1.139**	0.056				
Unem*leisure not important					-1.231***	-0.843***	-1.993***	dropped
Unem*leisure important					-0.484***	-0.586***	-0.527***	-0.566***
Unem*leisure very important					-0.813***	-0.693***	-0.854***	-0.627***
R-squared	0.030	0.029	0.029	0.028	0.032	0.030	0.029	0.025
N	9041	9041	5722	9041	9041	9041	5722	9041

Table 13: Regression results. *** denotes significance at the 1 % level, ** at the 5 % level ,* at the 10 % level and # at the 15 % level. Controlled for year 1999, long-term unemployed, out of labour force, health problem, partnered and age^2.

6 Income compensations

6.1 Calculation of income compensations for work involvement

Although the regression results in paragraph 5.4 were often comparable, they were different from each other. This may be because both the dependent variable life satisfaction and independent variables work involvement are difficult to measure. Especially the low number of observations for the categories 'work not important' and 'leisure not important' may have provided difficulties. More observations of individuals who become employed or unemployed would be a solution.

The best results from the regression analysis occurred when 'importance of work' was used as an indicator of work involvement. Because of three reasons no income compensations will be calculated for 'importance of leisure'. 'Importance of leisure' gave different results for the three categories between the columns, especially for the category "leisure not important". The absence of a good indicator for the effect of this category involves that this category cannot be compared well to the categories 'important' and 'not important'. Another reason is that the results of the categories 'important' and 'very important' do not match the theory of mental incongruence. Finally it can be argued that 'importance of leisure' contains less of an indicator of the immaterial aspects of work compared to the measure 'importance of work'.

From table 12 the effects of unemployment for 'importance of work' are now calculated. These are (-0.337) for the group 'not important' (average columns (1), (2) and (4)), (-0.479) for the group 'important' and (-0.811) for the group 'very important' (averages columns 1, 2, 4, 5, 6, 8 from table 12). The reliability of these effects may be proven in another way. The three effects times the proportion of unemployed individuals in these categories should give the mean effect of change in unemployment status in table 9 of (-0.637). The weighed effect of (-0.602) is comparable (calculation of this weighed effect: 42,81 %*-0.811 + 43,95 %* -0.479 + 13,25 %*-0.337). It is also important to investigate whether the effects of the categories are significantly different from each other. F-tests are applied to investigate this between the different categories in table 12. It is revealed that the results of the lowest category 'not important' are significant different to the highest category 'very important' and the results of the middle category 'important' are significant different from the highest category 'very important'. The results of the lowest category 'work not important' are not significant different from the middle category 'important. From this it can be concluded that it make sense to compare the lowest category 'not important' and the highest category in the calculation of income compensations.

In all the regressions the marginal effect of a € 1000 change in income is close to a change of 0.048 points in life satisfaction. This number can be used to calculate the compensating income variations. Three additional remarks should be made before the income compensation for psychological and financial costs are calculated.

First, it is possible that unemployment possible changes the utility derived from income. The fact that an intangible good or bad situation can change the marginal effect of income is not mentioned in the happiness literature but was hypothesized by Bas van Groezen (personal suggestion for the paper Zijlmans, 2009). This hypothesis is tested in table 14. An interaction term 'unemployed *income/1000' measures the marginal utility of income if someone is unemployed (column (1)) or has a change in unemployment status (column (2)).

The interaction term is slightly significant for pooled OLS and not significant for the first differences. For this reason it is also unlikely that the marginal utility of income does not depend on work involvement during unemployment. So this hypothesis is rejected.

Dependent variable: Life satisfaction	Pooled OLS (1)	First Differences (2)
Income / 1000	0.224***	0.048**
Unemployed	-1.120***	-0.634***
Unemployed *Income/1000	0.096[#]	-0.001
R-squared	0.141	0.028
N	19093	9041

Table 14: Regression results. *** denotes significance at the 1 % level, ** at the 5 % level * at the 10 % level and # at the 15 % level. Controlled for constant, year 1999, long-term unemployed, out of labour force, health problem, partnered, sex, age and age^2 (first differences not controlled for constant, sex and age).

Second, it is necessary to assume that individuals adapt in the same way to unemployment as to income. In paragraph 3.4 it was stated that there are indications that unemployed individuals become less unhappy the longer the unemployment spell is. This means that over time less income compensation is needed to compensate for their loss in happiness due to unemployment. A feature of income is that individuals over time will also adapt to a higher income (Di Tella et al, 2007). Hence individuals need also more income compensation because the marginal utility of income wears off over time. The compensating income variations calculated in this paper remain the same if it is assumed that the processes of adaptation to income and to unemployment status are equal in speed.

A final remark is that it is possible that work involvement is correlated with mean income. The correlation (spearman) of household income and the three categories of importance of work for unemployed individuals is 0.057 (significant) and the mean income for the categories are significant different from each other. Unemployed individuals in the category 'work not important' have a mean income of € 1.818. This is about 20 % lower than employed individuals (mean income

€ 2.267, not different for the lowest and highest category). Unemployed individuals in the category 'work very important' have a mean income of € 1.684 , a decrease of about 26 %. These percentage decreases are not in line with Winkelmann and Winkelmann (1995) who the estimated the net benefit replacement rate at about 40 % when becoming unemployed. Also passive labour market expenditures per unemployed individual are not comparable. In paragraph 2.4 it has been calculated that each unemployed individual receives about 50 % of mean national income per capita as passive labour market policies. The differences are explained by the fact that this paper focuses on household income whereas the paper of Winkelmann and Winkelmann focuses on individual income. In this paper the household income approach is chosen because absolute amounts will be calculated. This approach may also apply more to the context of the Continental (German) welfare state in welfare state arrangements are designed for the family income level instead of the individual income level.

The calculation method from chapter 4 is applied further on. For low work involved individuals ('work not important') the total amount of compensation for unemployment is an additional (household) income of € 7.021 (0.337 / 0.048 * € 1000). From this € 7.021 income compensation, the financial costs of unemployment are € 449 (€ 2.267 - € 1.818) and the psychological costs are € 6.572 (€ 7.021 - € 449). For the high work involved individuals ('work very important') the total compensation amount needed is € 16.896 (0.811 / 0.048 * € 1000). From this € 16.896 income compensation needed, the financial costs of unemployment are € 583 (€ 2.267 - € 1.684) and the psychological costs are € 16.313 (€16.896 - € 583). It can be assumed that the difference in the effect of unemployment between high and low work involved individuals 0.474 (0.811 - 0.337) is the psychological loss due to having a high work involvement. From the € 16.896 increase in income needed due to unemployment for a high work involved income individual, € 9.875 (0.474 / 0.048 * € 1000) can be attributed to the high work involvement.

6.2 Practical applicability of the income compensations

category:	work not important	work very important
marginal effect income	0.048	0.048
marginal negative effect unemployment	0.337	0.811
marginal effect of work involvement (part of unemployment)	0	0.474
income compensation	€ 7.021	€ 16.896
household income when employed	€ 2.267	€ 2.267
income compensation as percentage of current household income	310%	745%
household income when unemployed	€ 1.818	€ 1.684
decrease in household income	20%	26%
absolute amount of income compensation to financial costs	€ 449	€ 583
absolute amount of income compensation to psychological costs (including work involvement)	€ 6.572	€ 16.313
absolute amount of income compensation to work involvement	€ 0	€ 9.875
percentage of income compensation attributed to the financial costs	6%	3%
percentage of income compensation attributed to psychological costs (including work involvement)	94%	97%
percentage of psychological costs attributed to work involvement	0%	61%

Table 15: Overview of income compensations

In table 15 the income compensations are summarized for individuals with the lowest and highest category of 'importance of work'. Besides income compensations in absolute amounts, the compensating income variations for unemployment are also denoted as percentages of current household income, 310 % for low work involved individuals and 745 % for high work involved individuals. The total income compensation has also been split in the financial costs and psychological costs of unemployment. The absolute amounts of the financial costs of unemployment do not differ much between the lowest and highest categories of work involvement. But the financial costs are a relatively smaller part of the total income compensation when a large part of the psychological costs can be attributed to the negative effect from having a high work involvement.

The amount of € 9.875 refers to the psychological costs of becoming unemployed while having a high work involvement instead of a low work involvement. It is the shadow price of a high work involvement. The amount could be an indicator of how much unemployed individuals with a low work involvement value their leisure time and the immaterial aspects of work compared to individuals with a high work involvement. One could compare this amount to other studies which estimate the value unemployed individuals attach to their leisure time and the immaterial aspects of work. The purpose of these studies is to derive estimations of the individual benefit of being

unemployed. These estimations are used in the calculation of the return on reintegration programs as explained in the introduction. However, studies are inconclusive. In Kok et al. (2006) no value is attached to leisure and the immaterial aspects of work. It is argued that there is no indicator for the market value of leisure and immaterial aspects of work. The report of the CPB (2007) mentions a gap in the valuation of unemployed individuals who consider leisure as not important or important between the values of € 0 and about € 2000 a year. This gap suggests that the importance of work involvement is undervalued in comparison to the findings in this paper. The CPB study uses the neoclassical approach to value leisure. In this method, the difference between the unemployment benefits and reservation wage, at which an individual is willing to work, is considered as the value of leisure for an unemployed individual. However, this approach derives conclusions from observed behaviour in the market and this may not be a well indicator of actual experienced utility as explained in paragraph 2.2.

One could also argue that the results in table 14 can be used to investigate whether the relative sizes of compensating income variations reflect relative differences between current labour market policies for low and high work involved individuals. From a theoretical point of view, high work involved individuals should get about 2.48 more expenditures for passive labour market policies compared to low work involved individuals because the psychological costs are 2.48 higher for high work involved individuals (€ 16.313) compared to low work involved individuals (€ 6.572).

In reality, hower, it may be difficult to target labour market policies at unemployed individuals with a low or high work involvement (personal interview Jan Ott, also formerly employed at the Dutch employment office). For example, in Dutch labour market policies it is probably not legally allowed to use work involvement as a criterion for distinguishing between groups of unemployed individuals. Also the correlation between work involvement and currently used criterions to distinguish different unemployed individuals is unclear. Such criterions are for example distance to the labour market ("afstand tot de arbeidsmarkt") and obligation to apply ("sollicitatieplicht"). And if it would legally be allowed to use work involvement as a criterion, it is also doubtful whether there exists a right measure of work involvement for individual cases. For example, the measure should have the property that the own degree of work involvement cannot be manipulated by the unemployed individual. Nevertheless, it is possible that in informal settings, subjective opinions about the work involvement of individuals are sometimes held by the Dutch employment office to determine the right reintegration paths for different unemployed individuals. A last note about this issue is that it is difficult to determine the amount of money spent to active labour policies, for every criterion. In the Netherlands, active labour market policies are much

fragmented across different groups of unemployed individuals. So it is difficult to retrieve whether high work involved individuals receive more support than low work involved individuals (Ibid.).

Another remark about the practical applicability of different policies for high and low work involved individuals, is that different labour market policies have more organizational costs than only one general labour market policy. As explained, different labour market policies can be beneficial if more resources are targeted at the high work involved individuals instead of at the low work involved individuals. But the marginal benefits of different labour market policies should be more than the marginal organizational costs of these policies. Especially, when the number of unemployed low work involved individuals appears to be small (as in this paper), it makes sense to apply only one general policy for high work involved individuals.

Finally, actual expenses for active and passive labour market policies do not coincide with the psychological costs and financial costs of unemployment in Germany. If current labour market policies would take away all the costs, no individual should suffer from his situation of unemployment. Especially, the psychological costs of unemployment for both high and low work involved individuals are high, so more active labour market policies are desirable. Public expenditures to additional policies could then be justified by the low marginal effect of income on utility.

However, also society's budget constraint and the budget constraint of individuals should be taken into account in determining the optimal level of income compensations and labour market policies. For example, the calculations in this paper show enormous income compensations for unemployment which are far larger than a monthly household income. But individuals derive (and loose) also life satisfaction from all kinds of other intangible goods and market goods. Premiums for unemployment insurance are only a small part of the total individual consumption basket. It is not answered yet by happiness studies what the optimal composition of this consumption basket is.

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