An empirical study of age discrimination in Norway and Germany

Büsch, Victoria; Dahl, Svenn-Aage; Dittrich, Dennis

Mitglied der
Leibniz-Gemeinschaft

gesis
Leibniz-Institut
für Sozialwissenschaften

An Empirical Study of Age Discrimination in Norway and Germany

powered by ScholarOne
Manuscript Central™

An Empirical Study of Age Discrimination in Norway and Germany

Victoria Büsch[a], Svenn-Åge Dahl[b], and Dennis A.V. Dittrich[c]

revised – July 2006

Using a questionnaire and a sample of students and personnel managers we establish the existence of age discrimination in the hiring process in Germany and Norway. As expected, age discrimination is more prominent in Germany where the hiring probability of equally qualified applicants is reduced by about 22 percentage points due to an age differential of 14 years as opposed to only 12 percentage points in Norway. Within both countries the tendency to discriminate does not differ between students and personnel managers and does not depend on the age of the decision maker.

Keywords: hiring decisions, older workers, demographic change

JEL-Classification: J14, J23, J71

a OTA Private University of Applied Sciences, Ernst Reuter Platz 10, D-10587 Berlin, GERMANY. Tel.: +49 30 9225 3547, Fax: +49 30 9225 3555, E-mail: victoria.buesch@otahochschule.de

b Institute for Research in Economics and Business Administration (SNF), Breiviksveien 40, N-5045 Bergen, NORWAY. Tel.: +47 55 95 95 04, Fax: +47 55 95 49 39. E-mail: SvennAage.Dahl@snf.no

c Corresponding author. University of Erfurt, faculty of political economics, Junior Professor of economic theory, Nordhäuser Str. 63, D-99089 Erfurt, GERMANY. Tel.: +49 361 737 4611, Fax: +49 361 737 4739, E-mail: dennis.dittrich@uni-erfurt.de

"The phenomenon of unemployment among older workers [...] is characterized less by the risk of becoming unemployed than by the problem of remaining unemployed and failing to find new work."   Frerichs and Naegele (1998, p. 59)

1. Introduction

In this article we present the results of a questionnaire study that we conducted to investigate whether applicants with same qualifications are treated differently in the selection process just on the grounds of age, and address age discrimination in hiring decisions in Germany and Norway. Are there differences in age discrimination between the two countries, and if such differences exist, can we explain them?

Discrimination is a situation in which individuals identical in regard to their productive ability are treated differently because of certain of their nonproductive characteristics. In perfectly competitive labor markets discrimination cannot persist. Labor markets seem, however, to be monopsonistic (Manning, 2003). The labor supply to the individual firm is not infinitely elastic. Workers have limited mobility and entry costs hinder other firms from competing for the labor pool in question. This imperfection in competition allows the monopsony to discriminate without being forced out of the market.

Age discrimination in labor markets is consequently defined as fewer opportunities of older workers not due to lower productivity but only due to their age (Cain, 1986). Though age discrimination was already observed more than 50 years ago (see, e. g. Tuckman and Lorge, 1952) it is still one of the most difficult research questions to investigate in labor market research (Johnson and Neumark, 1997; OECD, 1998). The reason is that it is difficult to establish whether differences between groups in relation to unemployment and wages are a result of discrimination, or of real differences in productivity or labor market ambitions. Incomplete contracts, hiring and training costs lead to an improved position of 'insiders' when it comes to rent sharing (see, e. g. Solow, 1985). Wage differentials then no longer reflect productivity differentials alone. Such measurement problems, the unobserved heterogeneity of individuals and firms, have lim-

2

ited the economic research on age (gender, and ethnic) discrimination. Yet, the problem of age discrimination has received increased attention during the last decade for two reasons: First the high costs connected with early retirement and second an increasing proportion of older persons in industrialized countries (see, e. g. World Bank, 1994).

Companies, in the process of reorganizing or downsizing their workforce, often encourage older employees to go into early retirement instead of helping them to get a new job (Henkens and Tazelaar, 1994; Quinn and Burkhauser, 1990; Taylor and Walker, 1994; Warr, 1994). Without older persons working longer years, the financial problems of the welfare state will become more serious. This has led to a search for ways of increasing the labor participation rate of older citizens and to prolong the individual work life. In several countries, policy makers are already trying to create incentives for longer occupational careers. With such ambitions, there should not be any room for age discrimination in hiring processes.

Nevertheless, there are significant restrictions in the hiring, upgrading, and retention of workers, women and men, who are 45 of age and older. Older persons seeking work often find it difficult to get a new job because the employers are worried that the cost connected to hiring and investing in them is higher than the benefit and question their training potential, adaptability and health.

Some argue that the lower labor participation rate of older persons is due to a decrease in productivity with age (Lehr, 1997). This is formalized by the the so-called deficit model (Bäcker, 1979; Taylor and Walker, 1993). While some assert that there is hardly any gerontological evidence for a decline in productivity and performance for older individuals (e. g., Avolio, Waldman and McDaniel, 1990; Salthouse and Maurer, 1996; Warr, 1994), others have found evidence for such a decline. For example Hellerstein and Neumark (2004) found that workers aged 55 and older in the manfacturing industry had lower productivity than younger workers. The evidence is in other words mixed. One thing that can be found is, however, a bigger heterogeneity in the abilities with age (Ilmarinen, Tuomi and Klockars, 1997). The differences between older and younger workers are largely nonexistent or small, and negative stereotypes about older workers

3

and classifications based on them harms many productive older workers (Neumark, 2001).

A result of age discrimination is that older workers are often over-represented among the long-term unemployed, and have longer unemployment spells compared with their younger colleagues (Laczko and Phillipson, 1991; McDonald and Chen, 1993; OECD, 1998). The employer might use the unemployment spell as a signal for lower productivity of the applicant pool as a whole. Such statistical discrimination can, of course, be totally rational, if the cost of testing the individuals exceeds the potential expected gains from finding the most productive individual.

In Germany, it has become more difficult to find a new job already from the age of 45 and onwards (Frerichs and Naegele, 1998). Büsch, Dittrich and Königstein (2006) have shown that age discrimination in hiring decisions is rather common. The most-named reasons for the high proportion of long-term unemployed persons among older job seekers in Germany are perceived higher health risks and insufficient skills (Bogai, Hess, Schröder and Smid, 1994; Naegele, 1992). Furthermore, wage costs for older workers generally are considered to be too high because of the seniority principle in many wage systems, and the prospective employment period is seen to be too short. In Norway, the empirical evidence is much more anecdotal in character, and, as in most other countries, research on discrimination has focused on race and gender rather than on age. But, it has been found that age together with ethnic background, and long-term unemployment are the most important barriers for the unemployed in the labor market (Rogstad and Raaum, 1997). A recent survey shows that 13 % of interviewed managers did not hire an applicant or promoted employees because of their age (Senter for Seniorpolitikk, 2002).

The remainder of this article is organized as follows: In the next section, we briefly review the relevant literature on age discrimination and position ourselves relative to the various perspectives. Then we describe institutional features of the two countries. This is followed by hypotheses concerning what we expect to find and a description of the sample(s) together with research methods. In the subsequent section, we comment on the results from our empirical analysis, and finally provide a conclusion and discussion in the last section.

4

2. Review of the literature

Economic research on discrimination tries to explain the different treatment of individuals on the grounds of their nonproductive characteristics. So far these were mainly gender or ethnic background.

There are, in principle, two approaches to explain discrimination. One is the taste-based approach of Becker (1957). According to him, the different treatment results from the dislike of a person who belongs to a certain group. The other approach deals with statistical discrimination (see Phelps, 1972). Here, Aigner and Cain (1977) distinguish between group discrimination and individual discrimination. Group discrimination occurs whenever the average remuneration of a group is not proportional to its average productivity. Individual discrimination happens as soon as workers with the same true abilities are not receiving the same wage (see Büsch, 2004, for further implications).

Consequently, empirical research on discrimination in the labor market has, for the most part, focused on race and gender wage differentials by estimating wage equations (see, e.g., Hinks, 2002; Ward, 2001). In their recent overview of the mainly American literature, Altonji and Blank (1999) and Darity and Mason (1998) conclude that these differentials have been persistent over time, but that the nature and magnitude of the differences have changed. Yet, estimating wage equations posses serious problems. The problem of omitted variables, which invariably exists, leads to the conclusion that the obtained results always overestimate discrimination. If, on the other hand, discrimination has an impact on explanatory variables the obtained results may underestimate discrimination. Other research methods that try to overcome these problems and assess discrimination directly include paired-audit studies in which two applicants for a job are matched who differ only in one characteristic, such as race (for a summary presentation of relevant works, see Darity and Mason, 1998; Riach and Rich, 2002), the comparison of productivity and wage differences (e. g. Hellerstein, Neumark and Troske, 1999; Kahn, 2000), and, less common but increasingly popular, field (Harrison and List, 2004) and laboratory experiments (though not labor market specific see, e. g. Büchner and Dittrich, 2002; Fershtman and Gneezy,

5

2001). Our approach is similar to field studies using the correspondence testing technique where fake letters of applications of individuals with identical human capital but different demographics are sent out to companies (e. g. Bertrand and Mullainathan, 2004; Riach and Rich, 2004; Weichselbaumer, 2003).

The empirical literature on age discrimination in the selection process is to a large degree dominated by psychologists. Empirical research has found mixed evidence for the role of applicant age in selection decisions. While some studies found a significant effect of the applicant's age, e.g., Rosen and Jerdee (1976b) and Avolio and Barrett (1987), who show that younger applicants are evaluated more favorably than older applicants, others found little or no effect of age (Fusilier and Hitt, 1983; Locke-Connor and Walsh, 1980).

There are several themes regarding age discrimination in the empirically oriented literature, and among these are negative stereotypes, employers' attitudes, employers' / interviewers' age, job type/status, and the recruitment process. Negative stereotyping is usually suggested as a reason for age discrimination (Perry and Bourhis, 1998). Stereotypes in the relevant literature are typically defined as "...cognitive structures that consist of associations between attributes or features (e.g., personality traits, overt behaviors) and social categories (e.g., occupations, age)" (Perry and Bourhis, 1998, p. 1673). When an individual is identified as a member of a social category, the attributes associated with this category are applied to this individual (Kalin and Hodgins, 1984). Age stereotypes are defined by Rosen and Jerdee (1976a, p.180) as "widely held beliefs regarding the characteristics of persons in various age categories." Typically negative stereotypes of older workers are that they are less motivated, not up to date regarding their occupational skills, have a lower performance capacity, have less potential for development, are more risk averse, more resistant to change, and less creative (Maloney and Paul, 1989; Rosen and Jerdee, 1976a,b, 1977; Warr, 1994). Negative age stereotypes depict older persons as being potentially less employable, particularly for highly demanding and challenging positions. These stereotypes are used by employers when they have limited information about applicants and project onto individuals certain perceived group characteristics, i.e., they use easily observable

6

characteristics such as age to "statistically discriminate" among workers.

Several studies of employers' attitudes toward older workers in the labor market indicate that older persons seeking work are heavily discriminated by employers (Itzin and Phillipson, 1993; Laczko and Phillipson, 1991; McEwan, 1990; Taylor and Walker, 1991; Walker and Taylor, 1993). Ginn and Arber (1996) found that 64 % of the women and 66 % of the men over the age of 40 reported that age was the most important barrier for getting a better job in Great Britain. Lewis and McLaverty (1991) found in a survey among managers and professionals aged 40 to 55 that 36 % reported age as being a barrier for internal promotion in their organization, and 45 % had not had any possibility for development during the last five years. Johnson and Neumark (1997) found that employees who reported age discrimination (self-reported – no promotion, demotion, laid off, not hired, etc. because of age) had a higher probability of leaving their employer and a lower probability of being employed (even if controlled for personal characteristics and other variables) than workers who did not report discrimination.

The age of the person conducting the job interview might also influence the hiring decision. Perry, Kulik and Bourhis (1996), based on their research, argue that those who evaluate older workers are strongly influenced by their attitude toward older persons in job selection processes. A potentially greater number of years in the firm, "paper qualifications", and more adaptability are some of the reasons employers give for their preference for younger workers even though older workers are looked upon as more reliable. Many older workers felt that the only jobs that were available for them were part-time work and/or jobs with low wages (Taylor, 1998). This can be exemplified by the study of Chiu and Ngan (1996) and Heywood, Ho and Wei (1999) both of whom studied older employees' possibilities on the labor market in Hong Kong. Among employers it is common to hire older persons only reluctantly, and age limits exist for a lot of jobs, especially for women. The suitable age for women is set lower than for men in spite of a higher life expectancy of women compared to men. Finkelstein and Burke (1998) find that the age of the managers have an effect on how they rated hypothetical applicants, and older managers are found to disfavor older workers. According to the authors this finding indicates that older people

7

may actually be more likely than younger to hold economic stereotypes of older workers. On the other hand, Slater and Kingsley (1976) found that younger employers reported less advantageous attitudes towards older employees than older employees, and that employers in companies with many elderly had more advantageous attitudes towards this group.

Previous research and theory suggest that jobs have age norms or are age-typed (e.g., young-typed, old-typed, or age-neutral) and that young applicants and employees will be evaluated more favorably for young-typed jobs, and vice versa for older applicants (Cleveland, Festa and Montgomery, 1988; Cleveland and Hollman, 1991; Cleveland and Landy, 1983, 1987; Gordon and Arvey, 1986; Perry and Bourhis, 1998; Perry *et al.*, 1996). The job status has also been found to be of importance, as old candidates are favored for low-status jobs and young candidates for higher-status jobs (Triandis, 1963). Taylor and Walker (1994) find that age is an important factor in recruitment processes in such a way that several companies have official and unofficial upper age limits (see also Loretto, Duncan and White, 2000). In advertisements of vacancies, age is often seen as a barrier for applying when an age interval is specified. Yet other information in job advertisements can also discriminate older job seekers as specifications of education, demands for qualifications, type of experience, etc. may convey that a younger person suits the job or company better than an older one (McGoldrick and Arrowsmith, 1992).

Our study uses the method developed by Büsch *et al.* (2006) and differs from most of the studies cited above in the following aspects: First, in our questionnaire study we use four different age groups where age is randomized so that we have 24 different questionnaires and a total of 12 different age specifications for each of the three male applicants. The introduction of four different age groups improves the setting of other studies as the notion of being old varies with the occupation and can apply to a wide range, i. e. between 25–60 years (see Büsch, 2004). It allows to yield more robust results and to test an alternative explanation for age dependent hiring probabilities. Second, a real job advertisement from a German newspaper is used; we developed the CVs of the three applicants together with the personnel manager of the respective company that had published the advertisement. Though the decision remains hypothetical, the decision

8

frame becomes more realistic than in most earlier studies by psychologists. Third, our study is comparative, i.e., we examine whether different institutional arrangements in countries like Germany and Norway produce different results on age discrimination outcomes. To our knowledge, there have been no other comparative studies of age discrimination using such a questionnaire so far.

3. Background information on Norway and Germany

Based on historical and institutional differences between countries, Esping-Andersen (1990, 1999) distinguishes between different welfare regimes. Norway is classified as a social democratic welfare regime together with the other Nordic countries. They are characterized by universalism, comprehensive risk coverage, generous benefit levels and egalitarianism. Germany on the other hand is classified as a conservative welfare regime. The essence of such a regime lies in its blend of status segmentation (occupational) of pension and health schemes, and reliance on the family as a welfare provider. Early retirement policies have in continental Europe become the main means to facilitate industrial restructuring (Kohli, Rein and Guillemard, 1993), and the employment management policies have been passive. The Nordic approach has been 'productivistic' in the way that the focus is on re-employment through retraining and reactivation programmes. The result is low levels of early retirement and high rates of participation in particular among women and older workers, and high average retirement age. Classifying countries according to their degree of labour market regulation Esping-Andersen (1999) argues that Norway has medium regulation while Germany has strong regulation. On the other hand the employment protection is considered by OECD (2004) as somewhat stricter in Norway than in Germany. Such differences make it interesting and relevant to compare the two countries, and below we will go more in detail describing differences between the countries which are good examples of social democratic and conservative welfare regimes.

The standard retirement age in Norway is 67 years, while the compulsory retirement age is 70. However, some professions and occupations have a lower retirement age, and law fixes some

9

of these. There is no public early retirement scheme in Norway, but as in several other countries, institutional arrangements that were originally made for other purposes, notably unemployment benefits and disability pensions have been used as pathways to early retirement. By the end of 2004 as many as 311.000 persons received disability pension, i.e. 13.1 % of the work force. Older persons are entitled to unemployment insurance for an extended period. Persons who become unemployed when they are 60.5 years old can receive unemployment benefits until they reach the standard pension age of 67 years. The most important non-public early retirement scheme in Norway is Avtalefestet pensjon (AFP, "Early Retirement Pension Agreement"). This scheme came into effect as from the 1st of January 1989. The pension age in the scheme has been gradually reduced over the years, and has been set at 62 as of 1st of March 1998. The replacement rate is different for the various types of retirement schemes. This may lead to different economic incentives for the retirement pathway that is used. As there is no public early retirement system, the above mentioned schemes have been extensively used by Norwegian companies and employees, especially disability pension and AFP (Dahl and Nesheim, 1998).

Our brief description of the German retirement system is focused on West Germany since, due to the transition, many temporary regulations were introduced. Even though the standard retirement age in Germany is 65, the actual retirement age is lower, i.e., on average around 60 in West Germany. One reason has been, and for a certain age group still is, the possibility to go into early retirement by the pathway of unemployment by the age of 58. Nowadays – due to the Social Security Reform of 1992 – only persons born before 1982 are still entitled to receive this kind of retirement pension. Since, in Germany, the social security system was still facing serious financial problems, a law was implemented in 1996, which prescribed a higher retirement age for older workers receiving unemployment benefits. In the same year, a partial retirement for older workers was introduced to give persons an incentive to postpone retirement. Another important pathway to retirement is the disability pension. In 1981, 68 % of male workers retired via this pathway (Börsch-Supan, 1998). On the 1st of January 2001, a new law came into effect that distinguishes between a complete or partial reduction in one's earnings capacity. As a consequence,

10

in 2001 only 15.9 % of all new pensions for workers in West Germany were due to reduction in earnings capacity (VDR, 2003).

An additional notable background feature for the comparison of the two countries is the unemployment and labor force participation rates of older workers. The unemployment rate directly influences the opportunity to discriminate in the hiring process. If there is no queue there is little room for discrimination.

Older workers in Norway have a lower unemployment rate than other age groups: 1.6 % for the 55-64 age group compared to 2.6 % for the 25-54 age group in 2001. This is one of the lowest unemployment rates in the age group 55 and older in all OECD countries. In 2004, 16.7 % of all unemployed aged 55+ had been out of work for more than one year. The corresponding percentage for unemployed aged 25-54 years is 7.7 %. The average length of an unemployment spell increases with age. For the oldest group it is 30.4 weeks. In contrast, the unemployment rate of older workers in the reunited Germany is almost the highest rate in the OECD countries. In 2001 it was 11.2 % compared to 7.5 % for the 25-54 age group. The labor force participation rate in the 55-64 age group is 41.5 % in Germany and 68.5 % in Norway in 2001 (OECD, 2002). In September 2001 39.2 % of all older unemployed in Germany were long-term unemployed, i. e. two years and longer (Bundesanstalt für Arbeit, 2001).

Finally, the dismissal protection laws that may also influence hiring decisions (see, e. g., OECD, 1999) are rather similar in both countries as the legal dismissal period increases with tenure from one month up to 6 month in Norway, and 7 month in Germany (see table 1). However, the maximal dismissal period is age-dependent in Norway but not in Germany. Contrariwise, in Germany employers have to follow determined social criteria for redundancy that include among other things the age of the employee. These criteria are, however, not explicitly specified but are subject to firm internal negotiations. This aims to guarantee socially acceptable selection processes for redundancy.

11

Table 1: Dismissal Periods in Germany and Norway

| Length of Tenure in Years | Dismissal Period in Months | | If older than | | |
	Germany	Norway	50	55	60
below 2	1[a]	1			
2	1	1			
5	2	2			
8	3	2			
10	4	3	4	5	6
12	5	3	4	5	6
15	6	3	4	5	6
20	7	3	4	5	6

a Till the 15th or the end of the month. The legal dismissal period becomes only effective after six month of tenure. All other dismissal periods are till the end of the month.

4. Hypotheses and methods

In this section we set up our hypotheses and describe the methods used to generate the data. Furthermore we explain briefly the concept of young, age-neutral and old job positions.

The above description of the situation of older workers shows that in Norway, there are a higher retirement age and a higher participation rate of older workers in the labor market. In Norway the labor market situation in recent time has been stable and employees remain in their working positions. Older workers in Norway have a lower unemployment rate than other age groups. In Germany, however, the opposite is true. The unemployment rate is not only higher for older workers than for younger age groups but it is in general considerably higher.

Therefore, we expect that the degree of age discrimination will differ between the two countries with Norway being the country where the applicant's age has less influence on the hiring decision:

HYPOTHESIS 1 More age discrimination regarding the hiring decision will be observed in Germany than in Norway.

Since we also assess subjective expected productivity measures in our questionnaire study

12

we are able to identify and control for different age stereotypes in the two countries that may lead to statistical discrimination. Any discrimination that can not be explained by perceived productivity differences can be attributed to a dislike of older persons in the sense of Becker (1957). Therefore, in line with our fist hypothesis, if there are any differences in the assessment of applicants' productivities:

HYPOTHESIS 2 The differences in the expected productivities between young, middle-aged, and older applicants will be larger in Germany than in Norway.

An alternative explanation for age dependent hiring probabilities is the prospective time to recoup human capital investments. The longer the prospective employment term the higher is the potential return on human capital investments. If this argument drives our subjects' decisions the disparity in hiring probabilities should increase with the average age of the applicant pool: Let the relative advantage of one applicant over another be defined as the ratio of the prospective employment terms. As we keep the age gap (14 years) in the applicant pool constant and only manipulate the average age, the relative advantage of the youngest over the oldest applicant in the group increases with the average age of the group.

HYPOTHESIS 3 The hiring probabilities depend on the age group of the whole applicant pool. The higher the average age the less likely is the hiring of the oldest applicant.

As mentioned previously, we want to identify whether older applicants with the same qualifications are treated differently as compared to younger applicants. Since there is some evidence that certain jobs or positions have age norms, or are more appropriate for particular ages, it is important to identify an age-neutral position in a first step. By using an age-neutral position, we avoid identifying job discrimination, i. e. the job is seen as not suitable for the applicant (Perry *et al.*, 1996), instead of applicant discrimination.

One method to identify age-neutral positions was developed by Cleveland and Landy (1987). In their study, managers were asked to complete either a frequency grid questionnaire or a

13

graphic rating scale. In the frequency grid questionnaire, students had to express their subjective assessment regarding the age distribution in each job. They had to indicate how many of one hundred persons they thought were in each age category (<20, 20-29, 30-39, 40-49, 50-59, 60-69, >70). In the graphic rating scale questionnaire, they had to state which of seven age categories (1=young, 2, 3, 4=middle-aged, 5, 6, 7=old) they thought would be predominant for the position in question. A job was defined as a younger person's position if 60 % of responses from each questionnaire type fell in the first three rating categories. A job was characterized as an older person's position if 60 % of the responses fell in the last four rating categories. And, a job was classified as age neutral if in each of the two questionnaires less than 60 % of the responses of both questionnaires were concentrated either in the first three or the last four response categories.

We used this method in a pre-study in both countries. In contrast to Cleveland and Landy (1987), we provided the participating students not only with job titles but they also received some background information of the respective positions: They were supplied with real job advertisements of 20 jobs selected from the German newspaper Frankfurter Allgemeine Zeitung.[1]. We concentrated on white-collar positions that are not physically demanding because there is some evidence in the literature that it is possible that physical strength decreases with age. Further, all vacancies were for permanent positions, since younger workers are overrepresented in fixed term positions (see, e. g. Schömann and Kruppe, 1994), and we want to avoid such unduly biases. In both countries we used the same descriptions of jobs and the corresponding companies. In Norway, we made some minor adjustments to allow for a more representative picture. The adjustments concern only the largest companies since Norwegian companies are rather small on average. They have a smaller number of employees and lower annual turnovers.

After having identified a position that was age neutral both in Germany and Norway, we continued with the main questionnaire study. This consisted of four different tasks: In the introduction, students were asked to assume they were assistants of a personnel manager. The

---

1 The untranslated advertisements are provided in the appendix of the working paper version of this article

14

Table 2: Age assigned to applicants in the questionnaire

| | Applicant | | |
Age Group	Young	Middle-aged	Old
I	27	34	41
II	31	38	45
III	35	42	49
IV	39	46	53

managers were just asked to answer the questionnaire. Then they were given the description of the age-neutral position and the CVs of three hypothetical applicants. The first task was to state for twelve capability items – regarding different types of ability (see the appendix A.1.1) – weights (expressed in per cent) of the importance they attach to the criteria for filling the position. Second, they had to indicate on a 9-point bipolar rating scale, i. e. a discrete scale from one (extremely low) to nine (extremely high), how capable each applicant was with respect to all items. The third task was to mark the adequate wage level for each applicant. Participants were explicitly requested to use the wage level as a measure for productivity. In the questionnaire we also indicated the real wage range for this kind of position as a support. Last but not least, they had to decide whom of the three applicants they would hire given that all applicants would receive the same salary. Thus, the effects of the seniority principle in remuneration schemes should be ruled out.

In order to identify the degree of age discrimination in the hiring process the age of the applicants was the only systematically manipulated variable. We used four different age groups (see table 2). In total we had 24 distinct questionnaires since the various ages where assigned in all possible permutations within one age group to the three different applicants leading to 12 age specifications for each candidate.

The use of several age groups allows us to identify whether age discrimination is based on relative age within a group or whether it is also dependent on the absolute age. The age gap between the youngest and oldest applicant in each age group was only 14 years. Consequently, the applicant pool itself was characterized by a relatively homogeneous age structure. Compared

15

to e. g. Bendick, Jackson and Romero (1996) who described only two applicants with an age gap of 25 years to their subjects, an age gap of only 14 years is considerably less salient. This is important since in the questionnaire the real purpose of our study was hidden. Such knowledge obviously would affect the answers of the respondents, and most likely in a way that would reduce the study's potential for detecting age discrimination.

5. Empirical results

We ran the pre-study in Germany and Norway to make sure that the position used in the the main questionnaire study was seen as age neutral in both countries. In Norway, 28 and 26 students from the economics department at the University of Bergen, respectively, filled in the two questionnaires types. In Germany, 26 students of the economics and business department of the Humboldt-University of Berlin filled in the first and 35 the second questionnaire type.

In total, six positions in Norway and seven in Germany were identified as age neutral (see appendix, table 10 and 11). The overall evaluation of eight positions differed between Germany and Norway. In six of these eight cases, the answers differ in only one of the two questionnaires. However, no job associated with young persons in Germany was seen as an old person's job in Norway. The position used in the main study, Project-Engineer in Total Quality Management, was seen as age neutral in both countries.

In Norway, 91 students filled in the main questionnaire (35 female, 44 male, and 12 not reported), and in Germany 174 students (87 female, 78 male, and 9 not reported) participated. The students were enrolled at the same departments as in the pre-study. But, no student participated in both studies. In April 2002, we mailed the questionnaire to 294 Norwegian personnel managers of large industrial companies. These are companies with 200 or more employees according to "Norges største bedrifter 2001" (Norway's largest companies). Two reminders were sent out, and in total 66 analyzable questionnaires were received, yielding a response rate of 22 %. In February and May 2002, we sent a total of 761 questionnaires to companies with more than 200 employees in West Germany. To avoid a bias due to the special situation of older workers in

16

Table 3: Wage in Euro

| | Applicant | | | p-value | |
	Young	Middle-aged	Old	KW test[a]	ANOVA[b]
Students					
Norway	42472	42101	43153	<0.001	0.495
	(9050)	(3027)	(4364)		
Germany	41698	41587	41703	0.890	0.880
	(2515)	(2433)	(2320)		
Personnel managers					
Norway	40637	43011	43254	<0.001	0.005
	(5300)	(2091)	(2162)		
Germany	40756	41721	42471	<0.001	0.001
	(2797)	(2655)	(2884)		

Note: Numbers in parentheses denote standard deviations.
a Non-parametric Kruskal-Wallis test.
b One-factorial analysis of variance with correction for repeated measurement.

East Germany, we excluded this part of the country. We received 87 answers, yielding a response rate of 11 %.

In Norway, 45 male and 21 female managers and in Germany 58 male and 29 female managers filled out the main questionnaire. In Norway, the mean age of respondents was 47, in Germany it was only 40. This difference is significant according to a one-sided Wilcoxon test (p < 0.001).

A first result is that in the student sample wages for all three age types (young, middle-aged, old) did not differ much (see table 3).[2] This may indicate that they chose wages according to expected productivity as it was asked in the questionnaire. Personnel managers seemed, however, to rely on a seniority-base remuneration scheme. They offered to the oldest applicant a slightly higher wage than to the two younger applicants.

In order to calculate a measure for the perceived expected productivity, we multiply the percentage of how important the participants evaluated each of the twelve capability items by

---

2 The significant Kruskal-Wallis test result for Norwegian students is due to the high variance of wages for 'young' applicants. The means are not significantly different.

17

Table 4: Expected productivity on a 9-point scale

		Applicant		p-value	
	Young	Middle-aged	Old	KW test[a]	ANOVA[b]
Students					
Norway	5.91	5.78	5.93	0.232	0.503
	(0.94)	(0.88)	(0.89)		
Germany	5.84	5.82	5.78	0.565	0.872
	(1.11)	(1.01)	(0.98)		
Personnel managers					
Norway	5.53	5.64	5.57	0.922	0.732
	(0.65)	(0.83)	(0.84)		
Germany	5.59	5.76	5.57	0.704	0.595
	(1.30)	(1.43)	(1.27)		

Note: Numbers in parentheses denote standard deviations.
a Non-parametric Kruskal-Wallis test.
b One-factorial analysis of variance with correction for repeated measurement.

the value they gave each applicant regarding the corresponding item. Expected productivity for all three age types is very similar in both countries. There is no significant pattern as one can see in table 4. This indicates that age stereotypes have at most only little influence on the overall productivity assessment in both countries and the students and personnel managers subsample. Thus, we can exclude statistical discrimination as the main source of age discrimination in our study.

A closer look at the individual items (see tables 5 and 6) reveals that in Norway younger applicants received a significantly higher evaluation than older ones for only one item by the students (flexibility). German students, however, rated younger applicants significantly higher for two items (ability to learn and flexibility). Additionally, they assessed older applicants more highly in terms of organizational ability. While in Norway personnel managers did not show any significant pattern over all items, German managers evaluated in the same way as German students, i.e., they gave younger applicants a higher score for the items ability to learn and flexibility. So, there is some evidence that age stereotypes affect decisions in Germany but not or

18

Table 5: Students' evaluation of the different capability items

| | Applicant | | | p-value | |
	Young	Middle-aged	Older	KW[a]	ANOVA[b]
Norway:					
1. Technological know-how	5.44	5.40	5.80	0.112	0.177
2. Computer skills	5.89	5.75	5.98	0.529	0.482
3. Organization capability	6.02	6.03	6.25	0.264	0.405
4. Foreign language skills	5.66	5.35	5.29	0.394	0.184
5. Capability to learn	5.84	5.90	5.80	0.740	0.827
6. Flexibility	5.99	5.53	5.55	0.010	0.015
7. Conscientiousness	5.74	5.68	5.81	0.488	0.745
8. Reliability	5.74	5.65	5.66	0.461	0.859
9. Capacity for teamwork	5.98	6.02	6.31	0.105	0.253
10. Communication capability	6.09	5.80	5.99	0.115	0.391
11. Persuasive power	5.35	5.53	5.61	0.210	0.321
12. Commitment	5.85	5.73	5.68	0.736	0.680
Germany:					
1. Technological know-how	5.93	5.87	5.86	0.879	0.884
2. Computer skills	5.88	5.86	5.79	0.807	0.825
3. Organization capability	6.20	6.33	6.54	0.038	0.048
4. Foreign language skills	5.65	5.87	5.67	0.747	0.525
5. Capability to learn	6.25	5.72	5.40	<0.001	<0.001
6. Flexibility	6.34	6.14	5.60	<0.001	<0.001
7. Conscientiousness	5.87	5.89	6.02	0.457	0.374
8. Reliability	5.96	5.98	6.17	0.286	0.169
9. Capacity for teamwork	6.40	6.24	6.26	0.689	0.512
10. Communication capability	6.26	6.23	6.29	0.828	0.923
11. Persuasive power	5.73	5.91	5.99	0.183	0.200
12. Commitment	6.32	6.22	6.10	0.314	0.285

a Non-parametric Kruskal-Wallis test.
b One-factorial analysis of variance with correction for repeated measurement.

19

Table 6: Personnel managers' evaluation of the different capability items

| | Applicant | | | p-value | |
	Young	Middle-aged	Older	KW[a]	ANOVA[b]
Norway:					
1. Technological know-how	5.84	6.12	5.98	0.601	0.476
2. Computer skills	5.83	5.85	5.94	0.914	0.840
3. Organization capability	5.60	5.84	5.81	0.446	0.375
4. Foreign language skills	5.58	5.88	5.59	0.207	0.346
5. Capability to learn	5.84	5.82	5.73	0.841	0.815
6. Flexibility	5.63	5.39	5.44	0.286	0.274
7. Conscientiousness	5.28	5.62	5.66	0.447	0.089
8. Reliability	5.17	5.67	5.59	0.109	0.017
9. Capacity for teamwork	5.95	6.02	6.03	0.986	0.913
10. Communication capability	5.64	5.81	5.72	0.789	0.631
11. Persuasive power	5.15	5.39	5.47	0.564	0.194
12. Commitment	5.59	5.63	5.31	0.159	0.221
Germany:					
1. Technological know how	5.37	5.60	5.79	0.114	0.239
2. Computer skills	6.08	6.05	5.87	0.331	0.442
3. Organization capability	6.01	6.21	5.81	0.234	0.142
4. Foreign language skills	5.98	6.63	5.60	0.300	0.371
5. Capability to learn	5.84	5.84	5.28	0.001	0.006
6. Flexibility	6.03	6.01	5.54	0.009	0.014
7. Conscientiousness	5.47	5.72	5.75	0.104	0.249
8. Reliability	5.57	5.81	5.73	0.242	0.441
9. Capacity for teamwork	6.11	6.26	6.05	0.444	0.456
10. Communication capability	6.19	6.30	6.06	0.340	0.402
11. Persuasive power	5.58	6.01	5.71	0.026	0.055
12. Commitment	5.95	6.06	5.81	0.523	0.423

a Non-parametric Kruskal-Wallis test.
b One-factorial analysis of variance with correction for repeated measurement.

20

considerably less in Norway. This confirms our second hypothesis. Yet, due to the weighting these differences are equalized in the aggregate productivity measure.

The close agreement between students and personnel managers is expected as, for instance, Gordon, Rozelle and Baxter (1988) already observed that the evaluations of students and employer interviewers are very similar.

Concerning actual hiring decisions we observe for the German subsample a considerable favoritism of younger applicants (see table 7) that cannot be found in the Norwegian subsample according to a non-parametric test for trend in proportions (see Armitage, 1955). If we pool all data and stratify for the two countries we can test whether the four different age groups have an influence on the hiring decisions. First, the Woolf test shows that the assumption of homogeneous conditional odds ratios is not violated ($p = 0.832$). Therefore, we can use the Cochran-Mantel-Haenszel test for count data (Agresti, 1990). The test indicates that there is no association between hiring decisions and age groups when adjusted for country ($\chi^2 = 5.173$, df $= 6$, $p = 0.522$). Consequently, any discriminating behavior applies in the same way to all age groups, i. e. age discrimination in our study is as severe in the applicant age group 27–41 as in the age group 39–53. We cannot support the hypothesis derived from the recouping human capital investments argument.

If the stated wage offer is a measure for productivity the hiring probability of the applicant with the highest wage offer should be higher than the corresponding unconditional hiring probabilities given that all applicants will obtain the same wage if they are hired. As table 8 shows, this can be confirmed. Additionally, this table reveals that by controlling for perceived productivity measured as (highest) wage rank age discrimination can be found in all subsamples. Though, it is less pronounced in Norway.

This already confirms our first hypothesis. But, so far we have not jointly controlled for perceived productivity differences measured as the weighted sum of individual capability item assessments and wage, the different vitas of the applicants, and the respondent's own age. To accomplish this task, we ran several random effects logit regressions on hiring decisions that are

21

Table 7: Unconditional hiring probability

| | | Applicant | | p-value | |
	Young	Middle-aged	Old	χ^2 test[a]	Trend test[b]
Students					
Norway	35.16	27.47	37.36	0.331	0.753
Germany	46.26	29.89	23.85	<0.001	<0.001
Personnel managers					
Norway	28.03	43.18	28.79	0.115	0.926
Germany	39.08	35.63	25.29	0.133	0.054

a Non-parametric χ^2 test for count data.
b Non-parametric χ^2 test for trend in proportions (see Armitage, 1955).

Table 8: Conditional hiring probability with respect to wage

| | | Applicant with highest wage | | p-value | |
	Young	Middle-aged	Old	χ^2 test[a]	Trend test[b]
Students					
Norway	86.36	65.38	63.04	0.133	0.069
Germany	77.27	67.19	54.10	0.022	0.006
Personnel managers					
Norway	81.82	83.33	54.84	0.047	0.031
Germany	73.68	76.67	47.62	0.023	0.019

a Non-parametric χ^2 test for count data.
b Non-parametric χ^2 test for trend in proportions (see Armitage, 1955).

reported in table 9.

Note, that we model the hiring decision not as a multinomial choice model since the alternatives are correlated and thus the crucial assumption of independence of irrelevant alternatives is violated. We also do not rely on a nested logit model that can overcome this problem since some respondents chose not to hire only one but two applicants. We therefore rely on a random effects logit regression where the decision maker decides for each applicant whether he is hired or not. By using this approach we control for the repeated measurement. Given the individual random effects, the residuals are uncorrelated. The estimated coefficients are consequently conditional on

22

the random effects and thus the effect sizes are slightly larger than in the corresponding marginal model. The order of significance is, however, not affected. The model is specified by

$$
y_{ij} = \begin{cases} 1 & \text{if } y_{ij}^{\star} > 0 \\ 0 & \text{otherwise} \end{cases} \tag{1}
$$

$$
y_{ij}^{\star} = \beta X_{ij} + \gamma_i + \epsilon_{ij} \tag{2}
$$

where i is the index over the respondents and j over the three applicants. If $y_{ij} = 1$, respondent i decided to hire applicant j. The matrix X denotes the explanatory variables including the constant, β is the vector of corresponding coefficients. For the residuals γ and ϵ, $E[\gamma] = 0$, $E[\gamma\gamma'] = 0$, $E[\epsilon|\gamma] = 0$ and $E[\epsilon\epsilon'|\gamma] = 0$, with E being the expectation operator, hold.

For the regressions, we used the complete data set of all 418 questionnaires comprising German and Norwegian students and personnel managers. The first model already reveals that there is indeed age discrimination in our questionnaire data to be found: The coefficient of the variable Age Rank (coded 1, 2, 3 for youngest, middle-aged, oldest applicant) is significantly negative, indicating that older applicants have a lower probability of being hired. Furthermore, the subjective expected productivity has a significant positive influence on the hiring probability, i.e., the higher the subjectively perceived productivity of an applicant the higher is the hiring probability. The same is true for wage that was supposed to be a measure for expected productivity, too. Since we observe that applicant "Koch" with everything else remaining constant is hired significantly less often, indicating that his vita is perceived as being inferior to that of the two other applicants, we also included an appropriate dummy variable to account for this (see also Büsch *et al.*, 2006).

Since one may have doubts whether the influence of Productivity Rank and Wage Rank on the hiring decision is linear a second model is estimated where dummy variables for each level of the two rank variables are included instead. Subsequently, we tested which dummy variables are significantly different from each other and from zero. By this procedure the set of variables that need to be included to account for perceived productivity differences is reduced. The resulting

23

Table 9: Random effects logit regression on hiring decisions

Variable	Model 1	Model 2	Model 3	Model 4
Constant	-3.529**	-0.894**	-0.224	-0.295
	(-11.464)	(-2.773)	(-0.576)	(-0.348)
Applicant Koch	-0.611**	-0.853**	-0.871**	-0.853**
	(-3.302)	(-4.590)	(-4.664)	(-4.525)
Age Rank[a]	-0.690**	-0.752**	-1.108**	-1.027*
	(-6.792)	(-7.120)	(-5.868)	(-2.456)
Productivity Rank[a]	0.507**			
	(9.192)			
Wage Rank[a]	0.809**			
	(12.868)			
Productivity Rank[a] = 2.5		1.218**	1.201**	1.172**
		(2.921)	(2.856)	(2.761)
Productivity Rank[a] = 3		1.625**	1.638**	1.655**
		(9.956)	(9.974)	(10.043)
Wage Rank[a] = 2		0.573**	0.587**	0.556*
		(2.611)	(2.646)	(2.495)
Wage Rank[a] = 2.5		1.776**	1.791**	1.765**
		(6.111)	(6.056)	(5.973)
Wage Rank[a] = 3		2.889**	2.904**	2.869**
		(12.725)	(12.566)	(12.401)
Norway			-0.748	-0.775
			(-1.785)	(-1.773)
Norway : Age Rank[a]			0.409*	0.412*
			(2.061)	(1.986)
Student			-0.614	
			(-1.453)	
Student : Age Rank[a]			0.306	
			(1.522)	
Respondent Age < 25				0.852
				(0.748)
24 < Respondent Age < 35				-0.529
				(-0.507)
34 < Respondent Age < 45				-0.188
				(-0.188)
44 < Respondent Age < 55				-0.439
				(-0.474)
54 < Respondent Age				-0.410
				(-0.471)
Respondent Age < 25 : Age Rank[a]				-0.503
				(-0.882)
24 < Respondent Age < 35 : Age Rank[a]				0.261
				(0.519)
34 < Respondent Age < 45 : Age Rank[a]				0.054
				(0.112)
44 < Respondent Age < 55 : Age Rank[a]				0.204
				(0.451)
54 < Respondent Age : Age Rank[a]				0.150
				(0.347)
Null Deviance	1605	1605	1605	1605
Residual Deviance	1063	1032	1026	1025
P-value χ^2 test	<0.001	<0.001	<0.001	<0.001
Akaike Information Criterion	1075	1050	1052	1067

Note: Figures in parentheses denote t-values.
One (two) star(s) indicate(s) significance at the 5 % (1 %) level.
a The ranks are coded as 1 for lowest (youngest), 2 for middle (-aged), and 3 for highest (oldest). In case of ties the mid-rank is used.

24

model is presented in table 9 as model 2. Concerning the Productivity Rank only when the applicant is ranked highest (rank = 3) or jointly highest with a second applicant (rank = 2.5) the hiring probability increases. Comparably, having at least rank 2 on the wage scale also increases the hiring probability.

In model 3, we add a variable denoting a country and student interaction with Age Rank to assess differences between Germany and Norway and between students and personnel managers. In general, we observe the same results as before but, strikingly, age discrimination is significantly less pronounced in Norway. This is indicated by the significantly negative coefficient of the variable Age Rank and the significantly positive coefficient of the interaction effect between Norway and Age Rank. Here Norway is a dummy that equals 1 if the respondent is Norwegian. The total effect of Age Rank in the Norwegian subsample is still negative, but the size in absolute terms is significantly smaller than in the German subsample. There seems to be no significant difference between the student subsample and the personnel manager subsample. As is indicated by the nonsignificant coefficient of the interaction effect between Student and Age Rank, whereby Student is a dummy that equals 1 if the participant is a student. Indeed, removing the Student variables improves the AIC slightly (down to 1050) which is then on par with model 2.[3] Since the residual deviance of this revised model 3 is, however, lower (1028) than that of model 2 it is preferred to model 2.

Finally, in model 4 we examine the influence of the participants' age group on discriminatory behavior. Since respondents in the Norwegian subsample are older than in the German subsample, this may drive the above result. We introduce five age groups. The first group of participants is aged 24 years and younger, the second is aged 25-34 years, the third is aged 35-44 years, the fourth is aged 45-54 years, and the fifth is aged 55 years and older. All age groups show the same discriminatory behavior as indicated by nonsignificant coefficients on the Age Group : Age Rank variables. Including corresponding dummies for the Norwegian subsample yields no

---

3 The Akaike Information Criterion is a model selection criterion that discounts the model fit by the number of explanatory variables. A smaller AIC statistic is preferred. It selects the model with the best fit while still being parsimonious.

25

significant coefficients either. Using a continuous specification of the respondents' age leads to the same result. Discriminatory behavior is not age dependent in either Germany or Norway. Consequently, both German and Norwegian participants, regardless of their age, exhibited on average age-discriminatory behavior. The Norwegian participants, however, did show significantly less discriminatory behavior on average. Finally, we also observe that students do not behave significantly different from personnel managers as is indicated by the coefficient of the interaction effect between Student and Age Rank in model 3, which does not significantly deviate from zero.

To test for an influence of the four different age groups used in the questionnaire we introduce the appropriate interaction terms: age rank of the applicant within an age group and a dummy for each of three of the four different age groups. The remaining age group serves as the base condition. None of these interactions is significant at the 5 % level. This confirms the result of the earlier Cochran-Mantel-Haenszel test. The age group of the applicants has no significant influence on the hiring decisions when we control for perceived productivity. Consequently, the prospective term of employment seems not be an issue here. A possible term of employment of 24 years (time until the oldest applicant in the youngest age group reaches the age of 65) does not lead to a higher hiring probability than a term of employment of 12 years (oldest applicant in the oldest age group).

To illustrate the different age-discriminatory behavior, we finally compute the conditional hiring probability of an applicant perceived as being the most productive according to expected productivity and offered wage, using the revised model 3. According to this, in Germany the youngest applicant is hired with a probability of 93.70 %, the middle-aged applicant with a probability of 85.78 %, and the oldest applicant with a probability of 71.00 %. The analogous hiring probabilities in Norway are 91.50 %, 86.64 % and 79.61 %, respectively.

26

6. Conclusion and discussion

The aim of this article has been to get a better understanding of the role of workers' age in the labor market. In contrast to many other studies regarding older workers this study has concentrated on the hiring process and not on promotions or the end of the career.

In a first step we have applied a method developed by Cleveland and Landy (1987) to identify an age-neutral job position. We improved their method by giving participants not only job titles for their evaluation but also actual job descriptions from a newspaper. Identifying an age-neutral job position was important to avoid the identification of job discrimination instead of applicant discrimination.

The main questionnaire consisted of an age-neutral job position including the job description and three short CVs, one for each applicant. In contrast to many other studies – mostly done by psychologists – age has not been a salient variable here. In our questionnaire we have four different age groups for the three applicants. The age gap between the youngest and the oldest applicant is always 14 years. In total we have 12 different age specifications for the same applicant.

As it is almost impossible to assess one individual's true productivity, as Börsch-Supan (2001) asserts, the perceived productivity of the candidate becomes an important determinant of the hiring decision. If the perceived productivity depends on non-productive characteristics of the candidate, as for example age, i. e. if the decision maker uses age stereotypes to adjust the individual assessment, he statistically discriminates the candidate. To identify statistical discrimination and control for it, the questionnaire also asks for the evaluation of twelve capability items and their relative importance for the position in question. Discrimination that cannot be explained by perceived productivity differences results from a dislike in the sense of Becker (1957).

Even though age has not been a salient parameter the older applicant has a significantly lower hiring probability than the younger one independent of the actual age group. Regarding the expected productivity the evaluation has not differed much with varying age. We can conclude

27

that even if the qualifications and perceived productivities are the same the applicants are not treated the same way just on the grounds of age. Statistical discrimination plays – if any – only a minor role. However, we observe a considerable difference in discriminatory behavior between Germany and Norway. In Norway there is significantly less age discrimination. Additionally, we found no significant difference between students and personnel managers and no dependence on the respondent's own age. Therefore, the results are probably influenced by the different working situation of older workers in the two countries. Norway has less unemployment and a higher participation rate of older workers. Consequently, there is more experience with working with older workers in Norway. One could also suspect that different norms and the institutional design have been of importance for the results.

Anyhow, in Germany there is a strong tendency to discriminated against older workers in the hiring process. To meet the demographic challenges, it is necessary to reduce age discrimination. So that applicants with the same expected productivity are treated equally – regardless of their age. The reason for the "dislike" of older persons in Germany could be that, in contrast to Norway, an employee's age in Germany seems to be closely connected with hierarchical principles. In that case an employer in Germany might try to avoid hiring an older applicant for a low status position. Additionally, (though ruled out in our study) the seniority principle in remuneration schemes puts a higher price tag on an older employee's job performance. Changing these customs is only possible if the general norms of the society are altered – a very slow process that would last for some generations. Yet, when introducing a law against age discrimination, as it is required by the European Directive 78, the policy maker should exercise great caution as such a law can also have harmful effects. And, on the other hand, there is no clear evidence that suggests older workers are more likely to be hired as a result of such legislation (see Adams, 2004, for a study on age discrimination legislation and employment).

In this study, we have focused only on the demand side for 'old labor'. As the generosity of social welfare systems in Germany and Norway may also induce too high wage expectation of older workers given their productivity and as social benefits or early retirement pensions set a

28

wage floor, alternative and complementary measures on the supply side that come to mind are for example wage subsidies for otherwise unemployed old workers, and a reduction of unemployment and early retirement benefits. Such measures are already implemented or are being discussed to be adopted in, e.g., France (see OECD, 2005) so that their effects can be studied in the near future.

Thinking about future research aspects one could vary the questionnaire in different ways. Some adjustments like the following may be interesting. It could be worthwhile to find out whether the picture will change if age discrimination for a blue-collar instead of a white-collar position is investigated. Another point of interest could be to find out how the results change if – instead of an age-neutral position – an age-specific position is described. It might be equally important to analyze whether or not the results will change if age becomes more salient. Further, the use of female applicants could be of interest. Finally, an obvious future project is an extension to other countries like, for example, France and Italy. Due to their generous public pension systems and the expected sharp increase in the dependency ratio over the next decades these countries would suffer considerably from age discrimination in hiring decisions.

29

A. Appendix

A.1. Material for the main study

A.1.1. Questionnaire

This questionnaire describes a hypothetical employment decision: In the enterprise of the XY group they have to decide whom they would hire and which wage the applicants should receive. On the next page you receive the description of the according job position and a short profile of the three applicants. Afterwards you are asked to evaluate the three applicants regarding 12 items as well as to make suggestions for the level of the salaries. Please do not forget to indicate whom you would hire.

The job description can be seen in the following job advertisement:
Project Engineer in Total-Quality Management We are an enterprise of the group XY which is in the European market leader in the industrial metrology. 5700 employees in more than 50 high tech enterprises worldwide make a turnover of more than 1 billion Mark per year. Among our customers are top enterprises from telecommunication, satellite technology, medical technology and the automobile industry. In the area of circuits boards we are one of the best producers worldwide. Tasks:

- Extension and improvement of quality management
- Management and implementation of quality improvement projects
- Analysis of processes and statistical summaries
- Cooperation in problem-solving teams coming from different departments
- Support of ideas of co-workers

All three applicants fulfill the necessary hiring requirements. They have an engineer diploma and two years of sector specific job experience. Below there are further details about the three candidates:

Surname	Müller	Schmidt	Koch
Name	Fred	Anton	Siegfried
Age			
Grade of diploma	2.0	2.7	2.3
Computer knowledge	All current Microsoft Office programs	Word, Excel, Powerpoint, SPSS	Pascal, Windows standard programs
Stays abroad	1 year USA	6 months UK, 4 months France	No information
Additional qualification	Experience as project leader of two projects, Basic course of quality management at the DGQ	Member of an organisation committee of a conference of IEEE, Broad knowledge about ISO 9000	Several years' work in a development team, Participant of a workshop of DQS
Hobbies	Tennis coach, reading	Golf, classical music	Volleyball, travelling
Reason for the application	New challenge	Interesting working field	Change of place

30

1. Please weight the importance you attach to the criteria given below to fulfil the specific job requirements. Please indicate in the second column which weight you would give to these criteria. Please keep in mind that the sum of the percentages has to be 100.

Table 1: Criteria and their weights

Criterion	Weight in %
Technological know-how	
Computer skills	
Organization ability	
Foreign language skills	
Ability to learn	
Flexibility	
Conscientiousness	
Reliability	
Capacity for teamwork	
Communication ability	
Persuasive power	
Commitment	
Sum	100%

2. Please evaluate now each applicant regarding the above mentioned items by making a cross (between "extremely low" (1) and "extremely high"(9)). Please use a separate table for each applicang and make sure that there is only one cross in each row.

Table 2: Name of the applicant: Mr. Müller

Criterion	1 extremely low	2 very low	3 low	4 pretty low	5 middle rate	6 pretty high	7 high	8 very high	9 extremely high
Technological know-how									
Computer skills									
Organization ability									
Foreign language skills									
Ability to learn									
Flexibility									
Conscientiousness									
Reliability									
Capacity for teamwork									
Communication ability									
Persuasive power									
Commitment									

Table 3: Name of the applicant: Mr. Schmidt

Criterion	1 extremely low	2 very low	3 low	4 pretty low	5 middle rate	6 pretty high	7 high	8 very high	9 extremely high
Technological know-how									
Computer skills									
Organization ability									
Foreign language skills									
Ability to learn									
Flexibility									
Conscientiousness									
Reliability									
Capacity for teamwork									
Communication ability									
Persuasive power									
Commitment									

Table 4: Name of the applicant: Mr. Koch

Criterion	1 extremely low	2 very low	3 low	4 pretty low	5 middle rate	6 pretty high	7 high	8 very high	9 extremely high
Technological know-how									
Computer skills									
Organization ability									
Foreign language skills									
Ability to learn									
Flexibility									
Conscientiousness									
Reliability									
Capacity for teamwork									
Communication ability									
Persuasive power									
Commitment									

3. Please indicate in table 5, which wage you would offer the candidate in the case he would be hired. The wage level should reflect your evaluation of the applicant's productivity. The typical wage in the sector – including benefits like Christmas bonus – lies between 38,000 € and 46,000 €. Please take these limits into account for your answer.

Table 5: Applicants and their wages

Name of the applicant	Annual salary in € (gross)
Mr. Müller	
Mr. Schmidt	
Mr. Koch	

4. Please write now the name of the applicant you would hire, under the assumption that all applicants would receive the same salary.

Name of the applicant:

Please comment shortly on your decision: [about 12 lines of empty space]

Finally we would like to ask you the following questions:

1. Sex
   - ☐ female
   - ☐ male

2. How old are you?

3. What is your highest educational achievement?

4. Professional training (if applicable):

5. Field of study (if applicable):

6. How long have you been working for the firm?

7. Your position is
   - ☐ staff executive
   - ☐ clerical assistant
   - ☐ else, namely:

8. For how many years have you been responsible for personnel decisions?

9. How did you qualify for your position?
   - ☐ main subject
   - ☐ special training
   - ☐ main subject and special training
   - ☐ else, namely:

10. In how many hiring decisions (approx.) have you been involved so far?

Here is now space for your additional remarks: [about 12 lines of empty space]

Many thanks for your collaboration!

References

Adams, S. J. (2004). Age discrimination legislation and the employment of older workers. *Labour Economics*, **11**, 219–241.

Agresti, A. (1990). *Categorial data analysis*. New York: Wiley.

Aigner, D. and Cain, G. (1977). Statistical theories of discrimination in the labor market. *Industrial and Labor Relations Review*, **30(2)**, 175–187.

Altonji, J. G. and Blank, R. M. (1999). Race and gender in the labor market. In O. C. Ashenfelter and D. Card (eds.), *Handbook of Labor Economics*, vol. 3c. Amsterdam: Elsevier Science, 3143–3259.

Armitage, P. (1955). Tests for linear trends in proportions and frequencies. *Biometrics*, **11**, 375–385.

Avolio, B. J. and Barrett, G. V. (1987). Effects of age stereotyping in a simulated interview. *Psychology and Aging*, **2(1)**, 56–63.

Avolio, B. J., Waldman, D. A. and McDaniel, M. A. (1990). Age and work performance in nonmanagerial jobs: The effects of experience and occupational type. *Academy of Management Journal*, **33**, 407–422.

Bäcker, G. (1979). Der ältere Arbeitnehmer auf Arbeitsplatz und Arbeitsmarkt. *Sozialer Fortschritt*, **28**, 64–67.

Becker, G. S. (1957). *The Economics of Discrimination*. Chicago & London: The University of Chicago Press.

Bendick, M., Jackson, C. W. and Romero, J. H. (1996). Employment discrimination against older workers: An experimental study of hiring practices. *Journal of Aging and Social Policy*, **8(4)**, 25–46.

Bertrand, M. and Mullainathan, S. (2004). Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination. *American Economic Review*, **94**, 991–1013.

Bogai, D., Hess, D., Schröder, H. and Smid, M. (1994). Binnenstruktur der Langzeitarbeitslosigkeit. *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung*, **27(2)**, 73–94.

Börsch-Supan, A. (1998). Social security and declining labor-force participation in Germany. *American Economic Review*, **88(2)**, 173–178.

— (2001). Labor market effects of population aging. *NBER Working Paper 8640*, National Bureau of Economic Research, Cambridge, Massachusetts.

Büchner, S. and Dittrich, D. A. V. (2002). Gender discrimination in a household savings experiment. *Papers on Strategic Interaction 14-2002*, Max Planck Institute for Research into Economic Systems, Jena.

Bundesanstalt für Arbeit (ed.) (2001). *Arbeitsmarkt in Zahlen - Strukturanlyse: ältere Arbeitslose*. Nürnberg.

Büsch, V. (2004). *Three Essays on Age Discrimination in the Hiring Process*, chap. 2 Statistical Age Discrimination in the Selection of Applicants. Berlin: dissertation.de.

Büsch, V., Dittrich, D. A. V. and Königstein, M. (2006). Age discrimination in hiring decisions – A questionnaire study. *mimeo*, University of Erfurt.

Cain, G. (1986). The economic analysis of labor market discrimination: A survey. In O. C.

Ashenfelter and R. Layard (eds.), *Handbook of Labor Economics*, vol. 1. Amsterdam: Elsevier, 693–785.

CHIU, S. and NGAN, R. M. H. (1996). Opportunity and discrimination in employment. *Asia Pacific Journal of Social Work*, **6(2)**, 70–86.

CLEVELAND, J. N., FESTA, R. M. and MONTGOMERY, L. (1988). Applicant pool composition and job perceptions: Impact on decisions regarding an older applicant. *Journal of Vocational Behavior*, **32**, 112–125.

CLEVELAND, J. N. and HOLLMAN, G. (1991). Context and discrimination in personnel decisions: Direct and mediated approaches. In J. R. Meindl, R. L. Cardy and S. M. Puffer (eds.), *Advances in Information Processing in Organizations*, vol. 4. Greenwich, Connecticut: JAI Press, 223–238.

CLEVELAND, J. N. and LANDY, F. J. (1983). The effects of person and job stereotypes on two personnel decisions. *Journal of Applied Psychology*, **68**, 609–619.

— (1987). Age perceptions of jobs: Convergence of two questionnaires. *Psychological Reports*, **60**, 1075–1081.

DAHL, S.-Å. and NESHEIM, T. (1998). Downsizing strategies and institutional environments. *Scandinavian Journal of Management*, **14(3)**, 239–257.

DARITY, W. A. J. and MASON, P. L. (1998). Evidence on discrimination in employment: Codes of color, codes of gender. *Journal of Economic Perspectives*, **12(2)**, 63–90.

ESPING-ANDERSEN, G. (1990). *The Three Worlds of Welfare Capitalism*. Cambridge: Polity Press.

— (1999). *Social Foundations of Postindustrial Economics*. Oxford: Oxford University Press.

FERSHTMAN, C. and GNEEZY, U. (2001). Discrimination in a segmented society: An experimental approach. *Quarterly Journal of Economics*, **116**, 351–377.

FINKELSTEIN, L. M. and BURKE, M. J. (1998). Age stereotyping at work: The role of rater and contextual factors on evaluations of job applicants. *Journal of General Psychology*, **125(4)**, 317–345.

FRERICHS, F. and NAEGELE, G. (1998). Labour market position of older workers and national and local policies. national briefings – Germany. In European Commission (ed.), *Projects Assisting Older Workers in European Countries, A Review of the Findings of Eurowork Age*. Luxembourg: Office for Official Publications of the European Communities, 58–64.

FUSILIER, M. R. and HITT, M. A. (1983). Effects of age, race, sex and employment experience on students' perceptions of job applications. *Perceptual and Motor Skills*, **57**, 1127–1134.

GINN, J. and ARBER, S. (1996). Gender, age and attitudes to retirement in mid-life. *Ageing and Society*, **16(1)**, 27–55.

GORDON, R. A. and ARVEY, R. D. (1986). Perceived and actual ages of workers. *Journal of Vocational Behavior*, **28**, 21–28.

GORDON, R. A., ROZELLE, R. M. and BAXTER, J. C. (1988). The effect on applicant age, job level, and accountability on perceptions of female job applicants. *The Journal of Psychology*, **123(1)**, 59–68.

HARRISON, G. and LIST, J. A. (2004). Field experiments. *Journal of Economic Literature*, **XLII**, 1009–1055.

HELLERSTEIN, J., NEUMARK, D. and TROSKE, K. (1999). Wages, productivity and workers characteristics: Evidence from plant-level production functions and wage equations. *Journal of Labor Economics*, **17**, 409–446.

HELLERSTEIN, J. K. and NEUMARK, D. (2004). Production function and wage equation estimation with heteregeneous labor: Evidence from a new matched employer-employee data set. *NBER Working Paper Series 10325*, National Bureau of Economic Research.

HENKENS, K. and TAZELAAR, F. (1994). Early retirement of civil servants in the Netherlands. *Journal of Applied Psychology*, **24(21)**, 1927–1943.

HEYWOOD, J., HO, L. S. and WEI, X. (1999). The determinants of hiring older workers: Evidence from Hong Kong. *Industrial & Labor Relations Review*, **52(3)**, 444–459.

HINKS, T. (2002). Gender wage differentials and discrimination in the New South Africa. *Applied Economics*, **34**, 2043–2052.

ILMARINEN, J., TUOMI, K. and KLOCKARS, M. (1997). Changes in the work ability of active employees over an 11-year period. *Scandinavian Journal of Work, Environment and Health*, **23**, 49–57.

ITZIN, C. and PHILLIPSON, C. (1993). Age barriers at work: Maximising the potential of mature and older people. *Report*, Metropolitan Authorities Recruitment Agency (METRA), London.

JOHNSON, R. W. and NEUMARK, D. (1997). Age discrimination, job separations, and employment status of older workers: Evidence from self-reports. *Journal of Human Resource*, **32(4)**, 779–811.

KAHN, L. (2000). The sports business as a labor market laboratory. *Journal of Economic Perspectives*, **14**, 75–94.

KALIN, R. and HODGINS, D. C. (1984). Sex bias in judgements of occupational suitability. *Canadian Journal of Behavioral Science*, **16**, 311–325.

KOHLI, M., REIN, M. and GUILLEMARD, A. (1993). *Time for Retirement*. Cambridge: Cambridge University Press.

LACZKO, F. and PHILLIPSON, C. (1991). *Changing Work and Retirement: Social Policy and the Older Worker*. Milton Keynes, England: Open University Press.

LEHR, U. (1997). Der veränderte Lebenszyklus – Die biologische Uhr läuft konträr zur sozialen Uhr. In F. Kayser and H. Uepping (eds.), *Kompetenz der Erfahrung*. Neuwied: Luchterhand Verlag, 67–77.

LEWIS, J. and MCLAVERTY, C. (1991). Facing up to the needs of the older manager. *Personnel Management*, **23(1)**, 32–35.

LOCKE-CONNOR, C. and WALSH, R. P. (1980). Attitudes toward the older job applicant: Just as competent but likely to fail. *Journal of Gerontology*, **35(6)**, 920–927.

LORETTO, W., DUNCAN, C. and WHITE, P. J. (2000). Ageism and employment: Controversies, ambiguities and younger people's perceptions. *Ageing and Society*, **20(1)**, 279–302.

MALONEY, T. W. and PAUL, B. (1989). Enabling older americans to work. In *Annual Report of the Commonwealth Fund*. New York: Harkness House.

MANNING, A. (2003). *Monopsony in Motion: Imperfect Competition in Labor Markets*. Princeton University Press.

MCDONALD, L. and CHEN, M. Y. T. (1993). The youth freeze and the retirement bulge: Older workers and the impending labour shortage. *Journal of Canadian Studies*, **28**, 75–101.

MCEWAN, E. (ed.) (1990). *Age: The Unrecognised Discrimination*. London: Age Concern.

MCGOLDRICK, A. and ARROWSMITH, J. (1992). Age discrimination in recruitment: An analysis of age bias in advertisements. *Paper presented at the conference "The employment of older workers in the 1990s"*, University of Sheffield.

NAEGELE, G. (1992). *Zwischen Arbeit und Rente: Gesellschaftliche Chancen und Risiken älterer Arbeitnehmer.* Beiträge zur Sozialpolitik-Forschung. Augsburg: Maro-Verlag.

NEUMARK, D. (2001). Age discrimination legislation in the United States. *NBER Working Paper 8152*, National Bureau of Economic Research (NBER), Cambridge.

OECD (1998). Work force ageing: Consequences and policy responses. *Ageing working papers*, Organisation for Economic Co-operation and Development (OECD), Paris.

— (1999). *Employment Outlook 1999.* Paris: Organisation for Economic Co-operation and Development (OECD).

— (2002). *Employment Outlook 2002.* Paris: Organisation for Economic Co-operation and Development (OECD).

— (2004). *Employment Outlook 2004.* Paris: Organization for Economic Co-operation and Development (OECD).

— (2005). *Ageing and Employment Policy.* Paris: Organization for Economic Co-operation and Development (OECD).

PERRY, E. L. and BOURHIS, A. C. (1998). A closer look at the role of applicant age in selection decisions. *Journal of Applied Social Psychology*, **28(18)**, 1670–1697.

PERRY, E. L., KULIK, C. T. and BOURHIS, A. C. (1996). Moderating effect of personal and contextual factors in age discrimination. *Journal of Applied Psychology*, **81(6)**, 628–647.

PHELPS, E. (1972). The statistical theory of racism and sexism. *American Economic Review*, **62(4)**, 659–661.

QUINN, J. F. and BURKHAUSER, R. V. (1990). Work and retirement. In R. H. Binstock and L. K. George (eds.), *Handbook of Aging and the Social Sciences*, 3rd edn.. San Diego, California: Academic Press, 307–327.

RIACH, P. and RICH, J. (2002). Field experiments of discrimination in the market place. *Economic Journal*, **112**, 480–518.

RIACH, P. A. and RICH, J. (2004). Fishing for discrimination. *Review of Social Economy*, **62**, 465–486.

ROGSTAD, J. and RAAUM, O. (1997). Utstøting fra arbeidsmarkedet blant arbeidstakere med innvandrerbakgrunn. *SNF-report 74/9*, Samfunns- og næringslivsforskning AS (SNF), Bergen.

ROSEN, B. and JERDEE, T. H. (1976a). The influence of age stereotypes on managerial decisions. *Journal of Applied Psychology*, **61(4)**, 428–432.

— (1976b). The nature of job-related age stereotypes. *Journal of Applied Psychology*, **61(2)**, 180–183.

— (1977). Too old or not too old? *Harvard Business Review*, **55(6)**, 97–106.

SALTHOUSE, T. A. and MAURER, T. J. (1996). Aging, job performance, and career development. In J. E. Birren and K. W. Schaie (eds.), *Handbooks of the Psychology of Aging*, 4th edn.. London and San Diego: Academic Press, 353–364.

SCHÖMANN, K. and KRUPPE, T. (1994). Who enters fixed-term contracts: Evidence from East and West Germany. *DIW Vierteljahreshefte zur Wirtschaftsforschung*, **64**, 69–74.

SENTER FOR SENIORPOLITIKK (2002). Seniorpolitikk. *Nyhetsbrev 3/2002*, Senter for Seniorpolitikk, Oslo.

SLATER, R. and KINGSLEY, S. (1976). Predicting age-prejudiced employers: A british pilot study. *Industrial Gerontology*, **3(2)**, 121–128.

37

Solow, R. (1985). Insiders and outsiders in wage determination. *Scandinavian Journal of Economics*, **87**, 411–428.

Taylor, A. W., P. (1998). Employers and older workers: Attitudes and employment practices. *Ageing and Society*, **18(6)**, 641–658.

Taylor, P. and Walker, A. (1991). Too old at 50? Age discrimination in the labour market. *Report*, Campaign for Work, London.

— (1993). Employers and older workers. *Employment Gazette*, **101(8)**, 371–379.

— (1994). The ageing workforce: Employers' attitudes towards older workers. *Work, Employment and Society*, **8(8)**, 569–591.

Triandis, H. (1963). Factors affecting employee selection in two cultures. *Journal of Applied Psychology*, **47(2)**, 89–96.

Tuckman, J. and Lorge, I. (1952). Attitudes toward older workers. *Journal of Applied Psychology*, **36**, 149–153.

VDR (2003). VDR Statistik Rentenzugang des Jahres 2001 einschließlich Rentenwegfall, Rentenänderung/Änderung des Teilrentenanteils. *Report 141*, Verband Deutscher Rentenversicherungstr?ger (VDR), Frankfurt am Main.

Walker, A. and Taylor, P. (1993). Ageism versus productive ageing: The challenge of age discrimination in the labour market. In S. Bass, F. Caro and Y. P. Chen (eds.), *Achieving a Productive Ageing Society*. Westport: Auburn House, 61–80.

Ward, M. (2001). The gender salary gap in british academia. *Applied Economics*, **33**, 1669–1681.

Warr, P. (1994). Age and employment. In H. C. Triandis, M. D. Dunnette and L. M. Hough (eds.), *Handbook of Industrial and Organizational Psychology 4*, 2nd edn.. Palo Alto, California: Consulting Psychologists Press, 485–550.

Weichselbaumer, D. (2003). Sexual orientation discrimination in hiring. *Labor Economics*, **10**, 629–642.

World Bank (ed.) (1994). *Averting the Old Age Crisis: Policies to Protect the Old and Promote Growth*. Oxford University Press.

Acknowledgements