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**MOBILITY ON THE LABOUR MARKET,
WORK ABILITY AND SICK LEAVE**

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MOBILITY ON THE LABOUR MARKET, WORK ABILITY AND SICK LEAVE

THESIS FOR DOCTORAL DEGREE (Ph.D.)

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Till min pappa, Rune Nordström, som skulle ha gjort allt för att kunnat följa med mig på denna resa, och som var med mig i tankarna.

Och till min mamma, Birgitta Lahti-Nordström, som alltid tror på mig.

“One describes a tale best by telling the tale. You see? The way one describes a story, to oneself or to the world, is by telling the story. It is a balancing act and it is a dream. The more accurate the map, the more it resembles the territory. The most accurate map possible would be the territory, and thus would be perfectly accurate and perfectly useless.

The tale is the map that is the territory.

You must remember this.”

Neil Gaiman, *American Gods*

SAMMANFATTNING

Det övergripande syftet med avhandlingen är att studera möjliga prediktorer för och effekter av rörlighet på arbetsmarknaden bland personer med nedsatt arbetsförmåga eller erfarenhet av långtidssjukskrivning. Långtidssjukskrivning sammanhänger med ökad sannolikhet för rörlighet ut från arbetsmarknaden. Byte av jobb har diskuterats som ett sätt att förlänga arbetskraftsdeltagandet när arbetsförmågan är nedsatt i relation till aktuellt arbete. De studerade tidsperioderna sträcker sig från 1994 till 2010 och samtliga studier är utförda i Sverige.

I studie I användes registerdata från Longitudinell integrationsdatabas för sjukförsäkrings- och arbetsmarknadsstudier (LISA) för att undersöka om jobbyte påverkar sannolikheten för att kvarstå på arbetsmarknaden bland personer med erfarenhet av långtidssjukskrivning. Resultaten visade att bland de med över 180 dagars sjukfrånvaro vid basåret som bytt arbetsplats till nästkommande år så ökade sannolikheten att ha ett arbete 2-4 år senare.

I studie II användes registerdata från LISA för att studera om skillnader i sjukfrånvaronivåer mellan arbetsplatser kan förklaras av en hälsoselektion till arbetsplatserna. Resultaten visade att arbetsplatser med hög sjukfrånvaronivå hade högre sannolikhet att anställa en person med hög sjukfrånvaro året innan rekryteringen jämfört med en arbetsplats med låg genomsnittlig sjukfrånvaro.

Även i studie III användes LISA-data, här för att studera om individ- och arbetsplatsfaktorer predicerar jobbyte och att inte längre ha ett arbete (exit) bland individer med erfarenhet av långtidssjukskrivning. Resultaten visade att både arbetsplats- och individfaktorer sammanhänger med jobbyte och exit.

I studie IV användes data från Stockholms läns folkhälsokohort för att undersöka om krav, kontroll, stöd och fysisk belastning samt anställningsform påverkar sannolikheten att byta jobb eller lämna arbetslivet bland personer med nedsatt arbetsförmåga. Resultaten visade att tillfälliga anställningskontrakt ökade sannolikheten för både byte och exit. Låg jobbkontroll bland kvinnor ökade sannolikheten för exit men inte för byte.

ABSTRACT

The overall aim of this thesis is to study the potential causes and effects of mobility on the labour market among individuals with reduced work ability or who experience long-term sick leave. Long-term sick leave is associated with an increased likelihood of mobility out of the labour market. Changing jobs has been discussed as a strategy to extend participation in the labour force when the work ability is reduced in relation to the current job. The studied time periods ranged from 1994 to 2010, and all studies were conducted in Sweden.

In study I, registry data from the longitudinal integration database for health insurance and labour market studies (LISA) were used to investigate whether job change affected the likelihood of remaining in the labour market among people who experienced long-term sick leave. Among the individuals with over 180 days of absence in the first year, those who changed their job during the following year had a higher likelihood of having a job 2–4 years later than individuals who remained in the same job.

In Study II, the LISA data were used to examine whether differences in the number of absences due to sickness between workplaces can be explained by the health selection of recruits. The results showed that workplaces with high average levels of sick leave were more likely to hire a person with a high rate of sick leave the year before their recruitment than workplaces with low average levels of sick leave.

In Study III, the LISA data were used to study individual and workplace factors predicting job change and exit from the labour market among individuals who experienced long-term sick leave. The results showed that both the workplace and individual characteristics predicted job change and exit.

In Study IV, data from the Stockholm Public Health Cohort were used to examine if demand, control, support and physical strain, as well as the type of employment contract, affected the probability of whether employees with a reduced work ability would change jobs or leave the labour market. The results showed that temporary employment contracts increased the likelihood of both change and exit. Low job control among women increased the likelihood of exit but not of job change.

LIST OF SCIENTIFIC PAPERS

This thesis is based on the following publications, which are indicated by roman numerals.

Reprints were made with permission from the respective publishers.

- I. Nordström, K., Ekberg, K., Hemmingsson, T., Johansson, G. (2014). Sick leave and the impact of Job-to-job mobility on the future vocational situation. *BMC Public Health* 2014, 14:305
- II. Nordström, K., Hemmingsson, T., Ekberg, K., Johansson, G. (2015). Sickness absence in workplaces: does it reflect a healthy hire effect? *Int J Occup Med Environ Health* 2016;29(2):315–330
- III. Nordström, K., Ekberg, K., Hemmingsson, T., Johansson, G. The importance of individual and workplace characteristics for exit from the labor market and job change among long-term sick listed workers. (Manuscript).
- IV. Nordström, K., Hemmingsson, T., Ekberg, K., Alderling, M., Johansson, G. The importance of work conditions for labor market exit and job change among individuals with reduced work ability. (Manuscript).

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LIST OF ABBREVIATIONS

LISA	The Longitudinal Integration Database for Health Insurance and Labour Market Studies
SSIA	The Swedish Social Insurance Agency
RTW	Return to Work
CIs	Confidence Intervals
OR	Odds Ratio
HWE	Healthy Worker Effect

1 INTRODUCTION

The incidence of sick leave in Sweden has increased since 2010. In 2015, the average number of days on sick leave per year was 13.7 days among women, and 7.3 among men, which is an increase of 1.5 and 0.6 days from 2014, respectively. Long-term sick leave has also increased since 2010. In September 2015, 94,121 individuals in Sweden were on sick leave for 180 days or more, whereas in September 2010, 41,605 individuals were on sick leave for 180 days or more. Twice as many women than men were on long-term sick leave in 2015 (www.forsakringskassan.se).

The costs of work absence due to sickness are high for the community, employers and individuals. During 2014, the cost of reimbursement related to sick leave and disability in Sweden amounted to 125 778 000 000 SEK (13,835.6 million EUR), which corresponds to just over 3% of Sweden's GDP (1). According to a calculation from the Swedish Social Insurance Agency, the cost sustained by an employer of an employee with average monthly wage that is sick listed for 180 days is approximately 100 000 SEK (11,000 EUR; <http://www.forsakringskassan.se>). Further, lost competence that must be replaced may also be costly for employers. For individuals, long-term sick leave may also have a negative impact on health (2) and personal finances (3).

Long-term sick leave is associated with an increased risk of mobility out of the labour market into unemployment and disability pension (2, 4-10). In addition, being on long-term sick leave increases the risk of not returning to employment (11, 12). In a Swedish study of individuals on sick leave who were granted vocational rehabilitation, only 32% had returned to the labour market 2 years after completing rehabilitation (12). Among the individuals on long-term sick leave who do return to work, recurrent sick leave is common. In a study of workers who returned to work after sick leave due to common mental disorders, 19% experienced an additional period of sick leave during the 7-year follow up period, which was defined as the start of a new episode of sick leave after a recovery period of at least 28 days (13).

Changing to a more suitable job might be a rehabilitation strategy that enhances the chances of future labour market participation. This thesis focuses on mobility in the labour market

among individuals with reduced work ability or who experience long-term sick leave. We studied the following three areas:

1. The effects of job change on the future labour market situation
2. Where individuals who experience long-term sick leave find new employment
3. Predictors of job change and exit from the labour market

2 BACKGROUND

2.1 VOCATIONAL REHABILITATION

Vocational rehabilitation is defined as a set of actions that aim to retain the work ability for individuals who suffer from work incapacities and to create conditions that allow individuals to make a living from paid work (14). In the regulations regarding labour market political activity, vocational rehabilitation implies that those in need of support are offered investigative, guidance, rehabilitative or work-preparing interventions (15). Actions aimed at the individual, such as improving individual health, or aimed at the workplace, such as removing the barriers to an individual's return to work, can be taken to facilitate an individual's return to work after sick leave. Different authorities are responsible for these actions. The Swedish social insurance law (16) states that the health care provider is responsible for evaluating the needs for medical rehabilitation, such as physical therapy or occupational therapy. The employer is responsible for taking the actions needed for an efficient vocational rehabilitation, such as job training, education or reassignment within the company (16).

Actions directed at improving individual rehabilitation or capacities, such as physical therapy or education, might be effective in some cases. However, not everybody can be "cured", and accommodations at the workplace might be necessary to allow an individual to return to work.

Accommodations such as changing the workplace, work equipment, work conditions or work environment with the purpose of removing barriers to the individual's return to work, seems to be effective in facilitating a return to the same workplace after periods of sick leave (17-21). However, such accommodations are not always feasible, such as when an individual suffers from rheumatism cannot perform the physically demanding work he

formerly performed at a workplace where no co-workers are available to enable the individual's job tasks to change. Despite work accommodations, cooperation problems among key stakeholders or negative reactions from supervisors or co-workers may act as barriers to an individual returning to their jobs (18, 22, 23). When returning to the present job is not feasible, a job change might be considered as a rehabilitation strategy. In a review of the sickness absence system in Great Britain, Black et al suggest that some individuals on sick leave will only return to work when they are able to change jobs and employers (24).

2.2 WORK ABILITY

Work ability is a central concept in Swedish social insurance law. This law states that individuals who have their work ability reduced by at least one-fourth because of disease qualify for sickness-related financial benefits. This law also states that social circumstances and labour market conditions should not be included when assessing work ability (25). However, in most definitions, work ability encompasses more than individual-level factors. According to Illmarinen (26), work ability primarily involves a balance between a person's resources, such as health, functional abilities, education and attitudes, and work demands such as environment, actual contents and organization of work. Therefore, as personal resources change with age, and work demands change with new technology, the balance must be continuously maintained to sustain work ability (27).

The notion that work ability encompasses more than individual factors is also posited by Nordenfeld (25), who distinguishes three factors of ability: the agent involved, the goal of the agent and the circumstances in which the agent acts. An individual (the agent) can have the ability to perform work tasks (achieve goals) under certain circumstances, but not the ability to perform them under different circumstances (28). Tengland developed Nordenfeld's theory by suggesting two definitions of work ability, one for specific jobs requiring special training/education, and one for jobs that people in general can manage after a short learning period. He defines work ability in relation to specific jobs as having occupational competence, the required health and occupational virtues required to perform reasonable work tasks in an acceptable work environment. In a more general sense, Tengland defines work ability as having the required health and occupational virtues to manage a job when the tasks are reasonable and take place in an acceptable work environment (29).

In the illness flexibility model, work ability is formed by health, knowledge/skills, and work requirements. These requirements are captured by the concept of adjustment latitude, which describes the opportunities to adjust work to health. According to this model, high knowledge and skills and high opportunities to adjust work to health might preserve work ability despite poor health (17).

In a review of published definitions of work ability, Lederer et al. distinguished three dimensions of factors affecting work ability: the individual, organizational and societal dimensions (30). Factors in the individual dimension included physiological restrictions or abilities, mental health, cognitive abilities, motivation and education.

Factors in the organizational dimension included physical and psychosocial work environment; job insecurity; work attributes such as sector and company size; and organizational culture such as norms and values. The societal dimension includes political and legislative context, labour market demands, the availability of work and changes in industries. It also includes demographic trends that affect work ability, such as population aging or immigration, as well as societal norms. Lederer et al concluded that the view on work ability has shifted over the years from a narrower focus on the individual's physical impairment to a more holistic and multidimensional view (30).

To summarize, there is a difference between how the regulatory system defines the concept of work ability and how theories and models have developed around that concept, where the theoretical elements largely include contextual factors, particularly the work situation.

2.3 THE SWEDISH SOCIAL INSURANCE SYSTEM

In the general health insurance system introduced in Sweden in 1955, there were three qualifying days for sick leave, and the number of days on sick pay were limited. The replacement rate was 55% of the former income that the sickness allowance was based on. The time limitation for sick leave was removed in 1963, and in 1967, two of the qualifying days were eliminated and the replacement rate was increased to 80%. In 1987, the last qualifying day was abolished. In 1992, it became mandatory for employers to pay for the first 14 days of sick leave, and in 1993, one qualifying day was reinstated (31). After 14 days, sick pay is received from the Swedish Social Insurance Agency if the individual's work ability is reduced by at least one quarter because of illness (32).

In 2008, the rehabilitation chain was installed with the aim of achieving a more active sick leave process with early rehabilitation and support actions. The rehabilitation chain sets time limits for when work will be assessed against the current job (the first 90 days), another job with the same employer (91–180 days) or the entire labour market (after 180 days). After 180 days, the sickness allowance should be reimbursed only if the employee could not perform any work that normally exists on the labour market. Exceptions from the time limits could be made if there was a strong likelihood that the employee could return to present work within 365 days, or when assessing the employee's work ability in relation to the entire labour market was considered unreasonable. The terms for disability pension were also tightened in 2008 (32). Beginning on the 1st of February 2016, the upper time limit in the rehabilitation chain was abolished, and it became possible to receive a sickness allowance, as long as the individual's work ability was reduced by at least one quarter (Swedish Social Insurance Agency).

2.4 LAWS AND REGULATIONS

A history of many sick leave absences in most cases conveys poor health and disabilities. One strategy to allow individuals with disabilities to enter working life and to prevent discrimination is through government regulations. According to Swedish anti-discrimination law, employers are prohibited from discriminating against any employee or person seeking employment because of disability. Under this law, disability is defined as lasting physical or mental limitations to a person's functionality that arise because of injury or disease that was present at birth or develops – or is expected to develop – after birth (33). The work environment law states that the employer must ensure that there are suitable and organized job accommodations and rehabilitation activities available at the workplace (34). In several European countries, companies of a certain size are required by law to have a specific percentage of people with disabilities among their employees. The percentages vary between 2 and 7% in these countries. In a majority of the countries using quota systems, there are penalties for employers who do not fulfil the quota provisions (35). In Sweden, however, incentives are provided to employers for hiring disabled individuals (35). Wage subsidies can be paid to employers who hire a person with reduced work ability due to a disability when the person is not expected to be able to obtain or retain work unless the aid is provided. Subsidies can also be given for accommodations that are needed as a part of an employee's rehabilitation (36). Few studies have focused on whether wage subsidies are effective. One

exception is a longitudinal Danish register study that showed that lowering wage subsidies decreased the recruitment of unemployed individuals who were disabled (37).

2.5 MOBILITY ON THE LABOUR MARKET

2.5.1 Definitions

Mobility on the labour market can indicate several forms of transitions. A study of labour market mobility in the Nordic countries (38) identified the following dimensions of mobility on the labour market:

- A. Changes between labour market states, such as
 - mobility between employment and unemployment and
 - mobility between employment conditions, such as transitions in and out of temporary employment or part-time work.

- B. Changes within employment, such as a change of
 - workplace,
 - occupation/work tasks, or
 - employer.

Figure 1 illustrates the types of changes within employment (job change) and how different aspects of job change might coincide.

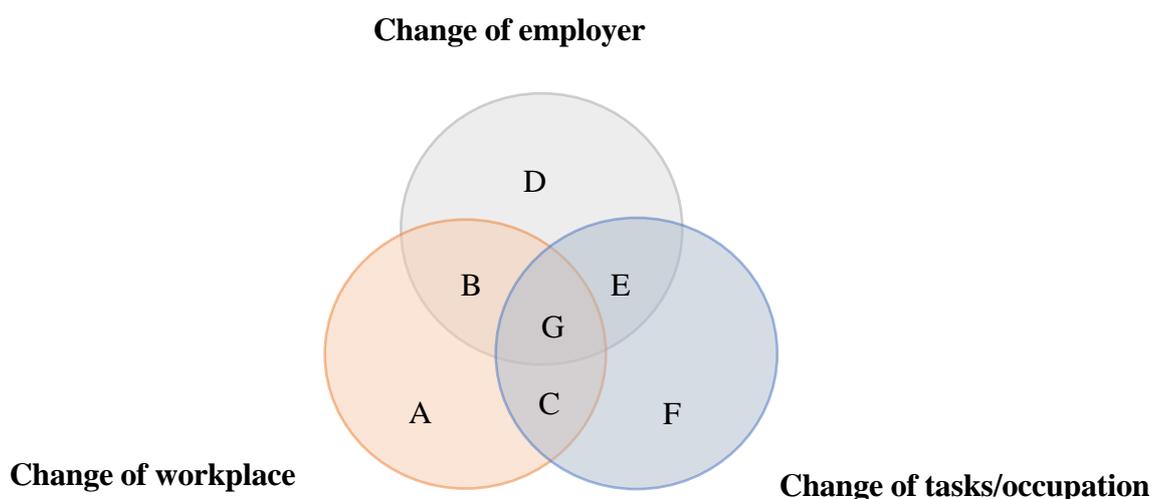


Figure 1. Variations of job change

Workplace mobility (A) describes changes of workplace but not of employer or occupation, such as a salesperson working in a shop who changes to another shop within the same commercial chain.

Intraoccupational workplace mobility (B) describes a change of workplace and employer but not occupation or work tasks.

Interoccupational workplace mobility within the company (C) describes a change of workplace and work tasks or occupation but not employer, such as a salesperson that changes to another shop within the same commercial chain and begins work as a manager.

Changed ownership (D) implies that the employer has changed but not the workplace or occupation, which indicates the workplace has changed ownership.

Changed ownership with changed work tasks (E) is similar to *D, changed ownership*, and indicates changed ownership with changed work tasks for the individual.

Internal mobility within the workplace (F) describes a change of work tasks or occupation but not of employer or workplace.

Total job mobility (G) describes a change of workplace, employer and work tasks or occupation.

Figure 1 describes horizontal job changes. However, job change can also be described as vertical, such as changing from a blue-collar job to a white-collar job (upward mobility) or the reverse (downward mobility) (39). These kinds of changes are not the focus of this thesis. Instead, this thesis focuses on changes in workplace. This change may or may not include a change of work tasks or employer (A, B, C and G in Fig 1). One reason for choosing a change of workplace and not a change of employer or occupation is that we believe this factor may better reflect job changes among men and women. As a result of the gender-segregated labour market in Sweden, a majority of women are employed in the public sector whereas the majority of the men are employed in the private sector. Although a public employer can provide many workplaces, which the private employer often cannot, defining job change by the employer can underestimate job changes among women. Furthermore, female-dominated occupations are often merged into large groups, which is more uncommon among male-dominated occupations (40). Therefore, choosing a change of employer or occupation as a measurement of job change may also risk underestimating job changes among women.

2.5.2 Job change in the general population

Sweden has a comparatively low degree of mobility on the labour market compared to other Nordic countries (38). In Europe in 2005, the proportions of individuals who changed jobs, defined as a change of employer, varied from 5.6% (Greece) to 22.9% (United Kingdom). In Sweden, 8.8% of the population had changed jobs in 2005 (41). Job changes between sectors and occupations are more common in a flourishing economy compared to economies in recessions where job changes are more limited and mostly occur within sectors and occupations (42, 43). Furthermore, job change in the form of a change in employer is common during periods of economic prosperity but decreases during recessions. When the economic activity increases, new companies are established that require employees, and existing companies grow and recruit, which creates new jobs (44).

In Sweden, mobility in the form of a change in the workplace has varied between 13 and 19% between 1994 and 2008 (fig. 2). Individuals with and without sick leave experience seem to change their workplace to a similar degree. Except for the period at the beginning of 2000, men with long-term sick leave experience have changed their workplace more often than women. However, during the last part of this period, the trend seems to change.

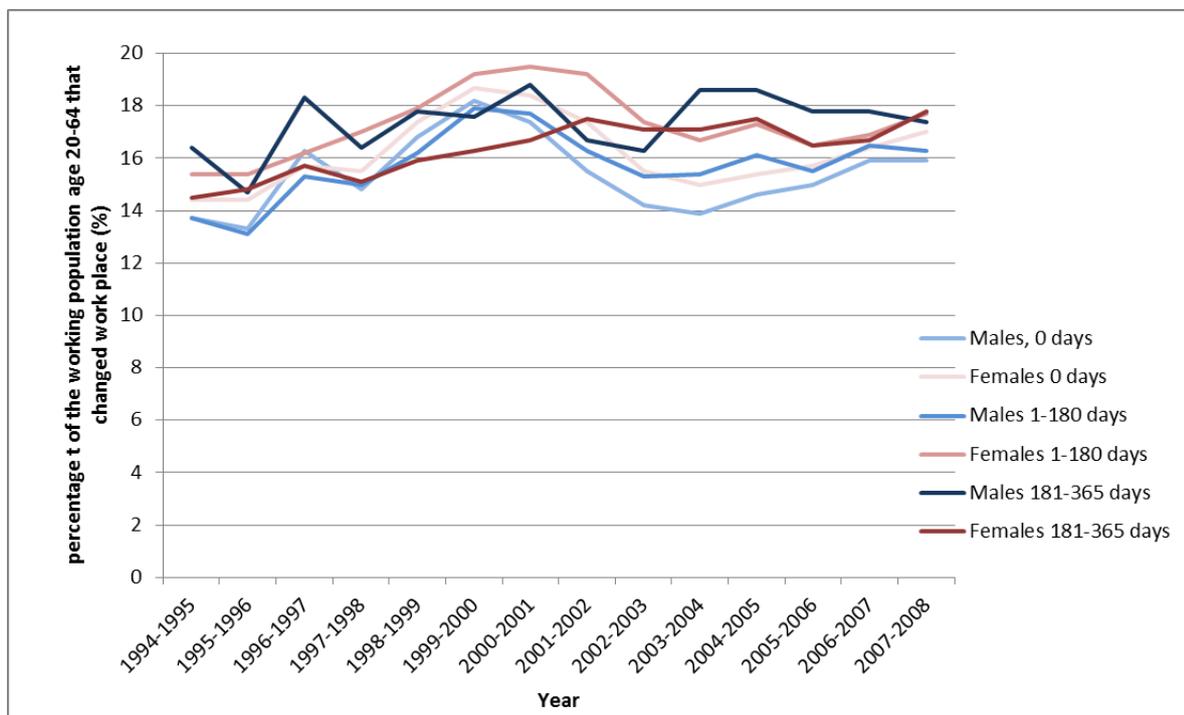


Figure 2. Mobility between workplaces in Sweden among men and women according to sick leave experience between 1994 and 2008. Based on data from LISA collected from Swedish adults aged 20-64 years

2.5.3 Driving forces for job change

Several models describe how individual and work-related factors affect job change.

According to the “healthy worker effect” (HWE), health is the driving force for mobility between jobs and labour market states. HWE is a well-known phenomenon in occupational epidemiology and is considered to be a methodological problem causing a selection bias (45). Originally, this term meant that an individual must be relatively healthy to be employable and that both morbidity and mortality rates are usually lower in the workforce than in the general population (46).

However, HWE is also likely to occur within the workforce. Certain occupations and workplaces may select for healthy individuals and against unhealthy individuals. One component of the HWE is the “healthy hire effect,” meaning that healthy workers are more likely to be hired than others. This implies that unhealthy individuals are less likely than healthy people to be hired in certain occupations and workplaces and/or that certain workplaces are avoided by unhealthy individuals. Another component of the HWE is the “healthy survivor effect,” which implies that unhealthy employees are more prone to out-selection and may be less likely to remain in certain occupations and workplaces (45-47).

Other explanations of why people change jobs focuses on job change as a result of the expectation that a new job will be an improvement over a current job, as well as personality factors such as a willingness to change. According to the push and pull model, a job change might be caused either by push factors that repel the individual from the original workplace or by pull factors that attract the individual to a new workplace (48). Originally created to describe emigration, the push and pull theory describes mobility from an area of origin to an area of destination. In both areas, there may be both positive and negative factors that attract or repel an individual. Between these two areas, there are obstacles that must be overcome. The perceptions of positive and negative factors, obstacles and personality factors (such as willingness to change) affects whether mobility (migration) occurs. The push and pull theory indicates that migration is selective. Some individuals respond primarily to plus factors at the destination area and are positively selected, whereas others responds primarily to minus factors at the origin area and are negatively selected (48). Push factors can include dissatisfaction with working conditions and managers, whereas pull factors can include job security or the positive reputation of an organization (49).

According to the turnover model, job change is the result of an individual's job decisions (50). An employee can be expected to change jobs when the net utility of a new job exceeds the value of the net utility of the old job, as well as the expected net utility from the existing labour market (51). The predictors for turnover can be structured into employee characteristics (e.g., age and education), the nature of the current job (e.g., job security and job stress), the nature of the current organization (e.g., supervision and pay) and external conditions, such as the unemployment rate (52).

Allen and Meyer distinguish three components in organizational commitment that affects an employee's inclination to leave or remain in an organization. Affective commitment describes the employee's attachment to the organization. Continuance commitment describes the employee's recognition of the costs of leaving the organization. Normative commitment describes the sense of obligation to the organization (53). In a follow-up survey study of the associations between the three forms of commitment and internal (within the workplace/employer) and external job moves (change of employer in fig. 1), a high normative commitment was associated with low numbers of external job changes over one's career. Moreover, external movers reported lower affective and continuance commitment prior to a job change than those who remained within the organization (54).

According to Hirschman (55), a person can "exit" or "voice" when dissatisfied with a job. Exit is escaping unsatisfying conditions by leaving the job, whereas voice is choosing to speak up in an attempt to change and improve the present job conditions. The degree of loyalty to the organization affects whether an employee will stay or leave the job (55). When experiencing poor work conditions, voice could mean trying to accomplish a change in work conditions at the present job, whereas exit could imply leaving the present job and trying to find a better job or exiting the labour market.

2.5.4 Where are the long-term sick employed?

Apart from HWE, which describes a selection process driven by health, the models of driving forces for job change mainly focus on job change as a result of the individual's decision to leave the present job. The actions and attitudes of employers for retaining and recruiting employees may be crucial for employing individuals with disabilities.

A previously published review found that employers who reported positive experiences with employees with disabilities were more likely to hire individuals with disabilities in the future (56). Four out of nine studies that considered the size of the company found that large companies showed more favourable attitudes toward individuals with disabilities than small companies. Two out of five studies that included the educational level of the employer found that employers with higher education levels had a more positive approach towards individuals with disabilities than employers with lower education levels. Another three studies found no association between an employer's education and approach towards individuals with disabilities (56). A survey study that included over 3000 companies in the USA revealed that companies in the service industry were more inclined to hire individuals with disabilities than companies in the production industry. However, companies in service industries with direct contact with customers were more likely to identify customer attitudes as a challenge when hiring individuals with disabilities (57).

A number of survey studies have focused on employer attitudes towards hiring individuals with disabilities. The reported barriers for hiring individuals with disabilities were the costs of accommodations (58) (59), a lack of knowledge and experience in working with employees with disabilities (58) (59) (60) and a fear of being stuck with an employee that cannot be fired for legal reasons (58). One study reported that enabling factors for hiring individuals with disabilities included education about disabilities, having a source for expert guidance regarding accommodations, written guidelines and tax and wage subsidies (58).

Employers who successfully hired individuals with disabilities reported that they included these individuals with other employees and treated them equally, and these employers welcomed diversity and focused on job performance results and not on the disability. These employers also typically matched employees' capacity with work tasks, focusing on the most important functions and having the required knowledge for supervising a diversified labour force (61).

Companies can also differ regarding keeping people with disabilities. In a Norwegian study that examined the characteristics of companies with an "active ageing" policy and practice to avoid early retirement, smaller companies were less likely to have such a policy than larger companies. Long training periods, which are more common among companies that have employees with a high average education, were also associated with a higher likelihood of having active ageing initiatives. Companies with difficulties filling vacancies during production spikes (62) and those expecting a scarcity in labour supply for the future (63) had a high likelihood of having interventions that aimed to retain senior employees and invest in

employability and of having practices such as ergonomic measures, alleviating tasks of older workers and adjusting working hours. Such investments might increase the attractiveness of the organization and prevent workers from leaving for another organization. Hermansen et al found that employers in larger organizations invested more in training that actively stimulated or increased the employability of older workers. They also found that the provision of such practices was higher in organizations where older workers are perceived more positively (63).

2.5.5 Is job change a way of prolonging labour market participation among individuals with long-term sick leave experience?

Several longitudinal studies have found an association between poor health and an increased risk of exit from the labour market in the form of unemployment and disability pension (7, 8, 64-66). Some studies have indicated that job change may prolong labour market participation among people with disabilities through at least three different mechanisms. One mechanism is providing a better match between the individual's health and the content and organization of the work. Another mechanism is increased health as a result of the change, and the third mechanism is by increased job satisfaction and growth opportunities.

2.5.5.1 A better match between the individual's health and work

The opportunity to find a more suitable job that better matches an individual's ability might be of high salience for avoiding exit from the labour market among individuals with poor health. This is supported by a longitudinal study that investigated the predictors of re-employment after early retirement due to ill health. In that study, 1317 individuals were recruited from the National Health Service in Britain. At the one-year follow up, 13% of the participants had re-entered working life (working mostly part time). In the follow-up questionnaire, 30% of the participants stated that finding a more suitable job was the main reason for returning to work, whereas 9% indicated that they returned to work because their health had improved (67). The main finding of that study – that the possibility of finding a more suitable job was more important than health for re-employment – indicates that a job change could prolong labour market participation. A change might mean that it is possible for an individual, despite ill health, to retain work ability because the job is consistent with

the present symptoms. However, there were no follow-up questions regarding whether the re-employed individuals were able to remain in the labour market over time.

2.5.5.2 Better health

According to the Person-environment fit model, a strain develops when the individual's needs or abilities do not match the supplies or demands of the job. Such a strain can lead to illness (68). The individual might voluntarily withdraw from the organization as a reaction to this strain (voluntary employee turnover). In a longitudinal study of the relationship between strain and voluntary turnover among truck drivers, voluntary turnover was associated with a reduction in self-reported fatigue and the need for recovery after work. The reduction was greater if the new job was outside the industry (69). Reduced emotional strain, as well as less fatigue, was also found in a longitudinal, retrospective study of individuals from the Maastricht Cohort Study who had changed employers (70). Liljgren et. al (40) found similar results in a longitudinal study in which a decreased probability of burnout and better mental health were reported among civil servants who had changed jobs compared with those who stayed at the same job. An association between upward job mobility and an increased health was also found in a study that examined 2,503 working women in the U.S. (71).

2.5.5.3 Increased job satisfaction and growth opportunities

Job change also has been found to be associated with increased job satisfaction. In a longitudinal study of Norwegian employees, job satisfaction had increased more among employees that had an upward job change (both within and between employers) than among employees that had stayed in the same job. If the job change was downward, then the opposite was true (72). Swaen et al. also found an association between job change and job satisfaction in a longitudinal study of employees from the Maastricht Cohort Study in varying occupations. Individuals that subsequently changed jobs reported more conflict with supervisors, higher physical and emotional strain and lower job satisfaction compared with individuals that did not change jobs later. However, after the job change, the individual's satisfaction improved and less conflicts and strain were reported compared to before the change (70).

In a longitudinal study of job change among British managers, it was found that job change was associated with increased opportunities for personal growth at work, whereas

immobility was associated with decreased opportunities. However, the type of job change was of importance; changes implying a change of employer or work tasks that involved upward or lateral status shifts had a positive effect on growth opportunities (73).

To conclude, a job change may thus lead to increased work ability, reduced strain, improved health, growth opportunities and increased job satisfaction and thereby increase the possibility of remaining employed. However, the opportunities to find a new, more suitable job might be limited among individuals with a history of long-term sick leave.

2.5.5.4 Possibilities for changing jobs

For job change to be a way of prolonging labour market participation among individuals with reduced work ability or long-term sick leave experience, employers must be willing to hire them. Long-term sick leave and unemployment have negative effects on health, but there is also a selection for health moving into and out of the labour market.

In a review, it was reported that most employers expressed a positive general view of individuals with disabilities. However, the review reported a discrepancy between what employers expressed when the global attitudes towards individuals with disabilities were assessed and how they answered more specific questions about hypothetical hiring situations. Global attitudes were in general positive, whereas employers expressed a more negative attitude when the questions were more specific. Employers also had more positive attitudes toward hiring individuals with physical disabilities than with mental disabilities (56).

In an American survey study, half as many of individuals with disabilities believed that they could get a job compared to individuals without disabilities but did not differ from others regarding their willingness to work or what kind of jobs they preferred (74). In a Swedish interview study, 16% of individuals with a reduced work ability had encountered negative attitudes from an employer on the basis of their disability, whereas 9% reported that they did not get a job that they applied for because of, despite sufficient qualifications, due to their disability, despite sufficient qualifications, (75).

The central propositions of the segmented labour market theory is that there are identifiable segments within the labour market and that there are barriers that prohibit mobility between these segments (76). Due to the potential existence of such mobility barriers, it might be difficult for individuals with long-term sick leave experience to escape poor working

conditions if a job change is to a very similar job. Schmutte (43) followed workers in the U.S. over a ten-year period and analysed their mobility between industries and occupations. He found support for the existence of “segments” based on the industry and occupation, and he found that the mobility among these segments was limited. These mobility boundaries might be the result of an incomplete portability of skills, missing information about job opportunities, and/or institutional barriers (43).

For a job change to have a positive impact on work ability and contribute to a longer working life among individuals with a history of long-term sick leave, the new job should imply a change of work environment and the demands put on the employee. An American register and survey study showed that the proportion of individuals with disabilities varied among occupations. The disabled are underrepresented in occupations demanding knowledge in communication and management and overrepresented in entry level jobs, unqualified jobs, physical work and high-risk occupations (77).

To remain in a non-preferred employment and experience an inability to obtain another job, which is called “being locked-in”, increases the risk of ill health (78). Individuals who lack the ability or the resources to change jobs are at greater risk of being locked in and thereby experiencing a further reduction in health.

2.5.6 Predictors of Job change among individuals with and without poor health

A few studies have focused on the predictors of job change in the general population (38, 70, 79-87), whereas there is a lack of studies focusing on job change among individuals with a history of long-term sick leave or with limited work ability. However, there are a few studies of re-employment after retirement/dismissal due to ill health (11, 88-90). This type of re-employment can be seen as a form of job change as these individuals leave one job due to ill health and then change to another job.

2.5.6.1 Individual predictors

In several longitudinal studies, young individuals were more likely than older individuals to change jobs without focusing on poor health or reduced work ability (38, 91, 92). Shniper suggests that older individuals have invested more in an occupation through training and experience, and they have more to lose in a career change than younger individuals (92). Consistent with studies of job change in the general population, a longitudinal study on ill-

health retirees in UK found that a young age was a predictor for re-employment (88). A young age was also found to be a predictor of finding a new job among individuals who had been dismissed for long-term sick leave in a cross-sectional study (11).

In a longitudinal study of the determinants of mobility in the populations of four Nordic welfare states, higher education was associated with an increased probability of workplace mobility in Sweden but not in Finland, Denmark or Norway. Higher education also increased the probability of an industry change in Sweden, as well as in Finland and Denmark (38). In the study involving individuals who were dismissed because of long-term sick leave discussed above, high education level was also found to be a predictor for finding a new job after long-term sick leave (11). Contrary to these studies, a study from the United States found that individuals with a high education were more likely to remain in their current occupation than individuals with low education attainment (79). That study argued that such a relationship might be due to a higher education level, which could make it easier for an individual to find a more fitting job in the beginning of their career, thereby making the individual less likely to change jobs later on (79). The difference in results between these studies might be due to the different type of mobility studied, as the former studied a change in workplace mobility and the latter a change in occupation.

In the general population of Sweden, the probability of workplace mobility was higher among natives than among non-natives (38). Individuals who are not native to a country also have a greater risk of mobility out of employment than natives (38). In a longitudinal study conducted in the U.S., downward mobility was more common among immigrants than natives (81), an association that was also found among emigrants in Spain (82).

Being married can decrease the probability of job change compared to being single, which is a finding that has been reported in several longitudinal studies that did not focus on individuals with poor health. Individuals with children are even less likely than individuals without children to change jobs (38, 79, 83). In a cross-sectional study on the predictors of re-employment after ill health retirement among teachers in Scotland, Brown et al. found that having dependents increased the probability of re-employment, regardless of whether it was the same job or a different job (89).

2.5.6.2 *Workplace predictors*

In the general population, public sector employees, including those in public administration, education and health care, have been shown to be less likely to change jobs than employees in the private sector (38, 80). In a report on labour market mobility in four Nordic countries, employees at large workplaces were less likely to change their workplace than individuals employed at small workplaces (38).

Temporary employment has been found to be a strong predictor for job change in the general population (38, 70). de Lange et. al. reported that reduced job satisfaction was a predictor of job change in a longitudinal study of workers in Belgium by (86). High demands and low control at work were also predictors of job change in longitudinal studies (84-86). However, high control (autonomy) was found to be a predictor of job mobility in a longitudinal study involving civil servants from the Swedish National Labour Market Administration (87). These differences in results might be explained by the fact that the latter study included only civil servants, whereas the former study included individuals from all sectors.

In conclusion, those studies investigating job change among individuals with long-term sick leave experience or poor health have focused on re-employment after leaving work due to ill health. They have been performed on a limited numbers of individuals and do not always distinguish between individuals who return to the same job and individuals who return to a different job. It is uncertain whether the predictors are the same for individuals that change jobs before entering ill-health retirement.

2.5.7 Predictors of exit from the labour market among individuals with poor health

Studies of exit from work among individuals on long-term sick leave or with poor health have focused on disability pension. Longitudinal studies have found that older age employees are more likely to receive a disability pension (88, 93, 94). Having a non-Swedish origin has also been found to be a predictor of disability pension in Sweden among individuals on long-term sick leave (94) and among young people with musculoskeletal problems (95).

Previous history of long-term sick leave (93, 95), low income (101) and lower levels of education have been found to increase the risk of disability pension (96, 97). Falkstedt et al. found evidence that work conditions partly explained the association between low education and disability pension. Poor working conditions are more common among individuals with lower education levels (97).

In several longitudinal studies, high demands, low control and low support have been associated with a lower probability of returning to work and an increased probability of receiving a disability pension. Christiansen et. al compiled the results from nine Danish studies on the predictors of early retirement and concluded that low levels of control and little variety in work tasks were predictors of disability pension (98). Low levels of job control in combination with high job demands (99) and little control over working time were also risk factors for disability pension among public sector employees in Finland (100). High job demands were associated with a decreased probability of returning to work after low back injury in a retrospective longitudinal study on compensated low back injury cases in Finland (18).

Support from supervisors has been found to reduce the risk of disability pension (22, 101). Krause et al. also found that physical work conditions, such as physically demanding work, work in uncomfortable positions, noise at work, physical job strain, musculoskeletal strain and repetitive or continuous muscle strain, increased the probability of disability retirement (22).

There are several theoretical models describing the driving forces for job change. These focus mainly on individual choices among healthy employees. Empirical studies have shown that other factors, such as branch, employer commitment to support sick-listed or disabled employees, work conditions, and individual characteristics all contributed to an individual's work ability and their ability to remain on the labour market.

3 AIM

The overall aim of this thesis is to study the potential causes and effects of mobility on the labour market among individuals with reduced work ability or a history of long-term sick leave.

3.1 SPECIFIC AIMS

- To investigate whether job-to-job mobility affects the likelihood of remaining on the labour market among persons who have experienced long-term sick leave (study I).
- To study whether a healthy hire effect may contribute to the understanding of why workplaces differ in their levels of sick leave absences (study II).
- To examine the importance of individual and workplace characteristics for job change and exit among employed individuals on long-term sick leave (study III).
- To study the importance of work and employment conditions for job change and exit among employed individuals with a reduced work ability (study IV).

4 MATERIAL AND METHODS

Overview of study I-IV

An overview of the research questions, outcomes, samples, factors controlled for, analytical tools and the main findings are presented in table 1.

Table 1. Overview of study I-IV.

	Questions	Outcome and source	Sample	Factors controlled for	Analytical tool	Main findings
Study I	Does job-to-job mobility affects the likelihood of remaining on the labour market among persons who have experienced long-term sick leave?	Vocational situation 2-4 years after baseyear: Employment; no employment Register data	Individuals from the Swedish population that were: 20–60 years old; Employed during base year and the following year, n=2,931,640 – 3,072,358	Individual: age, education, marital status, children, income, previous sick leave, previous mobility, rate of sickness absence Work place: sector, branch	Logistic regression	Individuals with more than 180 days' sick leave who changed jobs were more likely to have a job later compared with those who did not change jobs.
Study II	Do workplace differences in terms of sickness absence levels reflect a healthy hire effect?	Previous sickness absence among recruits: 0 days; 1-180 days; 181-365 days Register data	Recruits to all workplaces in Sweden with more than 5 employees in 2006, n= 747,236	Individual: age, education, occupation Workplace: sector, educational level, average age, number of employees, gender composition	Multinomial logistic regression	Workplaces with a high average level of sickness absence were more likely than workplaces with a low level of sickness absence to hire employees with high sickness absence in the year preceding employment.
Study III	Are individual and workplace characteristics associated with job change and exit among employed individuals on long-term sick leave?	Mobility 2006-2008: Same job; job change; no employment Register data	Individuals from the Swedish population that were: 20–62 years old; employed during baseyear; more than 180 days of sick leave during the baseyear, n= 58,609	Age, marital status, children, education, previous sick leave, previous mobility, country of origin. Part-time sick leave. Average age, number of employees, sector, gender composition, educational level at the work place	Multinomial logistic regression	Both individual and workplace characteristics were associated with job change and exit among individuals who had been on long-term sick leave.
Study IV	Are work and employment conditions associated with job change and exit among employed individuals with reduced work ability?	Mobility 2006-2010: Same job; job change; no employment Questionnaire, linked register data	Respondents of The Stockholm Public Health Cohort 2006 that were: Employed; 18 - 60 years old; had reduced work ability, n= 2,888	Age, marital status, education, country of origin, sector	Multinomial logistic regression	Temporary employment predicted both exit and job change. Low job control (women) was associated with exit but not with job change.

4.1 DATA SOURCES

4.1.1 Studies I–III: LISA

In studies I–III, the data were collected from LISA, a longitudinal database of Swedish registers of social insurance and labour market studies established by Statistics Sweden, the National Insurance Administration and the Swedish Agency for Innovation Systems (VINNOVA). LISA contains detailed information about sickness, insurance, parental insurance, unemployment security, basic economic data and key figures for companies. The database is updated annually with a 3-year delay and includes all registered residents in Sweden aged 16 years and older. The individual is the primary object, but it is possible to make connections to family, workplace and companies.

4.1.2 Study IV: The Stockholm Public Health Cohort

In study IV, the data were collected from The Stockholm Public Health Cohort of 2006, which was followed up in 2010. The Stockholm Public Health Cohort consists of randomly selected individuals over 18 years of age from the population of Stockholm County. The cohort was set up within the Stockholm County Council public health surveys of 2002, 2006 and 2010, with follow-ups for health, lifestyle and social outcomes (102). In the present study, information from postal or web-based questionnaires was sent out to participants who were recruited in 2006 and who were re-surveyed in 2010 was used. The questionnaires contained questions about health, labour market position, physical and psychosocial work environment, lifestyle, family, and demographic and socioeconomic characteristics. Additional data were derived from longitudinal administrative, health, and sociodemographic data registries.

4.2 DESIGN AND STUDY POPULATION

Study I

Study I was a longitudinal register study including individuals who were between 20 and 60 years old and who were employed during three different base years (1994, 1999 and 2004) and in each following year. The total number of women varied between 1,448,972 (1994) and 1,503,397 (2004). These numbers were comparable for men: 1,482,668 (1994) and 1,568,961 (2004). The study population was stratified into the following three categories based on the number of sick days during the base year: 0 days, 1–180 days and 181–365 days.

Study II

Study II was a register-based follow-up study including 747,236 individuals who had been recruited in 2006 from 106,650 Swedish workplaces with at least 5 employees (f = 385 369, m = 361 867). The workplaces were categorized into quartiles according to the average number of sick day absences in 2006: 0–4.9, 5–9.5, 9.6–13.3 and 13.4 or more days/year. Each participant was categorized based on their number of sick day absences in 2005 into one of the three following categories: 0 days, 1–180 days and 181–365 days.

Study III

Study III was a longitudinal register study including individuals in the Swedish population who in 2006 were 20–62 years old, employed, and had more than 180 days of sick leave during the base year, n=58,609 (f= 36,202, m=22,407).

Study IV

Study IV was a longitudinal cohort study based on survey information. Employees between 18 and 60 years of age from Stockholm were followed for a four-year period beginning in 2006, n=18,098 (f=10138, m=7959). The study population was stratified based on whether an individual had reduced work ability. At the 2010 follow up, 12,948 individuals remained, which included 1273 women and 778 men with reduced work ability in 2006.

4.3 DATA

4.3.1 Study I

Outcome

Vocational situation: The vocational situation is based on whether the individual was gainfully employed for 4 years after the base year. Individuals were classified as gainfully employed if they had worked for at least 1 hour per week in November; otherwise they were classified as non-employed. This is based on information that employers are obligated to provide to the Swedish Tax Agency.

Predictors

Job-to-job mobility: Data were collected from administrative registers at the Swedish Tax Agency. Job-to-job mobility was defined as a change in workplace during the year following the base year. A workplace is any address, dwelling unit or group of dwelling units in which some sort of economic activity is undertaken with at least one employee working at least 20 hours per week. A company can have several workplaces, but a workplace can only belong to one company. Employers in Sweden have an annual duty to report the salaries paid and the workplace identification numbers of all employees to the tax authorities. Information on workplace identity is based on salaries paid during one week in November.

Covariates

Age: Age was calculated from the birth year according to the individual's Swedish Social Security number.

Marital status and children: Information regarding marital status and the number of children was collected from national registrations conducted by the Swedish Tax Agency. In these registers, family identifications were created from the social security number of the oldest individual from a maximum of two generations who are connected to one another (married, registered partners, cohabitants with common children, parents or foster parents). Children are registered at the same property as the parents and are connected to their family identification. If the parents are divorced, the children are connected to the same family identification as the parent with whom they are nationally registered. In this study, marital status is categorized as unmarried, married/registered partner, divorcee or widow. Three categories were created based on the number of children living at home (0, 1–2, and ≥ 3).

Education: Information on education was collected from the Swedish Register of Education. For each individual and each year, the highest level of education reached at any formal institute of education in Sweden is registered. Education is classified according to the Swedish Nomenclature of Education (SUN), which was adjusted to the international Standard Classification of Education (ISCED). Elementary school/pre-secondary (<9 years), secondary school (2–3 years), and university/post-secondary were the categories used.

Previous sick leave: Data on sick benefits paid by the SSIA were used as a measure of sickness absence. Individuals with no days of sickness-related absence may include those

who had been off work for up to 14 days. Sickness absence is measured in net and gross days. One gross day of absence might mean being absent 100%, 75% or 25% of the day. With net days, one day of absence means 100% of a day, two days with 50% absence or four days with 25% absence. Net days are used, which means that one day of sickness absence encompasses one day with full sickness benefit, or two days with 50% or four days with 25% benefits. Three categories were created based on the number of days on sick leave during the year prior to the base year: 0 days, 1–180 days, and 181–365 days.

Previous mobility: To identify individuals with a pattern of frequent job changes, mobility the year prior to the base year was used as a confounder. Previous job change was defined as having a workplace identity at the base year that was different from the workplace identity for the year prior to the base year (see information on workplace and job change on page 23). Previous non-employment was defined as not having a workplace identity the year prior to the base year.

Branch of employer: Information on employment branch was collected from Statistics Sweden's company register with information from the Swedish Tax Agency. Based on the activities performed, every company is assigned one or several activity codes under the Swedish Standard Industrial Classification. This classification is based on the EU's recommended standard NACE (Nomenclature statistique des activités économiques dans la Communauté européenne) (103). The two-digit (short) version was used.

Sector: Information regarding sector is connected to the company where the individual is employed. Information about companies was collected during a week in November. Therefore, if the individual has several jobs during the year, the sector of the company from which the individual received the major part of his or her salary in November was used. Data regarding sector were collected from Statistics Sweden's Business Register. Based on the legal ownership and type of activity, companies in Sweden are given sector codes. Originally, 10 sectors were identified in the register. In these studies, these categories were merged into municipal (primary municipal administration, county councils and municipally owned companies and organizations), public/state (public administration, public utility companies and government-owned companies and organizations), private (stock corporations and other non-public companies) and other (any other organization).

Income: Income refers to disposable income and is the individual's contribution to household income. Disposable income is what remains from an individual's salary and benefits from the state and local authorities after taxes and deductions. Income was used as a continuous variable.

Rate of sickness absence: The dichotomous variable part-time sick leave was determined using net and gross days on sick leave. With net days, 2 days of part-time sick leave were merged into 1 day of sick leave. With gross days, every day of sick leave was counted as a whole day, regardless of whether the individual was absent for part of the day or the entire working day. If the sum of net days was equal to the sum of gross days, then the individual was considered to have been on full-time sick leave. If they were not equal, it implied at least one day of part-time sick leave during the year.

4.3.2 Study II

Outcome

Sickness absence at the workplace: For all workplaces, the average number of days of sickness benefits paid by the SSIA per employee and year was computed by adding together the days of sickness benefits for all employees with an identical workplace identification number each year and dividing that number by the number of employees at the workplace. The average sickness absence at a workplace was divided into the following quartiles: 0–4.9, 5–9.5, 9.6–13.3, and 13.4 or more days/year. Information on sickness-related absence at the workplace level was based on data from the administrative registers obtained from the Swedish Tax Agency.

Predictors

Individual levels of sickness absence: For all employees, the days of sickness absence/year were computed and divided into three categories: 0 days of sickness absence; 1–180 days of sickness absence; and 181–365 days of sickness absence (see information on sick leave at page 24).

Covariates

Age and education: see page 24, **Sector:** see page 25

Average age at the workplace: Information on an employee's age was collected from national registers (see Age at page 24). The mean age of all employees with the same workplace identification was calculated. We divided the average age at the workplace into quartiles.

Number of employees at the workplace: The number of employees was used to measure the size of the workplace. The number was computed by adding up all the individuals with the same workplace identities. Based on EU standards, four categories were created: 5–9 employees, 10–49 employees, 50–249 employees, and 250 or more employees (http://ec.europa.eu/enterprise/policies/sme/files/sme_definition/sme_user_guide_en.pdf).

Educational level at the workplace: The highest educational level is recorded each year for each person registered in Sweden (see Education on page 24). The proportion with the highest educational level of post-secondary school at each workplace was computed. Based on this value, the workplaces were divided into 3 groups: High (33% or fewer of the employees had secondary school as highest education), Middle (between 34% and 66% of employees had such education), and Low (more than 66% of employees had secondary school as highest education).

Workplace gender composition: The proportion of women at each workplace was computed. The workplaces were divided into 3 groups: male-dominated (0–40% women), gender-integrated (41–60% women), and female-dominated (61–100% women).

Occupation: Each person's occupation is classified based on a Swedish version of the ISCO 88 (COM), a European classification of occupations. This European classification is based on combined knowledge of experts in occupational classification with practical considerations for coding occupational information collected by census and survey techniques. Jobs are grouped into occupations according to the degree of similarity in their constituent tasks and duties. The ISCO-88 organizes occupations in a hierarchical framework on four levels. We have used the most detailed level that contains 355 different occupational groups.

4.3.3 Study III

Outcome

Same job: Individuals with a workplace identification number in 2008 that was the same as that in 2006 were classified as having the same job.

Job change: Job change was defined as having a workplace identification number in 2008 that was different from that in 2006 (see information on workplace at page 24).

Exit from the labour market: Exit was defined as no longer having employment following long-term sick leave, regardless of whether it is due to unemployment, early retirement or any other reason. Exit was determined to have occurred when an individual did not have a workplace identity in 2008, which might imply either a temporary or a permanent exit from the labour market.

Predictors

Age, marital status and children and education: See page 24 above.

Previous sick leave: See page 24 above.

Previous mobility: See page 25 above.

Country of origin: Country of origin refers to the birth country of the individual.

Individuals born abroad whose mothers were registered citizens of Sweden at the time of their birth were assigned Sweden as their country of birth. Country of origin was categorized into five groups: Natives, Other Nordic, Other European or North American, Other, and Unknown.

Part-time sick leave: See Rate of sickness absence on page 26 above.

Size of the workplace, Gender composition, Average age at the workplace, Educational level at the workplace: See page 27 above.

Sector: See page 25 above.

4.3.4 Study IV

Outcome

Same job: Individuals who in 2010 answered “yes” to the question, “Do you have the same job and employment conditions today as in 2006?” were classified as having the same job.

Job change: Individuals who in 2010 answered “no” to the question, “Do you have the same job and employment conditions today as in 2006?” and also answered the question “What is your main activity right now?” with “employment,” “temporary employment” or “self-employment” were classified as having changed jobs.

Exit from the labour market: Individuals who in 2010 answered the question “What is your main activity right now?” with a response other than “employment,” “temporary employment” or “self-employment” were classified as having no employment (i.e., as having exited the labour market).

Predictors

Physical burden: The respondents were asked about the physical burden in their job during the previous 12 months. The response alternatives were as follows: “Sedentary work (you have a mainly sedentary job)”; “Easy, somewhat mobile work (you have a job in which you walk quite a lot but that does not include heavy lifting)”; “Moderately physically demanding work (you walk a lot and also lift things or use stairs)”; and “Physically demanding work (you have a physically demanding job that includes heavy lifting and substantial physical strain)”. “Moderately physically demanding work” and “Physically demanding work” were merged into one category.

Type of employment contract: Individuals who answered the question in the 2006 survey, “What is your main activity right now?” with “Temporary employment” were classified as having temporary employment. Those who answered “Permanent employment” were classified as having permanent employment.

Support from manager: Support from the manager was measured with the question “Do you feel support from your manager when facing problems at work?” Answers were given on a four-point scale: “Yes, often/always”; “Yes, sometimes”; “No, seldom”; and “No,

never.” The responses were categorized into Support (“Yes, often/always” and “Yes, sometimes”) and Low/No support (“No, seldom” and “No, never”).

Support from co-workers: The question “Do you feel support from your co-workers when facing problems at work” used the same response scale as the previously described and was similarly categorized into Support (“Yes, often/always” and “Yes, sometimes”) and Low/No support (“No, seldom” and “No, never”).

Demands: Demands were measured with two items: “Is there enough time to perform your work tasks?” and “Does your job involve contradictory demands?” Answers were given on a four-point scale: “Yes, often/always”; “Yes, sometimes”; “No, seldom”; and “No, never.” If the question regarding sufficient task time was answered with “No, seldom” or “No, never enough time” and/or the question about demands was answered with “Yes, always” or “Yes, sometimes contradictory demands,” the individual’s demands were categorized as high. If either of the two questions were answered with either of the two response alternatives indicating high demands, the individual’s demands were categorized as low.

Control: Control was measured with three items: “Do you have the opportunity to learn new things in your job,” “Do you have the freedom to decide what to do,” and “Do you have the freedom to decide how to do it.” If any of these questions were answered with “No, seldom” or “No, never,” then the individual’s control was categorized as low. If none of the questions were answered with “No, seldom” or “No, never,” the individual’s control was categorized as high.

Covariates

Age and education: see page 24. **Sector:** see page 25, **Country of origin:** See page 28.

Marital status: See page 24. In study IV, Marital status was categorized as Married or Unmarried (including widows and divorcees).

4.4 STATISTICAL ANALYSES

4.4.1 Study I: Logistic regression

In study I, the likelihood that individuals on long-term sick leave were later employed depending on whether they changed their workplace during the year of long-term sick leave

or the following year was analysed using logistic regression analysis. A 95% confidence interval (CI) was computed for each OR. Separate analyses were performed for men and women. Age, sector, industry, children, marital status, education, income, rate of sick leave, earlier sick leave and earlier mobility were used as confounders.

4.4.2 Studies II-IV: Multinomial logistic regression

In studies II, III and IV, the data were analysed using multinomial logistic regression, which handles nominal outcome variables with more than two levels. A 95% confidence interval (CI) was computed for each OR. Separate analyses were performed for males and females.

In study II, the odds ratio (OR) was calculated for a workplace with high average sickness absence compared with a workplace with a low sickness absence, to hiring a recruit with a history of multiple days of sickness absence.

In study III, the odds ratios for being re-employed at another workplace or having no employment versus being employed at the same workplace in 2006 as in 2008 were calculated with regard to the predictors.

In study IV, the individual characteristics and work conditions were collected in the baseline year of 2006. Information regarding employment status was collected from a follow up survey administered in 2010. The odds ratios were calculated for job changes or having no employment in 2010 versus being employed at the same job in 2006 as in 2010, depending on the work conditions (employment contract, physical burden, support, demands and control).

4.5 ETHICAL CONSIDERATIONS

Ethical approval for studies I-III was obtained from the Ethics Review Board in Linköping, Dnr: 169-09. Written informed consent was not obtained, as the material on the total population is de-identified. Therefore, it was not possible to reach the participants. Thus, it was also impossible to identify any of the individuals, and the study does not imply any active participation. Ethical approval for study IV was obtained from the Ethics review board in Stockholm, Dnr: 2012/1808-31/5. Participants in The Stockholm Public Health

Cohort have given their informed consent to the preservation of their national registration number (NRN), future contacts and record linkages.

5 RESULTS

5.1 STUDY I

Research question: Does job-to job mobility affect the likelihood of remaining on the labour market among persons who have experienced long-term sick leave?

Women with more than 180 days of sick leave who changed workplaces were more likely to have a job later than women who did not change jobs. For men, the association was statistically significant with 1994 and 2004 as the base years, but not in the cohort from 1999. Among individuals without or with fewer days of sick leave, the association moves in the opposite direction; individuals who changed workplace were less likely to be employed later than individuals that stayed at the same workplace.

5.2 STUDY II

Research question: Do workplace differences in terms of sickness absence levels reflect a healthy hire effect?

Workplaces with a high average level of sickness absence were more likely than workplaces with a low level of sickness absence to hire employees with high sickness absence in the year preceding employment (men (OR= 7.1, 95% CI=6.5; 7.8), women (OR 8.5, 95% CI=7.8; 9.3)).

5.3 STUDY III

Research question: Are individual and workplace characteristics associated with labour market exit and job change among employed men and women on long-term sick leave?

Both individual and workplace characteristics were associated with job change and exit among individuals who had been on long-term sick leave. Some characteristics, such as previous mobility, having had full-time sick leave, and working in a workplace with few employees, were associated with both increased job change and exit. These circumstances might thus act as driving forces for leaving a present workplace among individuals who have been on long-term sick leave. Other conditions showed different associations with the types of mobility. Younger age was associated with a higher likelihood for job change, whereas older age was associated with a higher likelihood to exit.

5.4 STUDY IV

Research question: Are work conditions associated with labour market exit and job change among employed individuals with reduced work ability?

The results show that the type of employment contract has a profound impact on employment retention for people with reduced work ability. Among women, low job control is associated with exit but not with an increased likelihood to change jobs.

6 DISCUSSION

This thesis contributes to the knowledge on mobility in the labour market among individuals with reduced work ability or a history of long-term sick leave. The areas studied included the following:

- whether job-to-job mobility affects the likelihood of remaining on the labour market among persons who have a history of long-term sick leave,
- whether a healthy hire effect may contribute to understanding why workplaces differ in sickness absence levels, and
- the importance of individual and workplace characteristics – as well as work conditions – for job change and exit among employed individuals on long-term sick leave or with reduced work ability.

The main findings from the studies are discussed below.

6.1 JOB-TO-JOB MOBILITY AND FUTURE LABOUR MARKET SITUATION

The results from study I show that, in all studied time periods, women had an increased probability of staying in employment if they had changed jobs than if they had not. Among men, this association was present in two of the three studied time periods, but in the third time period, no association was found. Among the individuals with a history of 1–180 days of sick leave and among individuals without a history of sick leave, changing jobs was associated with a decreased probability of being employed later.

There is a dearth of studies on the association between job-to-job mobility and the future employment of individuals with a history of long-term sick leave with which we can compare our results. However, job-to-job mobility has been suggested as a possible rehabilitation strategy and as a way of retaining work ability (104, 105), and it has been reported as a reason for being able to return to work after long-term sick leave (67).

Previous studies have reported an increased risk of downward mobility among individuals with poor health (106, 107), which indicates that the group that changed jobs in the present study includes a share of individuals who experienced downward mobility. According to the push and pull theory, job change might result from push factors that repel the individual from the original workplace or pull factors that attract the individual to a new workplace (48). Downward mobility is likely due to push factors that make it hard to remain employed at the old job, unless the new, less-qualified job is perceived as a better match for the individual's abilities, which might then act as a pull factor.

Individuals with temporary contract employment were reported to be more likely to change jobs (38); therefore, it is likely that a higher proportion of job changers had temporary employment rather than stable employment. Temporary employment is associated with poor health (108, 109) and future unemployment (110, 111). Considering that we continued to find an association between job change and prolonged labour market participation – and despite including downward changes and temporary employment – job changes among individuals with a history of long-term sick leave were likely driven by negative push factors out of previous work, as well as by a search for a better matching job. Thus, a job change might be a way of prolonging labour market participation.

An alternative explanation as to why job change was associated with an increased likelihood of remaining in employment might be that individuals with long-term sick leave who changed jobs may have better health than those who did not change jobs. These individuals may therefore have better preconditions for remaining in the labour market. We attempted to account for the differences in health between individuals who changed jobs and those who did not by adjusting for the number of days of sick leave during the year before base year, assuming that those with poor health had a longer history of sick leave. However, the adjustment for earlier days on sick leave did not affect the results.

The effect of job-to-job mobility on the likelihood of an individual with many days of sick leave remaining in the labour market might differ in welfare systems with different rules and different incentives for mobility. However, in this study, a similar pattern emerged over a time period of 15 years, despite variations in sick leave and unemployment levels. However, it was uncertain whether the results would have been similar if the study had been performed after 2008 when stronger incentives for job change were introduced into the insurance system.

6.2 HEALTH SELECTION AS AN EXPLANATION FOR DIFFERENCES IN SICKNESS ABSENCE BETWEEN WORKPLACES

Physical and psychosocial work conditions and managerial leadership have been found to be associated with sickness absence among employees (112-114) and differences in those aspects are used to explain differences in sickness absence between workplaces. The results from study II show that workplaces with high average levels of sick leave are more likely to recruit individuals who were previously on long-term sick leave than workplaces with low average levels of sick leave. As sick leave is a strong predictor for future sick leave (4, 8, 93, 115-117), the results indicate that differences between the average sick leave levels at workplaces can be partly explained by a selection for health in the workplace, which is in line with a study by Virtanen et al. (2008) who failed to explain the differences in sickness absence among four factories of a food industry company using common risk factors such as health, socioeconomic characteristics and working conditions. Those authors proposed differences in practices that develop in local work communities, called “sickness absence habitus” as an explanation (118). One such habitus in local work communities may be different hiring patterns leading to different sickness absence by a healthy hire effect. Such different hiring patterns might be caused by different views among employers on the hiring of individuals with disabilities or a history of long-term sick leave. Employers reporting positive experiences with employees with disabilities were more positive regarding hiring individuals with disabilities (56). Employers that had successfully hired individuals with disabilities were characterized by focusing on the performance results and not on the disability. Such employers were also characterized by focusing on matching capacity with work tasks, a focus on the most important functions and having the required knowledge for supervising a diversified labour force (61).

The different hiring patterns could also be attributed to individuals with poor health who prefer certain types of jobs or workplaces while avoiding others or because of individuals with specialized education and/or experience only within a certain field who are limited to a certain segment of the labour market when looking for jobs. The labour market is segmented and there are mobility barriers between the segments, such as incomplete portability of skills (76). Certain sectors, such as health care, have primarily woman applicants, who have higher levels of sick leave than men, i.e., the recruitment possibilities in such sectors might be limited to a group of individuals who previously had a high number of sick leave absences.

6.3 INDIVIDUAL AND WORKPLACE CHARACTERISTICS AS PREDICTORS OF JOB MOBILITY

The results of study III show that workplace characteristics in general seem to be associated with both job change and exit in the same direction. Women working at a small workplace compared to a larger, a male-dominated workplace, or workers working at a workplace with high average education, had an increased likelihood for both outcomes. This finding indicates that those are characteristics that act as push-factors that might make it hard to remain at an individual's present workplace.

Working at a large workplace was found to lower the odds of an individual changing their workplace among the general populations in a Nordic study (38). Individuals employed at large workplaces might have greater opportunities to adapt their work by changing their working hours or tasks (38). In a Canadian study, small workplaces were shown to have fewer opportunities and economic resources to adapt the workplace to disabled employees (119). In that study, firm size was inversely related to the duration of disability, and RTW rates were lower in small workplaces. Injured workers are more likely to find re-employment in other workplaces or remain unemployed (119). Many employers have indicated that it is not financially viable to retain employees who cannot return to their initial work assignments (120).

Women working in male-dominated occupations suffered from distress more frequently and reported higher anxiety levels than men in the same occupation (121, 122), which might explain the greater need for leaving the workplace. Perhaps women in male-dominated jobs also have fewer opportunities to adjust their work to accommodate their health.

The finding that working at workplaces with a high average education level increases the likelihood of mobility among people with high a level of sickness absence is somewhat puzzling. One possible explanation is that employees with a high education level often have opportunities to adjust their work to accommodate their health (123). In some cases, illness does not lead to sickness-related absence. Individuals with a high education level and a history of long-term sick leave might thus be a selected group with poor health or different types of health problems in comparison with individuals that have similar levels of sick leave at a workplace with lower average education.

Whether mobile individuals change jobs or exit the labour market was associated with individual characteristics in study III. Being young or middle aged, having no sickness absence in the preceding base year, and being more highly educated (women) were characteristics that were associated with job change. An association between young age and job change has previously been found in studies of the general population (38, 91, 92, 124). The finding that young individuals are more likely to change jobs might result because young individuals are working their way upwards in their career progression and are driven by pull factors to change to a new job. The higher probability of job change among younger individuals than older individuals might also be due to a decreased willingness among employers to employ older workers and also because older individuals might be more resistant to change.

The increased likelihood for job change among individuals who previously changed jobs may be related to that many of them might have been in temporary employment. A lack of sick leave before the base year was associated with an increased likelihood for job change. This finding might be attributed to individuals with comparably better health than individuals who were on sick leave two years in a row and thereby had better opportunities to find new employment.

Exit from the labour market, in contrast to job change, was associated with characteristics disconnected from working life, such as previously having been on sick leave, previous unemployment or having been on full-time rather than part-time sick leave, along with individual characteristics, such as an older age, lower level of education, and being of non-native origin. These are characteristics that have been found in previous studies to predict whether an individual would leave working life (4, 8, 18, 19, 22, 67, 93, 96, 115-117, 125-130).

6.4 WORK CONDITIONS AS PREDICTORS OF JOB MOBILITY

The results of study IV showed that temporary employment increased the likelihood for both labour market exit and job change among individuals with reduced work ability, which accords with results from a study on a Swedish sample (38).

One explanation for the association between temporary employment and both job change and exit might be that temporary workers are overrepresented in smaller firms, in hazardous

occupations with inferior working conditions and often with poor or little compliance with employment regulations. Temporary work agencies might also have limited options or no system for providing modified work or accommodations after injuries, and complex employment relationships might create uncertainty regarding liability for injury and RTW (119, 131).

Another contributing factor might be that being in temporary employment lowers the perceived value of the job and thereby increases the tendency to change jobs as well as leave the labour market (110, 111). As previously described, the turnover model indicates that an employee can be expected to change jobs when the value of a new job exceeds the value of the old job as well as the expected utility from exiting the labour market (51). A few studies (132, 133) report that workers seek temporary work to maximize flexibility and to obtain opportunities to develop new skills and experience. These positive aspects have been experienced by higher qualified employees who voluntarily chose temporary employment. However, leaving a job might not be a choice for those employees with limited work ability and temporary employment. Job insecurity increases the odds ratio for job loss during sick leave (134). The possibilities for the temporarily employed to return to work at their last employer is limited, as they have no permanent workplace to return to. Vocational rehabilitation may not be well organized, as there is often little or no economic support for such employees. Temporarily employed workers have been found to face a high risk of being replaced when reporting injuries (135).

Furthermore, employment insecurity might have contributed to further reductions in health over the follow-up period, thereby increasing the likelihood of exit. It is also possible that individuals with temporary employment had worse health to begin with compared to individuals with permanent employment. In previous studies, temporary employment has been found to predict poor health (108, 109), but individuals with poor health are more likely to be selected for temporary employment (136).

One reason for why the association between low job control and exit was found only among women in study IV might be that the labour market is gender segregated and the prevalence of men and women is different in different types of work. Women are more often employed within health care (40). The combination of poor health and experiencing low control might make it more difficult to remain in this type of work with high levels of human contact than in workplaces in which men are more commonly employed. The results are partly in

contrast to previous studies (22, 99, 137-139) that found an association between low job control and exit among both sexes. An explanation might be that different populations were studied. Previous studies included older individuals (22, 137, 140), those in physically demanding occupations (138) or only public employees (99). In the present study, individuals with a reduced work ability in the base year were examined.

The results of study IV give some support for HWE, as poor working conditions in the form of job insecurity and low control (women) influence individuals with reduced work ability to become mobile. One reason that other work conditions did not predict mobility in the present study might be the responsibilities placed on employers to adapt work and thereby decrease the need to leave the job for employees. Another explanation for the lack of association between work conditions and job change might be that many individuals with reduced work ability choose to remain at their present job because of loyalty to their employer or because of the costs of leaving (in the form of lost employment security) are perceived as too high, which is in accordance with the organizational commitment theory suggested by Allen and Mayer (53). According to the Employment Protection Law, individuals who are most recently recruited are the first to be fired during layoffs (141). Thus, changing jobs might mean losing the perceived security of several years of employment with the same employer.

The lack of association between work conditions and job change might also be due to that individuals with poor working conditions often perceive themselves as unable to obtain another job, a state described as being “locked in” (78).

6.5 METHODOLOGICAL CONSIDERATIONS

6.5.1 Strengths

In studies I-III, register data were used. Sweden has a very comprehensive and well-developed register system, making it possible to follow the population over time and to make adjustments for a vast amount of factors. Official registers are produced through administrative processes, and the data are typically of good quality and have good coverage. In Study IV, the data was collected from The Stockholm Public Health Cohort 2006 with follow-up in 2010. The response rate was relatively high compared with similar studies (response rate 61.3%, follow-up response rate 77.7%) (102). All studies in this dissertation used a longitudinal design.

6.5.2 Limitations

Some of the challenges with research on large databases are missing data, data accuracy and the validity and statistical effects of large samples. Some of the predictors and confounders at the workplace level, such as average age and education level, were created by aggregating the individual data; this eventually increases the effects of missing data. Missing cases are another factor that might impact the results. However, when database participation is connected to reimbursement, such as health insurance in this case, the number of missing cases is reduced (142).

As information about health and employment status were lacking in studies I and III, previous sick leave was used as a proxy for health, and previous history of job change was used as a proxy of employment status. The foundation for the choice of using previous job change as a proxy for employment status is that job change is more common among those with temporary rather than long-term employment contracts. As expected, previous job change showed the same pattern that would be expected with temporary employment contracts, i.e., an increased likelihood for both job change and exit. However, a previous job change will likely misclassify individuals on temporary employment by including those with stable employment contracts who had previously changed jobs. The measure of previous job change may also misclassify individuals on temporary job contracts by not including temporary employees with contracts lasting for more than two years. However, these misclassifications would mean that the association found between temporary employment and job mobility in study III would be even higher (as opposed to lower).

In studies I and III, we lacked information regarding health. We therefore used previous sick leave as a proxy for health. Among those individuals without previous sick leave, there might have been a share of individuals who were at work despite having health problems. These individuals would have been misclassified and are thereby diluting the association between previous sick leave and exit found in study III.

In studies I-III, we did not have access to information on diagnoses. In some studies, the likelihood of returning to work after sickness absence has been found to vary depending on the type of diagnosis (4, 89, 143), whereas others have not found this association (67). It is possible that the individual characteristics associated with a job change and labour market exit varies depending on the diagnosis. This variable might be included in future studies.

A potential problem in studies I-III is that a large sample size may mean small effects that may turn out to be statistically significant although they are not practically relevant. However, the descriptive data shows differences among the distributions. For example, among women with a history of long-term sick leave, 34.9% of those that changed jobs were later not employed compared with 42.6% of those who stayed in the same job. Comparable figures were observed for men (35.5% vs. 45.0%, with 1994 as the base year).

The definition of job change in studies I-III is changing from one workplace to another, which may involve moving to a similar job or to a different job and might be perceived as changing to a more or less preferable job. Disabled workers are more likely to experience involuntary job changes than nondisabled workers (43). The positive effects of job change on health have been found to be affected by the characteristics of the change, such as whether the change was desirable (or not) (144). In this thesis, information was not available on the characteristics of job changes and motives. It is possible that the associations between the individual and workplace characteristics and job change, and also the association between job change and prolonged labour market participation might be affected by the cause of the change, an aspect that should be included in future studies.

In study IV, information regarding job change was collected by questioning whether the subjects had the same job and employment conditions today as in 2006. This question contains two questions in one, and the respondents can only answer yes or no. Not having the same job might imply a change in employer, workplace and/or work tasks (fig. 1), and it is not possible to distinguish between these kinds of changes in this study. If they are on the same job but have changed from temporary to permanent employment, it is difficult to know whether they have answered the question as yes or no. However, it is likely that the question has captured a general sense regarding whether a change has occurred.

In study IV, only individuals from Stockholm County were included in the sample. In comparison to more rural areas, Stockholm County has more available jobs but also more applicants for each job. It is possible that the importance of work conditions for job change and exit among individuals with limited work ability are affected by the supply of available jobs in the region.

During the time period investigated in these studies, there was little impetus for job change among individuals on long-term sick leave in the insurance system. Strong incentives for

mobility were introduced into the insurance system in 2008, and we do not know whether the mobility patterns were the same after this time period.

6.6 FUTURE STUDIES

There are many assumptions about this subject, including beliefs that individuals listed as sick do not change jobs and that long-time sick leave is reduced by regulations in the insurance system forcing job change. The dearth of studies actually investigating this subject is striking. Hopefully, the present studies have shed a glimpse of light on this subject. Nonetheless, there are many aspects of this subject that remain to be explored. One of these is the role of motivation and voluntarism. Does job change have positive effects on the future labour market participation, even when the initiative comes from outside the individual? If so, how might job changes be facilitated among individuals with experience of long-term sick leave or reduced work ability? Another important topic to study involves the characteristics of the change. Job changes can be in an upward, horizontal or downward direction. Individuals in this group with poor health are more likely to experience downward changes than healthy individuals, and it is unclear how that might affect the outcome of these changes? Another interesting line of research to follow is to examine more closely those workplaces that recruit individuals with a history of long-term sick leave. We know from study II that such employees have a higher number of days on sick leave, but little is known about other characteristics of such workplaces. The outflow of individuals with a history of long-term sick leave from different workplaces is another important topic for future studies.

6.7 CONCLUSIONS

The knowledge regarding mobility on the labour market among individuals with reduced work ability or experience of long-term sick leave is sparse. In this thesis, it is shown that job change might be a way for members of this group to remain on the labour market. However, our results indicate that those who change jobs among those with experience of long-term sick leave are likely to be hired at workplaces with high average sick leave. The positive effects that are found herein that are related to job change thus may not be lasting.

Poor work conditions, as measured in this thesis, do not seem to be a strong predictor of job change in this group notwithstanding that the need for change should increase with poor work

conditions among individuals with limited work abilities. That those with high sickness absence who change jobs seem to end up in workplaces with high levels of average sick leave may indicate that there is a form of a “locked-in effect”. Being locked in typically refers to being in an unwanted job with no perceived possibility of changing jobs. An extension of the concept that is indicated by our study might be the existence of a locked-in effect within segments of the labour market. If segmentation of the labour market prevents individuals with experience of long-term sick leave or with reduced work ability from changing to better matching jobs in which the work conditions or work tasks differ from the previous job, it is likely to limit job change as a means of prolonging labour market participation among individuals with a history of long-term sick leave or limited work ability.

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