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The relation between economic and non-economic incentives to work and employment chances among the unemployed

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The relation between economic and non-economic incentives to work and employment chances among the unemployed^a

by

Madelene Nordlund^b and Mattias Strandh^c

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Abstract

In this study we address the relationship of self-reported reservation wages (RW) (the lowest offered income at which an unemployed persona will accept a job offer), the income replacement rate of unemployment benefit (IRUB) and psychosocial need for employment with job search intensity and reemployment probabilities among unemployed in Sweden in 1996-1997. The results indicate that the RWs reported by the group that we observe over time were relatively stable, but strongly related to IRUB and both the gender and age of the unemployed individuals. Interestingly, IRUB was related to search intensity, but not reemployment probabilities, while the RW was related to reemployment probabilities but not search intensity. These findings suggest that IRUB might be a poor proxy for RWs, in some situations at least. In sharp contrast, psychosocial incentives appeared to be related to both search intensity and reemployment probabilities, indicating a need for a richer understanding of search behaviour and unemployment durations. The data also indicate that the roles of search behaviour and incentives for reemployment probabilities may be exaggerated which, at least under the relatively depressed labour market conditions our data represented, appeared to be much more strongly related to human capital and demand for labour for our study population.

Keywords: Reservation wage, income replacement rate, psychosocial need of work, job search intensity, human capital, job-chances

JEL-codes: J2, J3, J64

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Table of contents

1	Introduction	3
2	Theoretical background	4
3	Factors affecting reservation wages	8
4	Data and methods	11
4.1	Data	11
4.2	Variables	13
4.3	Methods	17
5	Results	18
5.1	Determinants of PRW	18
5.2	Changes in the reservation wage over time	21
5.3	Determinants of job search intensity	25
5.4	Determinants of reemployment probabilities	28
6	Conclusions	31
	References	35

1 Introduction

Economic incentives have long been key elements of job search theory, which describes the relations between individuals' economic compensation while unemployed, their selectivity in job acceptance, durations of unemployment spells, job offer rates, wage offer distributions and net income in relation to the utility of alternative uses of time. A key assumption is that durations of unemployment are likely to be longer when the unemployed are not economically motivated to find a new job. More detailed information about job search theory (hereafter simply search theory, for convenience) can be obtained from various sources, for instance, Mortensen (1977; 1990) Burdett (1979) and Van den Berg (1990; 1994).

A key concept in search theory is the reservation wage (RW): the lowest offered income at which an unemployed person will accept a job offer (Mortensen, 1977). The RW is widely assumed to affect the duration of unemployment spells, because it is strongly and positively correlated to selectivity. The concepts of search theory have also strongly influenced policy development, notably in the reform of the unemployment insurance system in Sweden in the mid-2000s (Regeringens proposition 2006/07:15)

The reservation wage has also been a central concept in much economic research during the last 30 years. However, few attempts have been made to assess determinants of individuals' RW empirically. Instead, it has generally been used as a theoretical assumption, as an imputed theoretical construct or simply estimated as the income replacement rate of the unemployment benefits (IRUB) (see for instance Mortensen and Pissarides, 1999). This is problematic for two main reasons. Firstly RWs, as measured by the IRUB, might differ from actual RWs set by the unemployed, which are probably affected by structural factors associated with the job offer arrival rate and wage offer distribution. Secondly, even if the net income and utility are highly important, the psychosocial value and functions of work should also be considered, as various sociological and psychological researchers have shown that employment generally fulfils important psychosocial needs (see, for instance, Jahoda 1982). Furthermore, these needs vary within and among populations, as well as over time (see, for instance, Nordenmark and Strandh 1999). Thus, the psychosocial disutility of unemployment could be important for understanding both how RWs are generally set and variations in

RWs among individuals. In addition, psychosocial factors may play important roles in the job search behaviour of unemployed people.

Apart from a few recent international studies (see, for instance, Addison et al. 2010, Caliendo et al. 2010), little attention has been paid to self-reported RWs, particularly effects of psychosocial needs on RWs and the search behaviour of the unemployed. To contribute towards filling this gap, the aim of this paper is to investigate: 1) associations of self-reported RWs with economic factors, the psychosocial need for employment and individual characteristics, 2) the factors that influence changes in RWs over time in unemployment, and 3) the associations of self-reported RWs (in contrast to the usually used IRUB), the psychosocial need for employment and individual characteristics with search intensity and reemployment probabilities. This is done using longitudinal Swedish survey data as well as register information following a nationally representative stock sample of unemployed people over one and a half years.

The next section of the paper provides theoretical background information, including short introductions to search theory and the PEN model (a sociological model of the psychosocial and economic disutility of unemployment). This is followed by sections on previous research focusing on factors that have been empirically found to affect RWs. The data, variables and methods used in the study are then described, followed by the results (in which findings related to each of the research questions are presented in separate sub-sections). Finally, the results are summarised and briefly discussed in a concluding section.

2 Theoretical background

To explore the relationships between individuals' economic capacities, their selectivity in job-searches and employment probabilities our point of departure is search theory-based models of how the unemployed value job-offers and engage in job-searches at different time points during unemployment spells in order to maximise individual goals. According to such models, the outcome (unemployment duration) is assumed to reflect the rational search behaviour that unemployed individuals are expected to follow. Their RW is expected to be inversely related to their likelihood of accepting job-offers, i.e. if their RW acceptance is low they are more likely to accept a job-offer, and their search intensity is set to optimise their steady income, taking into account both the wage rate in

employment and the value of leisure, net search costs, in unemployment (Pissarides 1984). In other words, a high RW is expected to lengthen an unemployment spell while a low RW will result in shorter unemployment durations. This relationship is understood as a function of the job offer arrival rate, the wage offer distribution and the net income in relation to the utility of alternative use of time. The RW is assumed to be set at a point where the benefits accrued from continued searching are equal to the additional search costs incurred, and the search period is expected to end when a wage above the RW is offered (see for instance Mortensen 1977; 1990; Van den Berg 1990; 1994).

This basic model describes how the RW of the unemployed affects the length of unemployment spells (given mentioned assumptions) and has been used, from a labour supply perspective, to suggest how economic incentives can be used to shorten unemployment periods, thereby reducing the general level of unemployment. This has led to a strong research focus on the role of the steady net income in relation to the utility of alternative uses of time. The major policy variable influencing the reservation wage is the unemployment insurance. One implication regards the *level* of unemployment benefit compensation. When this is high the RW will also be high due to the low value of job acceptance and the substantial value of continued job-searching. When the unemployment benefit is low the value of job acceptance will be higher, the value of job-searching will increase, the unemployed will set lower RWs and (hence) the probability of transfers from unemployment to employment will increase.

Another implication regards the *duration* of unemployment benefit compensation. A prediction of search theory is that the RW is set at a higher level at the beginning of an unemployment spell but gradually decreases as the date of benefit expiry approaches. At the known expiration point search costs drastically increase, thus its approach affects the perceived benefits and costs of unemployment, inducing the unemployed to accept job offers that they would not have accepted earlier in the unemployment spell (Mortensen 1977; 1990; Burdett 1979; Van den Berg 1990; 1994). This implies that the unemployed have economic resources that enable them to set higher RWs at the beginning of an unemployment spell but become more inclined to look for jobs and

accept job offers closer to the date of benefit exhaustion (or when the unemployment benefit rate is reduced)¹.

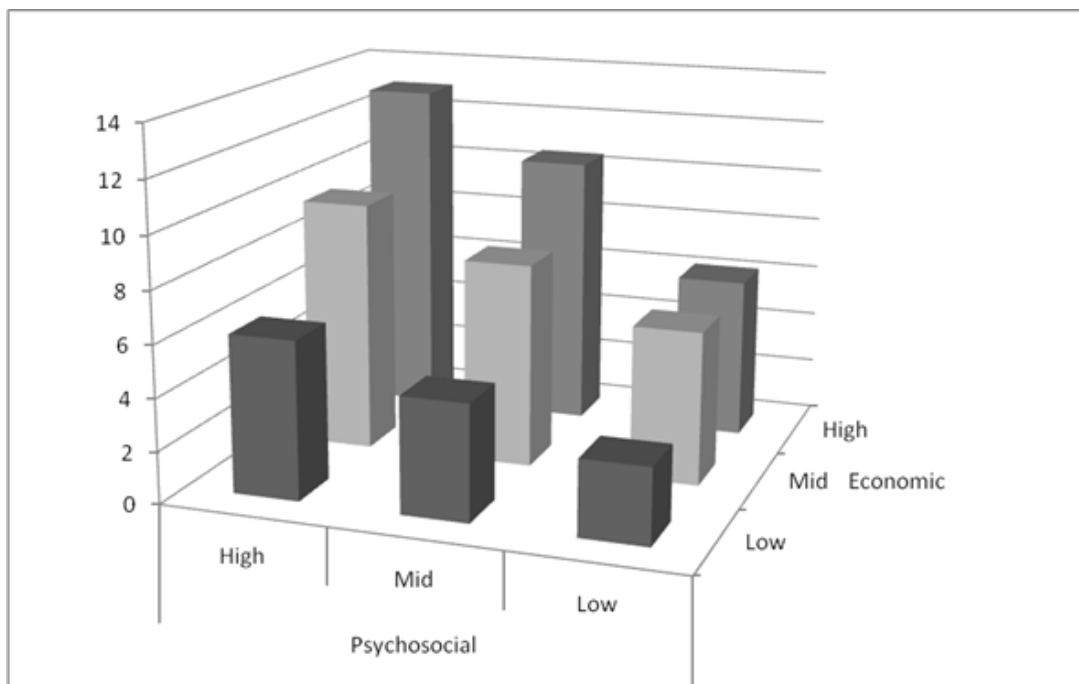
Models based on search theory designed to describe how the unemployed set their RWs incorporate economic incentives, and a key element is the relationship between the net steady income and the alternative utility of free time in the unemployment situation. The models are clear and readily understandable. However, negative effects of unemployment not only relate to income losses. Researchers from various fields, for instance economy, sociology and psychology agree upon that unemployment is a profoundly negative experience for most individuals (see for instance Warr and Jackson 1983, Kessler et al. 1989, Korpi 1997, Patterson 1997, Murphy and Athanasou 1999, Strandh 2000, Clark 2003, Dockery 2005, Andersen 2009, Eliason and Storrie, 2009a; 2009b, Sullivan and Wachter 2009, Black et al. 2012) and that these negative effects vary over the population (Jackson and Warr 1984, Hammarström et al. 1988, Viinimäki et al. 1993, Chen et al. 1994, Brief et al. 1995, Nordenmark and Strandh 1999, Shields and Weatley 2004, Andersen 2009). The generally negative experience and differences in the experience of unemployment are potentially important for understanding the incentives structure, which could affect the RWs, search behaviour and unemployment durations of the unemployed. In accordance with assumptions in most economic studies the economic situation of the unemployed and their households is clearly a key factor for understanding both the overall impact of unemployment on psychological well-being and variations in it (see for instance Whelan 1992, Strandh 2000). Equally clearly, however, the negative association between unemployment and psychological well-being cannot simply be reduced to the economic impact of unemployment, as psychosocial factors are also important components of both the negative relationship and the variation between individuals (see for instance Warr & Jackson 1985, Nordenmark 1999).

Nordenmark and Strandh (1999) have proposed a Psychosocial and Economic Need (PEN) model describing the negative effects of unemployment on psychological well-being. This model synthesises previous sociological and psychological theory on the consequences of unemployment and deduces the negative impact of unemployment on

¹ Economic incentives to shorten unemployment spells, such as reduction of benefits, might also have the opposite effect, of 'wage scarring'. Reductions in RWs and search times might lead to worse matching on the labour market. Empirical findings corroborate this conclusion (see for instance Gangl 2004, Nordlund and Strandh 2008).

psychological well-being from the two driving forces highlighted by previous theory and empirical findings. The model assumes that the negative relationship underlying unemployment and psychological well-being can be understood both from the psychosocial need of employment as suggested by Marie Jahoda (1982), who points out the importance of the non-economic functions of employment, and the economic need for employment to lead a desired life, suggested for instance by David Fryer (1992). If so, the variation in the impact of unemployment on psychological well-being is related to variations in both psychosocial and economic needs for employment. This relationship is illustrated in Figure 1 (from Nordenmark and Strandh 1999), which shows levels of psychological distress (measured using the GHQ-scale where higher scores represent higher levels of psychological distress) among groups of unemployed individuals with different combinations of psychosocial and economic needs for employment. The psychosocial need for employment was estimated using the Work Involvement Scale (WIS) which measures the importance of non-economic aspects of work, and the economic need for employment was measured using disposable income, both divided into tertiles. Data were collected from the ‘Long-term Unemployment Project’ (LUP), which is more extensively described in the data section.

Figure 1: Psychosocial and economic needs for employment among groups of unemployed individuals with indicated levels of psychological distress.



Note: In tertiles, based on LUP data (Nordenmark and Strandh 1999).

The PEN-model indicates the potential importance of psychosocial incentives for understanding how the unemployed set and adjust their reservation wages. Including the psychosocial need for employment, together with variables relating to economic incentives that are traditionally included, could improve understanding of how unemployed people actually set self-stated RWs. This would incorporate not only the general psychosocial disutility of the unemployment experience into RW models, but also the variations in this psychosocial disutility among the unemployed. Including both psychosocial incentives and economic incentives could thus improve the models. Adding psychosocial incentives might also potentially lead to somewhat different policy implications from those previously yielded by search theory, as policies that promote high levels of psychosocial need for employment among the unemployed might be quite different from those that increase economic incentives.

3 Factors affecting reservation wages

A large body of empirical work has focused on the direct impact of unemployment benefits on unemployment duration in the absence of self-reported reservation wages, but where the outcomes are postulated to be a result of lowered reservation wages. In line with predictions of conventional search theory-based models, several empirical studies have found that cuts or expiries of unemployment benefits have led to increases in transitions from unemployment to employment (see for instance Meyer, 1990; Roed and Zhang, 2004) and/or the compensation and duration of unemployment spells (see for instance Katz and Meyer, 1990; Layard *et al.*, 1991; Card and Levine, 2000). However, we find less convincing indications of a strong relationship between unemployment benefits and durations in the Swedish labour market, which differs in several important respects from other labour markets in Europe and the US. For example, historically the income replacement rate has been higher in Sweden than in many other countries due to the relative generosity of the unemployment insurance system. Furthermore, the strong tradition in Sweden of Active Labour market Policy measures may have reduced the incentive to lower reservation wages. Until the mid-1990s the active labour market policy programmes provided escape routes from open unemployment for all unemployed close to benefit exhaustion as they re-qualified them for continued unemployment benefits (which although nominally time limited thus in

practice were open ended). Such escape routes may have contributed to the explanation of why findings based on Swedish data to some extent deviate from international research.

Carling et al. (1996) studied the search behaviour among unemployed people who were approaching termination of their unemployment benefit compensation, and found that some transferred to the regular labour market, and some faced open unemployment, but most of them transferred into various types of active labour market programmes. Another finding, presented by Bennemarker et al. (2005), indicates that changes in the unemployment insurance system do not necessarily have expected effects on transfers from unemployment to employment. These authors studied a reform in Sweden in the beginning of the 2000s, which increased the compensation level for one group on the labour market but did not affect the compensation of another group. Under such circumstances search theory suggests that transfers from unemployment to employment on the regular labour market should increase, but no evidence that the increase in compensation level lengthened unemployment spells was detected. However, both of these studies were conducted during relatively depressed labour market settings, where lack of demand for labour might have negated any impact of benefit changes.

Nevertheless, despite the substantial differences between the Swedish labour market and many other labour markets, several studies have also found associations in Swedish data that are consistent with international studies and search theory. Notably, both Harkman et al. (1997) and Carling et al. (1999) found that cuts in the benefit compensation slightly increased transfers from unemployment to employment after major reforms of the Swedish unemployment insurance system in the 1990s.

As we have seen, numerous investigations have focused on the direct relationship between economic compensations and outflow from unemployment to employment. The RW, which links economic capacities and unemployment durations, is often unobserved. However, there is some empirical research based on data including RWs reported by the unemployed. Although measuring such variables may be problematic, the acquired data can contribute to understanding of the relationship between unemployment benefits and RWs as well as effects of other individual and structural characteristics on the determination of RWs.

Research based on self-reported RWs in other countries provides quite consistent indications, in line with search theory, that unemployment benefits are positively correlated with RWs (Feldstein and Poterba 1984, Ryscavage 1988, Prasad 2003, Alexopoulos and Gladden 2006, Davia and Marcenaro-Guiterrez 2008, Addison et al. 2010, Caliendo et al. 2010, Pannenberg 2010). Given the focus of search theory on unemployment benefits this has been the main focus of the research, but there are also indications that other factors are important. ‘Notably, variables related to other economic incentives have been found to be negatively correlated with RWs (Brown et al. 2010, Pannenberg 2010), while human capital in the form of education is reportedly positively correlated (see for instance Ryscavage 1988, Bloemen and Stanca 2001, Prasad 2003, Davia and Marcenaro-Guiterrez 2008, Schneider 2008, Addison et al. 2010, Brown et al. 2010, Caliendo et al. 2010, Pannenberg 2010).

We have only found one study that addressed self-reported reservation wages in a Swedish labour market context, by Eriksson and Lagerström (2010), who used self-reported RWs obtained from a CV-database provided by the Swedish Employment Service. They argue that these may differ from true RWs as the unemployed are unlikely to state the lowest acceptable wage in order to maximise the potential income from a new job. Nevertheless, in accordance with international studies they found that unemployment benefits and economic incentives (as well as factors related to human capital, such as education and age) are strongly correlated with self-reported RWs (Eriksson and Lagerström 2010).

Investigations of factors affecting the duration of unemployment have generally found indications that RWs tend to decline with time during unemployment spells due to selectivity declining, in accordance with search theory predictions (Addison et al. 2004, Alexopoulos and Gladden 2006, Caliendo et al. 2010, Pannenberg 2010). However, due to the lack of research based on longitudinal data including self-reported RWs, at different points in time, the extent to which RWs really decrease with time spent unemployed is unclear. Indeed, the only contribution we have found that empirically examined changes in RWs over time, using European cross-country data, detected little evidence of such a decline (Addison et al. 2009).

Local unemployment rates have also been found to be correlated (negatively) with RWs (Addison et al. 2004, Alexopoulos and Gladden 2006, Brown et al. 2010, Caliendo

et al.2010), and several demographic variables (including gender, age, citizenship and household composition) influence them in various ways. Notably, women and non-natives have been found to set lower than average RWs, while relatively old, cohabiting, married and child-supporting unemployed individuals set higher than average RWs (Ryscavage 1988, Bloemen and Stancanelli 2001, Prasad 2003, Addison et al. 2004, Davia and Marcenaro-Gutierrez 2008, Schneider 2008, Addison et al. 2010, Brown et al. 2010, Caliendo et al.2010, Pannenberg 2010).

4 Data and methods

4.1 Data

To meet the objectives of this study individual-level longitudinal information is required on self-stated RWs, psychosocial variables reflecting possible non-economic incentives that could affect demands placed on job positions or searches, background characteristics, search behaviour and search outcomes over time. To accommodate these needs we make use of a longitudinal dataset collected within the framework of the ‘Long-term Unemployment Project’ (LUP) at the Department of Sociology, Umeå University. This dataset was designed to cover, longitudinally, subjective aspects of the unemployment experience, such as psychological well-being and work involvement, the wage demands and search behaviour of the unemployed, and labour market transitions of the unemployed. The LUP data collection process began by randomly drawing a sample of 3500 openly unemployed individuals and participants in labour market programmes from the Swedish Labour Market Board’s register of unemployed individuals (Händel) at the beginning of 1996.

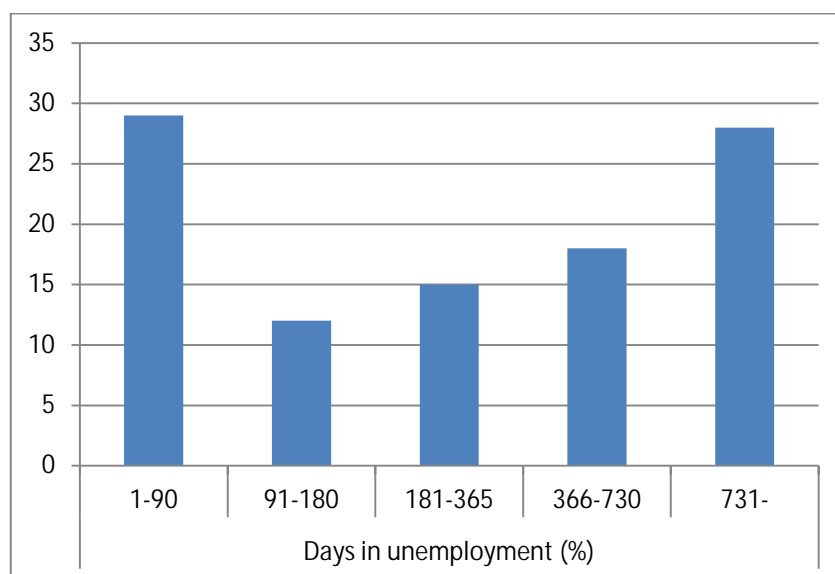
Two waves of telephone interviews were then conducted, using a questionnaire addressing issues such as the interviewees’ psychological well-being, financial situation, work involvement, confidence in the future, wage demands and job search behaviour in 1996 and 1997. The interviews were then complemented with register information from Händel about each individual's unemployment spell (openly unemployed, involved in a labour market programme and not unemployed) from the beginning of 1992 until the date of the second sampling in 1997. Attempts were made to contact all of the 3500 individuals in the sample, and 2590 (74%) responded, of whom 1806 were still unemployed at the time of the second interview. The second interviews

were restricted to the 1806 individuals who answered and were unemployed at the time of the first interview. In this second wave 1415 respondents answered (almost 80% of the possible respondents).

For both waves, only about six percent of non-responses were due to refusal to participate in the investigation, the rest were due to factors such as lack of published telephone numbers or non-residence in Sweden at the time of the study. Analyses of the non-responses show that in the first round the non-response rates were somewhat higher than average among the very long-term unemployed (over 3 years), the middle-aged, men, non-Swedish citizens, those with the lowest education level, and those living in cities with more than 100 000 inhabitants (4%, 5%, 2%, 16% and 4% higher than average, respectively). In the second survey the differences in non-response rates were even smaller (being 2%, 8%, 3% and 5% higher than average among men, non-Swedish citizens, those with the lowest education level and those living in cities with more than 100,000 inhabitants, respectively) (Nordenmark 1999).

At the time for the first interview in 1996 we find unemployed with varying time in unemployment, from a couple of days to several years. About 40 % had been unemployed a relatively short time (less than 180 days) while 60% were long term unemployed. For details about length of initial unemployment duration see Figure 2.

Figure 2: Days in unemployment at first interview (N=1385)



4.2 Variables

Reservation wages are not generally observable in register data sources. In order to acquire such data we utilize the lowest wage at which the surveyed individuals reported they were willing to accept a job offer. A number of studies have adopted this approach (see, for instance, Bloemen and Stancanelli 2001, Schneider 2008, Brown et al. 2010), which has the clear advantage that it does not impute the value of the RW. However, it is more prone to measurement errors of various kinds. For instance, we can never be sure that the RW stated by an unemployed individual is her/his true RW, or that measurement errors are random. Nevertheless, self-reported RW data may provide valuable complements to previous research by allowing detailed individual-level analysis of factors that affect RWs and their relationships with labour market behaviour and outcomes. Thus, the unemployed respondents were asked to state the lowest monthly income, in SEK, for which they would accept a job offer and the stated values were regarded as their respective RWs.

However, we argue that it would be theoretically problematic to use this value for comparisons of individuals' RWs and associated variables. For instance, is an unemployed person who sets a RW of 40000 SEK per month more selective, or "fussier", than another who sets it at 25000 SEK? The answer to this question is, of course, that it depends on the characteristics of the individuals setting them, and in order to discuss, or compare, levels of RWs we must consider differences in unemployed individuals' human capital. For this reason we have also applied a measure of the RW that relates to the income respondents received from the latest job they held (the RW to previous wage), on the basis that the previous income is the best available measure of the market value of their human capital, both in and out of unemployment. Using the RW as a proportion of previous income we can evaluate whether or not the RW is high or low, relative to the respondent's human capital, and thus whether or not it is a sign of selectivity. To distinguish this proportional measure from the RW we label it the "proportional reservation wage" (PRW).

In the following analyses we use logarithmic transformation of this measure to minimize the impact of extreme values. We argue that the PRW provides a suitable measure for tracing the level of selectivity in relation to human capital that absolute values of the RW cannot catch. The drawback of the approach is that it limits our analysis to unemployed individuals who have previously been in employment.

Descriptive statistics of the RW and raw (untransformed) PRW for our respondents (means and medians for the whole group and various subgroups) are presented in Table 1.

Table 1: Descriptive statistics and distributions of the variables RW in 1996 and 1997, and PRW in 1996.

	N	M	Md	Range	Sd
Reservation wage (RW) 1996 (SEK)	1302	12400	12000	3500-30000	3000
Male	697	13300	13000	4600-30000	3000
Female	605	11400	12000	3500-18000	2400
Nordic	1227	12500	12000	3500-30000	2900
Non-Nordic	75	10700	10000	6000-20000	2700
Age -30	478	10900	11000	3500-20000	2400
31-50	546	12900	13000	6000-30000	2700
51-	278	14200	14000	5000-30000	3000
Compulsory education	405	12500	12000	4000-28000	2900
Upper secondary education	763	12200	12000	6000-30000	2800
Post upper secondary education	129	13800	14000	6000-30000	3200
Reservation wage (RW) 1997 (SEK)	496	12800	13000	4500-35000	3100
PRW 1996	1095	1.02	1.0	.29-4.44	.34
Male	597	.96	.97	.29-4.44	.29
Female	498	1.08	1.0	.39-4.0	.37
Nordic	1071	1.01	1.0	.29-4.44	.33
Non-Nordic	24	1.1	1.0	.47-1.88	.37
Compulsory education	354	1.04	1.0	.29-3.82	.37
Upper secondary education	630	1.0	1.0	.39-4.0	.29
Post upper secondary education	107	1.04	1.0	.57-1.5	.47
Age -30	340	.98	1.0	.39-3.5	.28
31-50	487	1.03	1.0	.45-4.44	.34
51-	89	1.02	1.0	.29-3.82	.37

Note: The numbers related to Reservation wage in 1996 in the M, Md, Range and Sd columns are rounded to the nearest hundred.

The level of compensation from various forms of unemployment benefits are addressed here in a similar manner to the reservation wage. Unemployment benefits represent a search subsidy that should be considered relative to the potential income from employment, as the absolute levels tell us very little about how much potential income a respondent loses when unemployed compared to when he/she is employed. In 1996 most Swedish unemployed individuals received income replacement-based benefits of 75% of their previous income, up to a threshold beyond which there was no further compensation. Thus, many of those who received the highest absolute compensation levels received the lowest relative levels of compensation, as they previously had incomes that exceeded the threshold. In the LUP-dataset 35% of individuals had less than 65% compensation levels, most of whom were previously relatively high earners whose income had exceeded the threshold and others who, for some reason, did not fully qualify for insurance-based benefits. For this reason we also use a proportional measure of the level of unemployment benefits that relates their value to the respondents' previous income, the income: replacement ratio of the unemployment

benefits (IRUB), calculated as benefits per month/previous income per month. This measure is similar to the proxy for the RW that has been frequently used in previous research. In order to minimize the impact of extreme values the IRUB values were log-transformed before use in the analyses reported here.

In order to measure the psychosocial need for employment we use LUP-data based on the Work Involvement Scale (WIS), developed by Warr et al. (1979), which in the version applied in LUP, consists of responses to five statements about the importance, in very broad terms, of employment for the unemployed ("Having a job is very important to you", "Even if you won a great deal of money you would continue to work", "You hate to be unemployed", "You quickly get very bored if you have no work to do", "The most important things that happen to you involve work"). For each statement, the respondent is asked to rate his/her agreement on a scale from 1 (strongest disagreement) to 5 (strongest agreement). Each individual's answers are summarised into an additive index, ranging from 5 to 25, where the higher the score, the higher the work involvement. The scale is designed to measure the general importance of non-economic aspects of paid work in respondents' lives. A high WIS score indicates that employment is important because it provides social status and identity (Nordenmark, 1999). Due to its individual-level connection with status and identity, the WIS-scale can be seen as a relatively good measure of the psychosocial need for employment; a high score indicating high psychosocial need for employment and vice versa.

Job search intensity is expressed as the number of hours spent on active job search by the unemployed during the two weeks preceding the two waves of interviews, designated t1 and t2, respectively. This is a behavioural measure designed to capture the intensity of the job search efforts made by the unemployed. A problem with the short recall period is that the job search behaviour during the specified period may have been unusual, for various reasons, rather than representative of two average weeks. However, long recall periods also have disadvantages as people have problems correctly recalling behaviour over extended periods of time. Thus, using a longer recall period would have been more problematic than using this rather short recall period, as the proportion of respondents who would have forgotten the time they expended in job search activities over a long recall period would probably be larger than the proportion whose job search activities were unrepresentative during the short recall period.

To measure the labour market outcome we use months until reemployment from the time of the first interview. This might underestimate some possible positive exits from unemployment that differ from reemployment (such as entry into further education) that could have longer-term labour market benefits. However, it is consistent with the definition of unemployed as individuals who are actively looking for work and could take up offered work. From this perspective most outcomes other than reemployment (or failure) from an unemployment spell represent at least some adaptation to adverse conditions. For descriptive statistics of the IRUB, psychosocial need, search intensity, reemployment variables and background variables for our respondents, see Table 2.

Table 2: Descriptive statistics of variables used in the study.

Variable	Values	M	alt % (N)	Sd	Min	Max
Time in unemployment until first interview	<180 days	40	(554)			
	>180 days	60	(831)			
PRW	Continuous	1.02		.34	.29	4.44
IRUB (1996)	Continuous	0.72		.23	.07	3.11
Psychosocial need (1996)	5-25	21		4.6	5	25
Job search intensity (hours)	Continuous	5		8	0	70
Reemployed within 19 months		35	(379)			
Gender	Male	53	(732)			
	Female	47	(653)			
Age	24-30	37	(514)			
	31-50	42	(584)			
	51-	21	(287)			
Citizenship	Nordic	93	(1289)			
	Non-Nordic	07	(96)			
Level of education	Compulsory	33	(596)			
	Upper secondary	58	(807)			
	Post upper secondary	10	(138)			
Family composition	Married without children	26	(359)			
	Married with children	35	(484)			
	Unmarried with children	07	(100)			
	Unmarried without children	31	(435)			

In addition to our central variables (IRUB, PRW, Psychosocial needs) and the three dependent variables (PRW, search behaviour and time to reemployment) we use a number of control variables that have been previously shown, or could theoretically be assumed, to affect RWs, search behaviour or search outcomes. These include demographic and human capital-related variables, selected for the following reasons. Gender (man or woman) could have effects through, for instance, associated differences in social expectations or gender-segregation in the labour markets. Age (-30, 31-50 or over 50 years old) could have effects through, for instance, age-associated differences in acquired human capital or discrimination in the labour market. Type of family (single, single parent, cohabiting, cohabiting with children) could affect short- or long-term

economic needs, social expectations and access to social networks. Citizenship (Nordic or not) provides a proxy for both language and perceived cultural distance, and could have effects through variations in human capital or discriminatory evaluation of individuals' human capital. The highest level of education (compulsory, secondary or tertiary), together with the duration of unemployment, should mirror the human capital of unemployed individuals and thus their estimates of their value in the labour market. Finally, we use the level of unemployment in the individuals' municipality, which could affect both social expectations and the level of competition faced by the unemployed. For descriptive statistics of these variables, see Table 2.

4.3 Methods

We use standard statistical procedures for investigating relationships of most of the dependent variables with the potentially important factors. More specifically, for continuous dependent variables, such as job search intensity and PRW, we use OLS-regression to obtain informative coefficients describing changes associated with unit changes in the continuous independent variables, and differences in the dependent variable in relation to a reference category for categorical variables (in both cases holding all other independent variables in the model constant). To assess effects of the tested factors on dichotomous dependent variables we use binary logistic regression, which provides estimates of the probability of events or outcomes by fitting data to a logistic curve. Here we use multivariate logistic regression analyses to assess the probabilities of lowering the reservation wage from 1996 to 1997. We choose to present the odds ratios, i.e. ratios of the odds for two categories of event occurrence. It can be interpreted as representing an under risk of lowering the PRW if under 1 and an over risk of lowering the PRW if over 1 in relation to a reference category (if the independent variable is categorical) or of a one unit change in the independent variable (if the independent variable is continuous). The size of the over risk can be relatively crudely estimated in percentage points as the deviation from 1 (an odds ratio of 1.25 would for instance represent an over risk of 25%). Under risks can also be translated from odds ratios in a similar fashion as the deviation from 1, although a somewhat more complex equation has to be used in order to compensate for the compression of all under risks between 0-1.

In addition, to explore effects of the independent variables on time until reemployment we use Cox regression (Cox 1972) to take into account both outcome occurrence and time. This is a form of survival analysis that models rates of event occurrence as a log-linear function and allows us to examine the impact of independent variables on the “hazard” (likelihood) of reemployment during the study period as a function of a number of independent variables. More precisely, we use Cox regression to assess how long individuals took to move from unemployment (at t_0) to employment (sometime between measuring points t_1 and t_{19} , where the numerals refer to consecutive months of the study period). The advantage of survival analysis techniques, such as Cox regression, over ordinary regression techniques is that they accommodate censored cases, such as when unemployed individuals do not transfer to employment at some point during a study period. Cox regression is also called proportional hazards regression as it assumes that the ratio between two hazards is constant over time. Here, the hazard ratios (ExpB), which can be interpreted in a similar fashion to the odds ratios obtained from logistic regression, represent the average “risk” of transfer from unemployment to employment each month during the study period. In reality the risk may have varied for some unemployed individuals during the study period rather than remaining constant. However, for the purpose of this study this would not be problematic, because even if the proportional hazards assumption is incorrect the regression should provide good approximations of overall effects of the independent variables (Allison 1984).

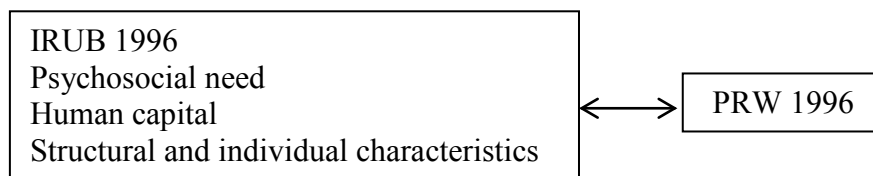
5 Results

5.1 Determinants of PRW

The main objectives of the presented empirical study include identification of factors associated with the PRW of our study population, determination of the strength of their effects, and exploration of the relationships of the PRW with the respondents’ search behaviour and reemployment probability. As discussed in the introduction, relatively little empirical work has been devoted to examining factors related to the RW, as stated by the unemployed. Some studies have addressed the impact of economic factors suggested by search theory, and individual characteristics, but they have paid less attention to central findings from psychological and sociological research regarding

factors that affect the unemployment experience. In the following sections, building on previous research, we investigate impacts of not only economic factors, but also the psychosocial need for employment, human capital and other individual and structural characteristics on reservation wages of the unemployed (Figure 3). While most previous studies have used the actual reservation wage we use the logged proportional variable PRW, which allows us (as discussed above) to catch the selectivity of our respondents. For a more detailed description of this measure we refer to the section describing the variables.

Figure 3: The relationships between indicated variables and PRW 1996



First we model relationships of these factors, and control variables, with the log PRW of our unemployed respondents, entering variables in a stepwise manner (Table 3). The first model examines the bivariate relationship between log PRW and the log IRUB. The coefficient obtained shows that the IRUB strongly correlated with PRW in 1996. However, R^2 0.17 indicates that IRUB is far from identical to the PRW. This result is broadly in line with job search theory assumptions and previous studies on stated RWs (Feldstein and Poterba 1984, Ryscavage 1988, Prasad 2003, Alexopoulos and Gladden 2006, Davia and Marcenaro-Guiterrez 2008, Addison et al. 2010, Caliendo et al. 2010, Pannenberg 2010). The fact that our measure of IRUB is proportional to our respondents' previous income provides further important information, as the data indicate (given the threshold in the unemployment benefit system) that those who set high PRWs were largely the unemployed with low previous incomes. Those with very high IRUB had *per se* previously relatively low incomes, meaning that the unemployed with the lowest incomes had the highest PRW. The maximum compensation from the unemployment insurance in 1996 was 564 SEK/day (IAF, 2007:1), corresponding to a monthly income of about 11280 SEK (USD 1635).

Table 3: The relationships between PRW in 1996 and the indicated variables

	Model 1	Model 2	Model 3
	B (SE)	B (SE)	B (SE)
IRUB	.32*** (.02)	.33*** (.02)	.3*** (.02)
Psychosocial need		-.00 (.00)	-.00 (.00)
Educational level (<i>Ref. compulsory</i>)			
Upper secondary education			-.02 (.02)
Post upper secondary education			-.01 (.03)
Number of days in unemployment			.00 (.00)
Unemployment in % of population			.00 (.00)
Gender (<i>Ref. man</i>) woman			.10*** (.02)
Age (<i>Ref. -30</i>)			
31-50			.05** (.02)
51-			.04(*) (.02)
Citizenship (<i>Ref. outside Nordic country</i>) Nordic			-.06 (.05)
Family composition (<i>Ref. unmarried no child</i>)			
Married without children			.04(*) (.02)
Married with children			-.00 (.02)
Unmarried with children			.00 (.03)
Constant	.09*** (.01)	.11*** (.03)	.06 (.07)
Adjusted R ²	.17	.17	.21
N=1095			

Note: The only independent variable included in the first model is IRUB 1996. Psychosocial need and control variables are added stepwise in models 2 and 3. (*) = $p < 10\%$, * = $p < 5\%$, ** = $p < 1\%$, *** = $p < 0,1\%$

The next model (2) is expanded by including the measure of psychosocial needs for employment. If psychosocial incentives to find a job are strong we can assume that psychosocial needs depress the reservation wage. However, the data do not support this conclusion. Contrary to expectations based on previous psychological and sociological research, psychosocial incentives appear to be unrelated to the PRW of our respondents. Model 3 includes the human-capital related variables and variables providing information about individual characteristics. According to previous findings, higher levels of education are associated with higher RWs (see for instance Ryscavage 1988, Bloemen and Stancanelli 2001, Prasad 2003, Davia and Marcenaro-Guiterrez 2008, Schneider 2008, Brown et al. 2010, Addison et al. 2010, Caliendo et al. 2010, Eriksson & Lagerström 2010, Pannenberg 2010). However, our data provide no indications of a significant relationship between the educational level and PRW of our respondents, probably because the PRW is the RW to previous income ratio, which should reflect the respondents' educational level. The results also indicate that the duration of unemployment (before the first wave of interviews) did not significantly affect the RW set by our respondents. This conflicts with search theory predictions and most previous findings (Addison et al. 2004, Alexopoulos and Gladden 2006, Caliendo et al. 2010, Pannenberg 2010), and may reflect effects of contextual factors related to the wage structure in the Swedish labour market and/or the unemployment benefit system at the

time. However, it is also consistent with findings of a study, in an American context, reported by Krueger and Mullers (2011).

Both intuitive expectations and previous studies (Addison et al. 2004, Alexopoulos and Gladden 2006, Brown et al. 2010, Caliendo et al. 2010) suggest that unemployed individuals living in areas with relatively good job prospects are likely to have higher PRWs, generally, than those living in areas with higher unemployment levels. However, our data indicate no significant relationship between these variables. Furthermore, women had a higher PRW than men, again in contrast to most previous studies. This may have been because our female respondents had lower pre-unemployment incomes, which (as mentioned above) has been found to be connected with lower absolute RWs², thus unemployed women may have had less scope to lower their incomes. Regarding the relation with age, our middle-aged and older respondents had significantly higher and marginally significantly higher than average PRW, in accordance with most previous studies (for previous findings on gender and age see Ryscavage 1988, Bloemen and Stanca 2001, Prasad 2003, Addison et al. 2004, Nordlund and Strandh 2008, Schneider 2008, Addison et al. 2010, Caliendo et al. 2010, Pannenberg 2010). Contrary to previous findings on household composition (Bloemen and Stanca 2001, Addison et al. 2004, Schneider 2008, Brown et al. 2010, Davia and Marcenaro-Gutierrez 2008, Caliendo et al. 2010, Eriksson & Lagerström 2010) we find little association between our respondents' PRW and either their cohabitation status or presence of children, although those who were married without children had marginally significantly lower PRW than average.

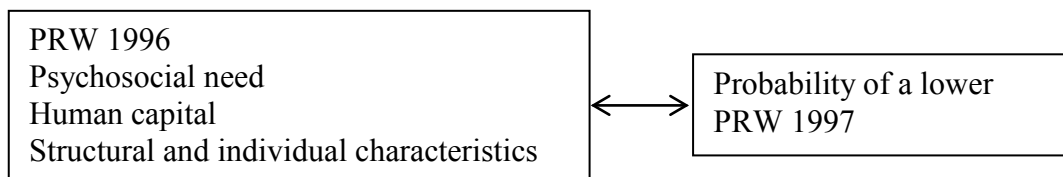
5.2 Changes in the reservation wage over time

So far, in the investigation of determinants of the RW we have used cross-sectional data. According to search theory how the unemployed initially set their RW can be understood in terms of selectivity, as the unemployed are assumed to meet the market with both an initial understanding of their market value and a certain level of search subsidy that supports this evaluation. Thus, RWs are expected to be higher at the beginning of an unemployment spell and gradually decline as time in unemployment passes and the unemployed adapt and become less selective.

² This conclusion is corroborated by analyses including previous income, which have been excluded from the models due to multicollinearity issues.

As noted in the previous section, our data provide no indications of a significant relationship between unemployment duration and the PRW. However, the possibility remains that the RW could have changed over time. Thus, we now examine this possibility longitudinally, by examining the data for the 469 respondents who were unemployed in both 1996 and 1997, as well as the possibility that their initial PRW or individual characteristics may have affected the probability of them lowering their RW (Figure 4).

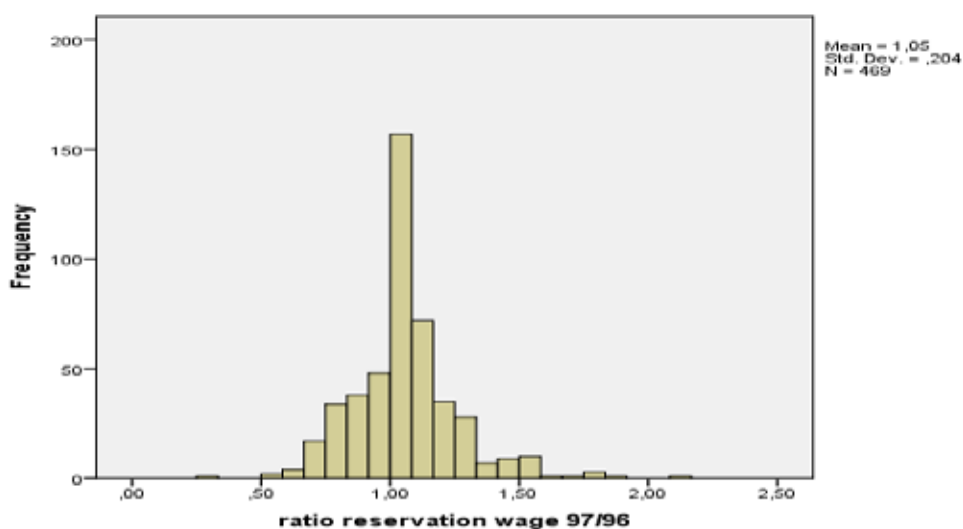
Figure 4: The relationship between indicated variables and probability of a lower PRW in 1997



Note: Only respondents who were still unemployed in 1997 are included in the analysis (N=469). Multivariate logistic regressions are applied.

As shown by the histogram in Figure 5, large numbers of the 469 continuously unemployed respondents did not lower their RW: at the time of the second wave of interviews, 27 % had reduced their RW, 27% reported the same RW in both years while 46 % had actually increased it. Thus, a substantial number increased their reservation wage between the first interview in 1996 and the second interview in 1997.

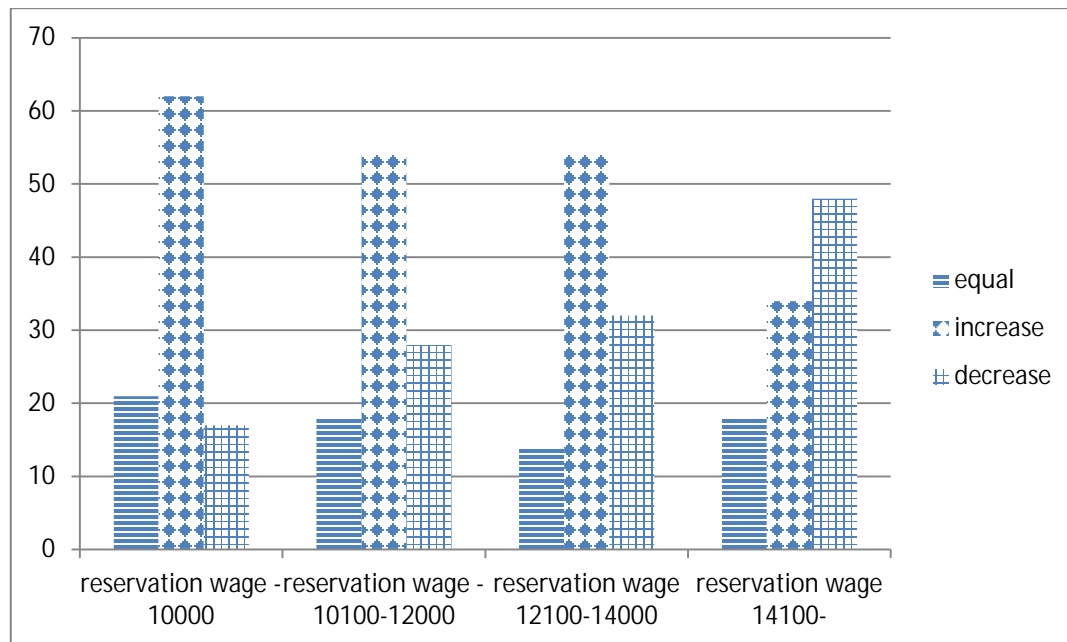
Figure 5: Histogram of the ratio between RWs in 1997 and 1996 (n=469)



The apparent lack of adaptation and lowering of wage demands are consistent with our cross-sectional finding, but do not seem to be consistent with search theory predictions.

Possible contributors to this pattern could include the relatively compressed wage structure in the Swedish labour market and the practice of setting wages by collective bargaining (which could mean that RWs of the unemployed are also largely set at the union-employer bargaining table. If so, those with the lowest RWs should be the most sensitive to resulting rises in the lowest wages. As shown in Figure 6, grouping initial RWs into quartiles provides some confirmation for this hypothesis. Those who set the highest RW in 1996 (fourth quartile of the dataset, 14100 SEK or more) lowered their RW the most extent, while those in the first quartile, who had set a RW up to 10000 SEK in 1996, increased their RW to the most extent between 1996 and 1997.

Figure 6: Proportions of the unemployed in 1996 who reported equal, lower or higher reservation wages in 1997



Note: By initial reservation wage, quartiles. N=463

It could be argued that these analyses are based on a selected group (individuals who were still unemployed in 1997 as a result of their initially high PRW and reluctant to lower their PRW during the unemployment spell), which may reduce the generality of the findings. The extent to which individuals found jobs after adjusting their RWs downward cannot be traced using our data (since those who found employment were not asked about their RW in 1997). However, we know that the mean PRWs of the unemployed who transferred to jobs after the first interview and those who were still unemployed in 1997 were 1.0 and 1.04, respectively (an insignificant difference

according to an independent sample t-test). This shows that the analysed sample at least had a similar initial PRW to the group that is not represented (those who returned to jobs in the labour market before the end of this study).

We take the analysis a step further by using stepwise logistic regression models to investigate factors that affected the probability of reductions in the RW between 1996 and 1997 (see results in Table 4). The first, bivariate, model indicates that those who set a high PRW in 1996 were much more likely to cut their RW than those who initially set a low PRW. This correlation is strong, of similar magnitude across all the models and thus unaffected by controls.

Table 4: The probability of lowering PRW in 1997.

	Model 1 Exp(B) (SE)	Model 2 Exp(B) (SE)	Model 3 Exp(B) (SE)
Initial PRW			
Psychosocial need	7.09***(.5)	6.47***(.50)	7.56*** (.56)
		1.02 (.03)	.98 (.03)
Highest achieved educational level (<i>ref. compulsory</i>)			
Upper secondary school			.53* (.27)
Post upper secondary school			.53 (.56)
Number of days in unemployment			1.00 (.00)
Unemployment in % of population			.95 (.05)
Gender (<i>ref. man</i>) Woman			.60(*) (.29)
Age (<i>ref. -31</i>)			
31-50			.70 (.31)
50-			.48(*) (.39)
Citizenship (<i>Ref. outside Nordic country</i>)			
Nordic			.1** (.85)
Family composition (<i>ref. unmarried without children</i>)			
Married without children			.71 (.37)
Married with children			1.22 (.31)
Unmarried with children			.92 (.56)
Constant	-1.12*** (.12)	-1.48** (.58)	3.32* (.01)
NagelkerkeR²	.06	.06	.16
N=469			

Note: This table displays the results of stepwise multivariate logistic regression analyses of the relationship between the initial PRW in 1996, psychosocial needs and control variables on the probability of a lower PRW in 1997 (PRW 1997/PRW1996). (*) = $p < 10\%$, * = $p < 5\%$, ** = $p < 1\%$, *** = $p < 0,1\%$

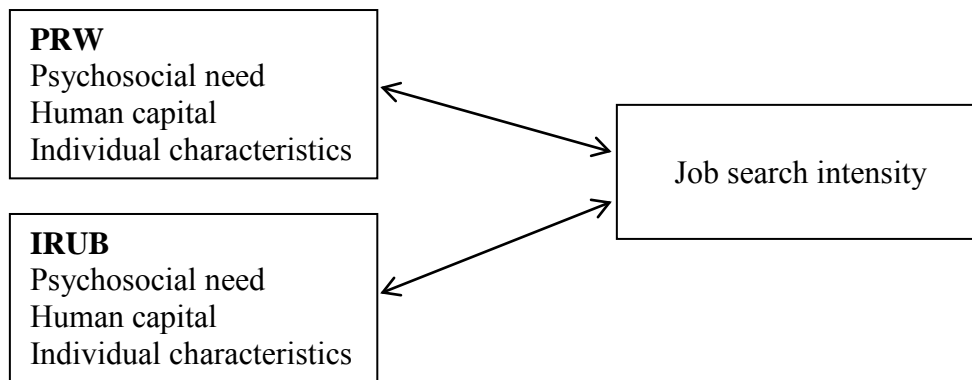
In models 2 and 3 variables reflecting the respondents' psychosocial need for employment, individual characteristics and the local unemployment rate were added. The results indicate that higher levels of education, being older, being Nordic and being female (but not the psychosocial need for employment) were all connected with lower probabilities of reducing the RW. For those with higher levels of formal education this may have been due to attempts to protect and utilise their acquired human capital. For women it may be related to their higher initial PRW (associated with lower incomes in

employment, which could reduce the scope for lowering the RW). Further possible contributory factors are that the labour market in Sweden is strongly gender-segregated and women are disproportionally employed in the public sector, where incomes tend to be relatively low and homogenous within occupational strata (all of which probably reduce opportunities for adjusting wage demands).

5.3 Determinants of job search intensity

Having considered factors that influence reservation wages, in this section we start examining the extent to which PRW, in contrast to IRUB, as well as the psychosocial need for employment and background variables, relate to search intensity (expressed as hours of active job search) (Figure 7).

Figure 7: The relationships between indicated variables and job search intensity, where PRW and IRUB are studied separately.



There is a general lack of empirical studies on the relationship between stated RWs and the search behaviour of the unemployed. Indeed, we have only found one such study, by Lindeboom and Theeuwes (1993), who detected an inverse relationship between these variables. This paucity of empirical research is probably partly due to a shortage of data sources that allow such analysis. In addition, search theory holds that the RWs and job search activities of the unemployed are simultaneously set, thus RWs should not theoretically affect search behaviour. Furthermore, RWs represent wage demands and having high demands should not necessarily mean that an individual would not actively look for a job matching those high demands. In contrast, there is a very strong focus on the role of economic incentives for both search intensity and (hence) unemployment duration. This often implicitly connects the RW with job search behaviour (see, for instance, Alexopoulos and Gladden 2004). IRUB, which we found to be very strongly

connected with RWs (section 5.1), has been a point of central interest. It has been assumed to form an incentive for job search and higher replacement rates are assumed to reduce search intensity (Krueger and Mueller 2008). Several studies have also shown that search intensity increases when the expiry of unemployment benefits approaches (Lindeboom and Theeuwes 1993, Krueger and Mueller 2008), indicating that unemployment benefits may potentially reduce search intensity. However, most empirical studies conflict with this assumed effect of unemployment benefits (Wadsworth 1990, Eriksson et al. 2002, Alexopoulos and Gladden 2004, Cobb-Clark et al. 2004, Ashenfelter et al. 2005).

Given the interest in effects of economic incentives on search behaviour, and the associations (theoretical and empirically confirmed) between them, it is clearly important to assess the effects of the RW on search behaviour. Furthermore, attention to the role of economic incentives should, as already argued, be balanced by consideration of psychosocial incentives. However, few studies have addressed effects of the psychosocial need for employment on job search efforts, although the few studies that have included variables related to it, such as work engagement, have found indications of a positive correlation (White et al. 1994, Åberg 1997, Eriksson et al. 2002).

Table 5 displays results of stepwise OLS regression analyses of the effects of PRW (or IRUB, the variable usually used as a proxy for the RW), the psychosocial need for employment and the background variables on the hours our respondents spent on active job search. In both cases the first model only considered the relation with of PRW/IRUB, which appear to be strongly related to the self-reported job search intensity, although IRUB has a stronger, more significant coefficient. When the psychosocial need for employment and other controls are added in models 2 and 3 this difference is accentuated. PRW loses its statistical significance, while IRUB remains strongly correlated with search behaviour³. Higher replacement rates are related to lower search intensity, implying that PRW may be connected to the level of wage demand, as assumed in search theory. In contrast, IRUB is connected with more purely economic pressure that is not related to the respondents' perception of their value in the labour market.

³ If analysed together in the same model (with and without controls) IRUB remains significant while PRW does not.

Table 5: The relationship between indicated variables and job search intensity.

	Model 1		Model 2		Model 3	
	A B (SE)	B B (SE)	A B (SE)	B B (SE)	A B (SE)	B B (SE)
PRW	-1.98* (.96)	-2.86** (.78)*	-1.78(*) (.97)	-2.86*** (.79)	-1.48 (.99)	-2.58*** (.80)
IRUB				.19*** (.05)		.17*** (.05)
Psychosocial need			.21*** (.05)		.20*** (.06)	
Educational level (Ref. compulsory)					.16 (.58)	.29 (.57)
Upper second.					3.33*** (.93)	2.5** (.93)
Post upper second.					.00 (.00)	.00 (.00)
Unemployment (days)						
Unemployment in % of population					-.24** (.09)	-.24** (.09)
Gender (Ref. man) Woman					-.93(*) (.55)	-1.02(*) (.52)
Age (Ref. -30)						
31-50					1.01 (.64)	.43 (.62)
51-					.05 (.78)	.1 (.75)
Citizenship (Ref. outside Nordic) Nordic					.97 (1.81)	-1.15 (1.81)
Family composition (ref. unmarried without children)						
Married without children					-.62 (.71)	-.69 (.69)
Married with children					-.74 (.67)	.17 (.65)
Unmarried with children					.64 (1.08)	1.89(*) (1.04)
Constant	4.6*** (.25)	3.36*** (.37)	.29 (1.14)	-.58 (1.1)	2.97 (2.28)	3.89 (2.56)
Adjusted R²	.00	0.00	.02	.03	.04	.04
N=1095						

Note: The table displays results of stepwise OLS-regressions. The first bivariate regression in model 1 displays the bivariate relationship between PRW and job search intensity (A) and the second bivariate regression in model 1 displays the relation between IRUB and job search intensity (B). Model 2 and 3 display the relation between indicated variables and job search intensity through multivariate regressions where regression A includes PRW but not IRUB and regression B includes IRUB but not PRW. (*) = $p < 10\%$, * = $p < 5\%$, ** = $p < 1\%$, *** = $p < 0.1\%$

Models 2 and 3 indicate that our respondents' psychosocial need for employment was strongly, positively correlated with search intensity, while the background variables had varying impacts. Duration of unemployment appeared to have no association, in accordance with findings of most previous studies (Harkman and Jansson 1995; SOU 1996; Åberg 1997; Caliendo 2010), while the respondents' education was positively associated (i.e. the most highly educated reported the highest job search intensity). For gender we find somewhat lower search intensity among women, in line with previous studies (Bosworth 1990; SOU 1996; Eriksson et al. 2002), although the correlation in this study has only borderline significance. Our respondents' age was not significantly related with search intensity, contrary to previous findings (Wadsworth 1990; Eriksson et al. 2002; Caliendo et al. 2010). Similarly, we find no significant association for citizenship, but single parents reported (marginally) significantly higher search intensity than other groups. However, there appeared to be a strong, negative correlation between search intensity and the unemployment rate in the local labour market, in accordance with findings presented by Åberg (1997). Thus, in addition to economic and

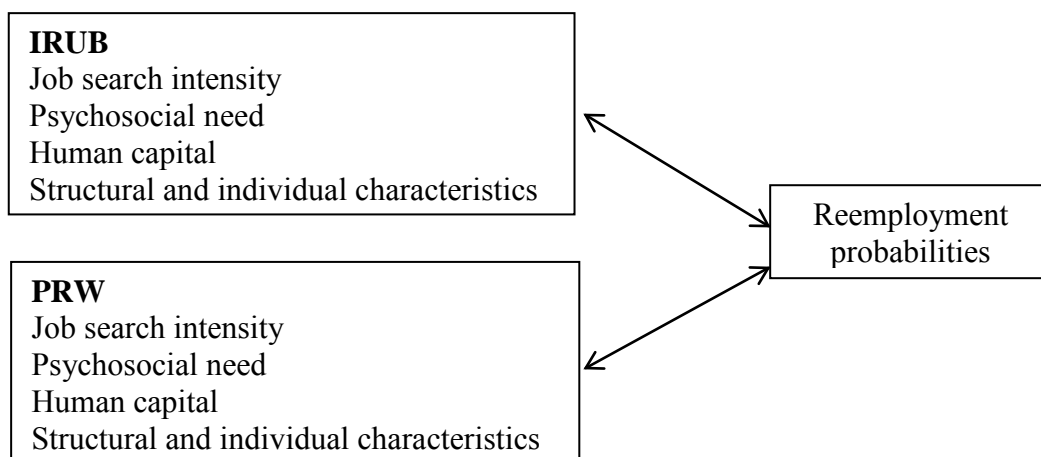
psychosocial incentives, measured using the IRUB and the psychosocial need for employment, labour market-related factors appear to be important for search intensity. This is presumably because the utility of searching for jobs increases when there are available jobs to look for and when the unemployed have human capital to offer that may be attractive to potential employers.

5.4 Determinants of reemployment probabilities

After considering search behaviour we now turn to reemployment probabilities. In this section our aim is to complement previous research by studying the relation between our variables of interest and reemployment chances (Figure 8). While the relation with the RW and search behaviour is somewhat on the outskirts of search theory, the relationship with the duration of unemployment is at its core.

The RW, as a measure of wage demands, should theoretically affect the propensity of the unemployed to accept job offers: high RWs should increase the probability of job offers being rejected and hence delay the return to employment. This expectation has been corroborated by several previous empirical studies based on stated RWs (Christensen 2002, Addison et al. 2004, Alexopolus and Gladden 2006, Addison et al. 2010, Krueger and Mueller 2011). However, a couple of studies have found non-significant relationships between these variables (Heath and Swann 1999, Davia and Marcenaro-Guiterrez 2008).

Figure 8: The relationship between indicated variables and reemployment probabilities.



Note: IRUB and PRW are being studied separately together with other indicated variables on reemployment probabilities. COX regressions are applied.

This empirical research interest in the effect of the RW on unemployment duration is complemented by a much larger body of research that empirically uses the replacement

rate of unemployment benefits, but draws conclusions about the effect of RWs on unemployment duration. One of the general conclusions from this research is that RWs have strong effects on the duration of unemployment, although weaker relationships have been found in Swedish studies (see for instance Carling 1999, Bennemarker 2005). Compared with this great interest in the role of economic incentives very little attention has been paid to effects of non-economic incentives on unemployment duration. However, the few studies that have used factors that could be related to the psychosocial need for employment have found that they have significant, positive relationships with reemployment probabilities (Åberg 2001) and the propensity to accept both relatively low salaries and other undesirable conditions (McFayden and Thomas 1997).

Table 6 displays results of stepwise Cox regression analyses of the correlations of PRW (or IRUB, the variable usually used as a proxy for the RW), the psychosocial need for employment and control variables with reemployment probabilities (based on the time until reemployment in months after the initial interview in 1996). All of the models indicate that PRW has the predicted association, i.e. that PRW is significantly, negatively associated with reemployment probabilities. Interestingly, however, when PRW is replaced with IRUB the pattern is somewhat different. The correlation for IRUB is significant in the initial models (although weaker than for PRW), but disappears completely when all controls are included.⁴ Addition of search intensity and the psychosocial need for employment (the second model), indicates that search intensity was not correlated with the probability of reemployment. This relationship is also insignificant according to bivariate analyses. Interestingly, our data indicate that neither IRUB nor search intensity (two factors we have shown to be related to each other) are related to reemployment probability, which conflicts with previous assumptions. This suggests that despite being related, IRUB and PRW measure somewhat different things. IRUB may be more of a pure measure of economic pressure associated with search intensity rather than reemployment probabilities. PRW provides a better fit with the theoretical assumptions of search theory and is probably more a measure of wage demands in relation to perceived market value, which do not affect search intensity according to our data, but are associated with reemployment probabi-

⁴ A complementary regression (not displayed in this report) shows that when IRUB and PRW are included simultaneously (with and without controls) only PRW remains significant.

lities (probably, as suggested by search theory, through effects on the probability of the unemployed accepting job offers).

Table 6: The relationship between indicated variables and time until job on the regular labour market

	Model 1		Model 2		Model 3	
	A Exp(B) (SE)	B Exp(B) (SE)	A Exp(B) (SE)	B Exp(B) (SE)	A Exp(B) (SE)	B Exp(B) (SE)
PRW	.55**(.21)		.54** (.21)		.60* (.22)	
IRUB		.70* (.17)		.70* (.17)		.84 (.17)
Psychosocial need			1.03* (.01)	1.03* (.01)	1.02(*) (.01)	1.02(*) (.01)
Job search intensity			1.00 (.01)	1.01 (.01)	1 (.01)	1.01 (.01)
Educational level (Ref. compulsory)					1.44** (.13)	1.39* (.14)
Upper secondary education					1.98*** (.18)	1.85** (.20)
Post upper secondary education					.99*** (.00)	.99*** (.00)
Number of days in unemployment					.95** (.02)	.95** (.02)
Unemployment in % of population					.81(*) (.12)	.72** (.12)
Gender (Ref. man) Woman						
Age (Ref. -30)					.99 (.12)	1.01 (.13)
31-50					.66* (.18)	.60** (.19)
51-						
Citizenship (Ref. outside Nordic)					6.07* (.72)	11.39*(1.00)
Nordic						
Family composition (ref. unmarried without children)					1.01 (.24)	1.11 (.25)
Married without children					1.4 (.22)	1.31 (.23)
Married with children					.86 (.24)	.77 (.25)
Unmarried with children						
Global Chi²	8.26	4.7	13.9	12.8	106.4	103.1
N=1095						

Note: This table displays stepwise Cox regression estimates of the relation between indicated variables and time, in months, until our respondents re-entered the regular labour market after the first interview. Model 1 displays the bivariate relationship between PRW and time until job (A), and the bivariate relationship between IRUB and time until job (B). Model 2 and 3 display multivariate Cox-regressions for PRW and other indicated variables on time until job (A) and then IRUB and indicated variables on time until job (B). (*) = $p < 10\%$, * = $p < 5\%$, ** = $p < 1\%$, *** = $p < 0,1\%$

The psychosocial need for employment was also positively correlated with our respondents' reemployment probabilities, according to all models in which this variable is included, although its significance is marginal when all controls are included (model 3). The most obvious mechanism for this is, of course, its function as a non-economic incentive that increases the probability of the unemployed accepting job offers and working conditions that would otherwise be rejected. If so, the psychosocial need for employment has similar effects to the RW, acting through the costs connected with continued job search and the value connected with job offers.

Inclusion of the background variables (in the third model of this series), provides results that are consistent with previous research, indicating that higher education levels are connected with greater reemployment probabilities while increases in the length of the unemployment period reduce them. Increases in the duration could be thought to impair human capital, but this correlation could also be connected with statistical discrimination by potential employers, who reportedly view long-term unemployment

as a sign of low productivity (see, for instance, Loek 1990, Blanchard and Diamond 1994, Heckman 1999, Okeke 2001, Åberg 2001, Addison 2004, Gregg and Tominey 2005). The model also shows that women, the old, non-Nordic citizens and those who living in areas with higher unemployment levels had lower than average probabilities of reemployment while those cohabiting with children had greater than average reemployment probabilities. These findings are consistent with those of most previous studies (see for instance Rones 1983, Ryscavage 1988, Korpi 2001, Hjerm 2002, Addison 2004, Caliendo et al. 2010). The groups with lower than average probabilities of reemployment may also, to some extent, explain why the relation with IRUB completely disappears when the controls are included in the modelling. High IRUB is negatively associated with incomes (as a result of the structure of the unemployment insurance system), which in turn are disproportionally associated with these groups. Thus, when adding the controls some of the variation in IRUB is captured.

The findings from the third model of this series have several important implications. Although PRW and psychosocial incentives are related to reemployment probabilities, it clearly indicates that the control variables (especially level of education, the availability of jobs and citizenship), have much stronger explanatory power than the PRW (Chi2 changes from around 13 to 106), although it is usually regarded as a major determinant of reemployment probabilities. This finding is probably strongly context-dependent, as unemployment rates were high and there were few available jobs during the study period in Sweden. In a labour market with lower unemployment rates and more available jobs, PRW and psychosocial incentives may have stronger effects than we found in this study.

6 Conclusions

In this report we wanted to extend previous empirical research on reservation wages and search behaviour by examining: relationships between self-reported RWs and economic factors, psychosocial needs for employment and individual characteristics; the factors that may influence changes in RWs over time; and relationships between self-reported RWs (in contrast to the usually used IRUB), the psychosocial need for employment and individual characteristics with search intensity and reemployment probabilities.

We found that RWs, measured as wage demands as a proportion of previous income (the proportional reservation wage - PRW), was strongly connected to the IRUB, gender and age (women and the middle-aged or older unemployed had higher than average PRW among our respondents). These findings seem to be consistent with the search theory assumptions that RWs are related to net income, here represented by the IRUB, as well as the wage offer distribution, here represented by the labour market opportunities faced by different categories of the unemployed. Further, contrary to assumptions based on sociological and psychological research, we found that the PRW was not significantly related to psychosocial incentives. These findings confirm job search theory assumptions about how the unemployed form RWs, showing that self-reported RWs can be basically understood from the perspective of economic incentives, ignoring potential variations of psychosocial disutility faced by the unemployed.

Our longitudinal analysis of changes in the PRW over time in unemployment yielded results that do support search theory assumptions. Selectivity, expressed in terms of PRW, was positively associated with the probability of respondents reducing their RW. This seems to reflect a rational adjustment after facing the market for those who have the opportunity for such adjustment. Interestingly, however, there was little evidence of the RW generally dropping⁵. This lack of overall adaptation does not seem to be consistent with search theory expectations: that the RW should generally drop over time as the unemployed test the market. The observed pattern could be due to the relatively compressed wage structure in the Swedish labour market and the practice of setting wages by collective bargaining. Thus, the RWs of the unemployed could be set, in some parts of the Swedish labour market at least, at the union-employer bargaining table rather than by the unemployed themselves. However, we cannot ignore the possibility that the analysis can be affected by selection problems. That is; the unemployed who lowered their reservation wages may as a consequence have left unemployment for a job on the labour market while unemployed who did not may, to a larger extent, still have been unemployed at the time for the second interview. In that case the results would be in line with the assumption of the search theory. After finding that the

⁵ As mentioned earlier in this report we base this particular analysis on individuals who are still unemployed, perhaps as a result of their inability, or unwillingness to lower reservation wages. The unemployed who lowered reservation wages may to a larger extent have left unemployment and are therefore not represented in our sample here. This is to say that here we may be studying a somewhat non representative group. On the other hand we know that the group is representative when it comes to mean initial PRW. See the wider discussion about this in chapter 5.2.

formation and adaptation of the self-reported RW broadly align with search theory assumptions we finally examined correlations of our respondents' PRW (as compared with IRUB) and psychosocial need for employment with their job search intensity and reemployment probability. An important finding here was that IRUB and the measure of search intensity were strongly correlated: higher replacement rates were associated with lower search intensity and vice versa. However, neither IRUB nor search intensity were related to actual reemployment probabilities. In sharp contrast, despite its close relationship with IRUB, PRW did not appear to be significantly correlated with the measured search intensity, but was significantly, negatively correlated with the probability of reemployment. IRUB had no such significant relationship.

These differences between PRW and IRUB are important findings as they indicate that IRUB may not be a good proxy for the RW. Despite their relationship, IRUB and PRW measure somewhat different things and have different predictive powers. IRUB is probably more of a pure measure of economic pressure that is associated with search intensity but not reemployment probabilities (as our search intensity measure was not related to reemployment probabilities of our respondents). The self-reported RW, as measured through PRW, fits the theoretical assumptions of search theory better and is more a measure of wage demands in relation to perceived market value. This is not correlated with search intensity, but is associated with reemployment probabilities through the probability of accepting job offers, as suggested by search theory.

The analyses of job search intensity and reemployment probabilities also provided another important finding. While our respondents' psychosocial need for employment were unrelated to their PRW it was strongly related to their search behaviour and (less strongly) reemployment probabilities. Psychosocial disutility in the unemployment situation could here perhaps be thought to work in a similar fashion to IRUB, i.e. as a complementary psychosocial component of the incentives structure that increases search intensity in a similar way to IRUB. However, as search intensity does not appear to be related to job chances it is unlikely that the positive correlation with job chances can be understood through this. It is more likely that this relationship can be understood in a similar way as for the RW, i.e. through the influence of psychosocial needs on unemployed individuals' probability of accepting job offers and working conditions that would otherwise have been rejected. Regardless of the mechanisms the findings indicate

that future studies of search behaviour should not consider only economic incentives and concepts such as the RW, but also integrate psychosocial disutility into the frameworks used.

The non-significant relation between job search intensity on actual reemployment probabilities is also an important finding. We found clear relations of the RW as well as the psychosocial need for employment on reemployment probabilities, but they were minor compared to the relations to our control variables. A possible explanation for this is that there were relatively high unemployment rates and low demands for labour during the study period in Sweden. In such situations the search behaviour and incentives of the unemployed may be less important for reemployment chances than in more favourable conditions (which would be an interesting possibility to test in future studies). This implies that, at least under poor labour market conditions, the importance of job search behaviour and the structure of incentives for the unemployed may be exaggerated, and measures to maintain or improve human capital might be more fruitful.

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