



**WORKFORCE** 2020

**AGEING WORKFORCE**

# A Literature Review of the Forms of Age Discrimination: an Economic Perspective



## ACKNOWLEDGEMENT

Department of Labour

**Disclaimer:** The Department of Labour has made every effort to ensure that the information contained in this report is reliable, but makes no guarantee of its accuracy or completeness and does not accept any liability for any errors. The Department may change the contents of this report at any time without notice.

Data correct as at 24 March 2009.

ISBN-13: 978-0-478-33354-1

© Crown copyright 2009

This material is Crown copyright unless otherwise stated and may be reproduced free of charge without requiring specific permission. This is subject to it being reproduced accurately and not being used in a derogatory manner or in a misleading context. The source and copyright status should be acknowledged. The permission to reproduce Crown copyright protected material does not extend to any material in this report that is identified as being the copyright of a third party.

Department of Labour  
PO Box 3705  
Wellington  
New Zealand

[www.dol.govt.nz](http://www.dol.govt.nz)

For Department of Labour research, visit  
[www.dol.govt.nz/browse-dol.asp](http://www.dol.govt.nz/browse-dol.asp)

For the Workforce 2020 web page, visit  
[www.dol.govt.nz/services/LMI/workforce2020/index.asp](http://www.dol.govt.nz/services/LMI/workforce2020/index.asp)

Please cite as: Department of Labour. *Ageing workforce - A literature review of the forms of age discrimination: an economic perspective*. Wellington: Department of Labour, May 2009.

## **EXECUTIVE SUMMARY**

Several types of discrimination in the hiring of older workers are reviewed in this paper: employer discrimination, search discrimination, employee discrimination, customer discrimination and information cost-based discrimination.

### **Employer discrimination**

Employers who discriminate due to a prejudice are willing to accept lower profits to avoid hiring the group they dislike. They are at a cost disadvantage to those who hire on merit. It is possible that many firms may discriminate, but there is little effect on wages because older workers are hired by the less prejudiced employers. Competition can drive the discriminating employers out of the market.

### **Search discrimination**

Wages may not be equalised by competition when there is employer prejudice because of higher job search costs. Older job seekers may accept a lower wage rather than chance waiting for better offers from the less prejudiced employers.

### **Employee discrimination**

Employees may dislike working with certain groups and ask for higher wages to work with them, or they are less productive in integrated work sites. There could be lower wages than otherwise for older workers in more integrated workplaces.

### **Customer discrimination**

Consumers may discriminate in transactions involving customer-worker interaction. There could be lower pay for older workers in jobs with customer contact or segregation into jobs with less customer visibility with similar pay.

### **Information cost-based discrimination**

Information is not free. Information costs may be higher when evaluating older job applicants because of the diversity in their work histories and greater uncertainty about how much of their human capital is mobile across jobs. These information costs may be a major factor behind age discrimination. Employers may supplement what is known of an individual applicant with an age-based generalisation about the mobility of their human capital to the new job. Information cost-based age discrimination can persist despite competition if the information cost savings outweigh the cost of hiring errors. It can lead to lower average wages for groups with lower average productivity and equal average wages for groups with the same average productivity. The distribution of wages is compressed. Workers of above and below average ability may be paid a wage closer to the average wage rather than a wage reflecting their individual merits.

### **The power of demographic trends**

The cost to employers of age discrimination is rising. Older workers are the fastest growing labour pool. One in four workers will be over 55 in 2020, versus one in six in 2007. Employers that do not hire on merit risk their own survival as they compete among themselves for a shrinking pool of younger workers.

# CONTENTS

<b>EXECUTIVE SUMMARY .....</b>	<b>3</b>
<b>LIST OF FIGURES.....</b>	<b>5</b>
<b>1. INTRODUCTION .....</b>	<b>6</b>
1.1 Purpose and rationale for the review .....	6
1.2 The scope and limits of the review .....	7
1.3 Methodology.....	7
1.4 Some law and economics of discrimination .....	8
1.5 The structure of the review .....	10
<b>2. TYPES OF AGE DISCRIMINATION .....</b>	<b>11</b>
2.1 Prejudice and employer discrimination .....	11
2.2 Employer prejudices and search discrimination .....	12
2.3 Employee discrimination .....	13
2.4 Customer discrimination and job visibility.....	16
2.5 Information cost-based discrimination .....	17
<b>3. THE PERSISTENCE OF AGE DISCRIMINATION.....</b>	<b>33</b>
3.1 Is prejudice enough? .....	33
3.2 The role of information cost savings .....	34
3.3 Employer beliefs are neither fixed nor uniform.....	35
3.4 Belief formation and change .....	35
3.5 Forces for change.....	36
3.6 The power of demographic trends .....	38
<b>4. COUNTERING AGE DISCRIMINATION .....</b>	<b>40</b>
4.1 What is the origin of the discrimination? .....	40
4.2 Reinforcing and offsetting market processes.....	40
4.3 The role of pioneering information.....	41
<b>5. SUMMARY AND RECOMMENDATIONS.....</b>	<b>43</b>
5.1 Summary.....	43
5.2 Recommendations.....	44
<b>REFERENCES.....</b>	<b>45</b>

## LIST OF FIGURES

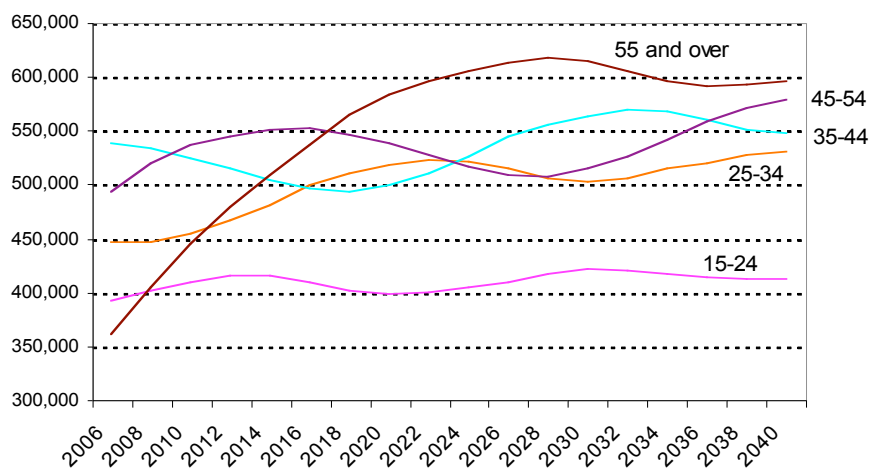
Figure 1: Projected New Zealand labour force by age group, 2006–2040 .....	6
Figure 2: Illustrative expected job tenures by age .....	27
Figure 3: Percentage of the population employed by age, OECD 2006 .....	28
Figure 4: New Zealand labour force participation rates by age group, 1987– 2008 .....	28
Figure 5: Job tenure of 10 years or more by age group, New Zealand, March quarter 2008 .....	29
Figure 6: Variance-based discrimination .....	31

# 1. INTRODUCTION

## 1.1 Purpose and rationale for the review

Between 2009 and 2020, older workers (aged 55 and over) will go from the smallest age group to the largest in the New Zealand workforce (see Figure 1). The labour force will plateau in size during the 2020s (Statistics New Zealand 2007). With one in four New Zealand workers likely to be aged 55 years and over by 2025, barriers to their employability and the proper utilisation of their skills need to be explored and opportunities for improvements identified.

**Figure 1: Projected New Zealand labour force by age group, 2006–2040**



Source: Statistics New Zealand (2007), National Labour Force Projections, 2006-base, Series 5M.

One barrier is age discrimination. Discrimination is the unequal treatment of equally qualified workers. A range of researchers<sup>1</sup> have found evidence of age discrimination in hiring in New Zealand and overseas and older workers having longer unemployment spells, lower re-employment wages after job layoffs, fewer promotions and reduced training opportunities.

The employment of older workers is part of the Government's Positive Ageing Strategy. Recent policies that affect the labour market participation of older workers include an intensified jobs search service, with new specialist health and disability advisors, and the removal of the age-related work test exemptions for the unemployment benefit in 2007. In 2008, the Retirement Commission, Human Rights Commission, Council of Trade Unions, Equal Employment Opportunity Trust and Business New Zealand jointly developed a good practice guide for employers to tap the talents of older New Zealand workers in the public and private sectors.<sup>2</sup> The Ministry of Social Development's Turning 65 research project

<sup>1</sup> See OECD 1998, 2006; Department of Labour 2006; McGregor and Gray 2002; McGregor 2007; Davey 2008; Murray 2002; Riach and Rich 2002, 2006, 2007a, 2007b; Wilson and Kan 2006; Ghosheh Jr, *et al.* 2006; Wilson *et al.* 2007; Wood *et al.* 2004; Lahey 2008; Neumark and Stock 1999; Adams 2002; Neumark 2001, 2003, 2008.

<sup>2</sup> See <http://www.eeotrust.org.nz/content/docs/toolkits/Valuing%20experience.pdf>.

has asked a sample of people currently around that age to describe their involvement in paid work over the past 10 years, and what has affected it. This research will be published later in 2009. The Department of Labour has published on the retirement transitions of workers in the 60s (Dixon 2008; Dixon and Hyslop 2008) and the impact of an ageing population on the labour market in 2020 (Department of Labour 2008). The Department of Labour has also published a myth-buster about older workers in 2009.<sup>3</sup> The Equal Employment Opportunity Trust has released research in 2008 on the attitudes of employers and recruitment consultants to older workers (McPherson 2008a, 2008b).

What motivates this paper is not the existence of age discrimination against older workers, but its persistence. Why does age discrimination against older workers persist despite competition? Why do employers, operating in competitive markets, seeking profits and wanting to reduce costs, choose to not employ well-qualified older workers on merit and instead hire younger applicants?

## **1.2 The scope and limits of the review**

This review aims to widen the New Zealand debate about the factors that cause age discrimination in recruitment to persist and to wane. Job changing by older workers will be the focus of the economic analysis in this paper because of a paradox. Workers reach their career peak earnings by their 50s in every country studied. Many employers have older employees who have been on the payroll for years. These workers are paid good wages and stay to retirement. The paradox is these same employers are reluctant to hire new older employees.

Job changing is where the employability challenges of older workers arising from age discrimination appear to peak. They will be the focus of the paper. Issues such as older workers and age discrimination in layoffs, and in internal promotion and training opportunities, are outside the scope of this paper. Age discrimination against other age groups is also outside the scope of this paper.

## **1.3 Methodology**

This review will draw upon the economic literature on employment discrimination, which is now more than 50 years old. The review to follow also draws on the law and economics and sociological literatures on employment discrimination, and it will also touch on the theoretical psychology of cognition.

Much of the vast economics, law and economics, and sociological literatures on employment discrimination are available online. These literatures are regularly summarised in surveys in journals, in economics and law and economics handbooks and textbooks and in online university course notes.

The economics of discrimination was an empirical literature from its start. Only a small part of the economic literature on employment discrimination is theoretical. The purpose of economic theory is to set out internally consistent assumptions and postulates to derive implications about the relationships between events for testing against data. A useful economic theory indicates what will or will not

---

<sup>3</sup> See <http://www.dol.govt.nz/services/LMI/workforce2020/myths/older-workers.asp>.

happen or it will indicate the probability of an event, or what raises, or lowers, the probability of an event (Alchian *et al.* 2005).<sup>4</sup> The first two major contributions to the economic literature on employment discrimination by Becker (1971) – first published in 1957 – and by Alchian and Kessel (1962) tested their predictions about racial and ethnic discrimination against the data of their day. The underlying objective was to gain insight into economic and social problems.

The increased availability of data, both in quantity and detail, advances in econometrics, increased computer power and more special surveys and field experiments have made the economic literature on discrimination intensely empirical. These empirical literatures initially focused on race and sex discrimination, but there are now more studies of age discrimination.<sup>5</sup>

#### **1.4 Some law and economics of discrimination**

To understand discrimination in daily action, Becker (1971) defined discrimination as the voluntary relinquishing of profits, wages or income to cater to a prejudice. Employers, employees or customers must be willing to pay more or forfeit income to act on a preference to associate with some and not others. The definition elucidates the factors that motivated and constrained the choices of market participants. This definition aimed to explain how discrimination can survive in the market in face of competition, monopoly and regulation. It is important to identify why there is discrimination in the market before pursuing policies to eliminate it.

Becker (1971) differentiated between market segregation and market discrimination. Market segregation occurs when prejudice affects the distribution of employment across workplaces – wage inequality is not the focus. Minority workers may be paid the same as others but, due to segregation, they are under-

---

<sup>4</sup> Economics is built on a simple assumption – that individual behaviour is best predicted by assuming that each individual will take the actions that best achieve their objectives, and that these objectives are reasonably simple (Friedman 1990). Human actions are constrained by income and wealth, imperfections of memory and calculating capacities, scarce resources, limited time, and social, legal and political institutions (Becker 1993). Complex human objectives are not assumed in economic analysis because everything could be explained and nothing falsified. Every empirical anomaly that is encountered could be covered in advance by assuming sufficient complexity and number in personal objectives and a high frequency of error and inertia, or by subsequent ad hoc reinterpretations adding new objectives or sources of error to allow a theory to escape refutation (Friedman 1990). What demarks a science from non-science is falsifiability, refutability or testability (Popper 1963). A good scientific theory is a prohibition: it forbids certain things to happen; the more that a theory forbids, the better it is (Popper 1963). Because economics assumes simple objectives and that people tend to choose the best way of achieving them, it must make risky predictions. Such risk-taking is a methodological strength of a science (Popper 1963). Evidence falsifying economic predictions will be easier to come by because these predictions must take the risk of having to be consistent with a few simple and well-known behavioural assumptions, which cannot be adjusted ad hoc. Falsifying evidence cannot be explained away, or differentiated as a special case, by resort to a protective belt of auxiliary assumptions about the great multiplicity of human objectives and the many decision rules used to pursue them, both often unique to different social settings, and that mistakes and inertia are frequent.

<sup>5</sup> See Becker 1971; Cain 1987; Altonji and Blank 1999; Goldin and Rouse 2002; Neumark 1996, 2003, 2008; Neumark and Stock 1999, 2006; OECD 2008b.

represented or they do not work at all in some workplaces. Market discrimination is where wages differ between workers of comparable productivity based on a personal characteristic. The distribution of workers across workplaces is not the focus. Market segregation and market discrimination can occur separately or together depending on the forces acting in the market (Becker 1971). The extent and persistence of each phenomenon needs explaining if the origin and effects of discrimination are to be comprehended and effective countermeasures found.

Becker's analysis suggests that any theory of discrimination must explain:

- the lower wages paid to older workers of equal productivity
- occupational, workplace and sectoral segregation of workers by age
- the long-run persistence of age discrimination.

The Human Rights Act 1993 and the Employment Relations Act 2000 prohibit age discrimination in employment and define exceptions and justifications where it is not unlawful. Discrimination may occur directly or indirectly such as when an apparently neutral decision has a negative effect on a group with a particular personal characteristic (McGregor 2007; Human Rights Commission 2008). The Human Rights Commission can act on complaints. Older employees can also raise an employment relationship problem under the Employment Relations Act 2000.

Legal concepts of employment discrimination focus on prohibited biases. These laws regulate behaviour at particular points in time. Discrimination from a legal standpoint is an action taken by someone to the disadvantage of another because of their race, sex, age or some other protected classification (Ashenfelter and Oaxaca 1987). Economic conceptions of discrimination are broader and extend to behaviours and processes that are not explicitly unlawful or are not effectively prohibited because of issues of measurement or of proof (Blank *et al.* 2004).

Economic conceptions of discrimination explore the immediate and long-run market processes that sometimes intensify and sometimes undermine discrimination. Understanding these processes allows policy makers to decide how to best change them and to anticipate and react to market processes that either undermine or reinforce the goals of regulation. The economic analysis of discrimination identifies competition as a process that can reinforce legal prohibitions on discrimination. The economic analysis of discrimination can also identify market processes that can reinforce discrimination and inequality.

There can be a self-fulfilling accumulation of disadvantage across a long period of time. An example of a self-fulfilling process that leads to persistent inequality is reduced incentives to invest in human capital both at school and later in the workplace (Pager and Shepherd 2008; Farmer and Terrell 1996; Altonji and Pierret 2001; Altonji and Blank 1999). Human capital is comprised of investments in education, on-the-job training, health, migration, searches for information about incomes and prices, and other factors that increase the labour productivity, earnings and job and life satisfaction of the worker (Becker 1975).

A cause of lower levels of investment of members of a minority in human capital can be the lower anticipated returns on these investments because of future discrimination. Employment discrimination may reinforce prejudices by reducing

incentives to develop skills because these investments may not be fairly rewarded (Lundberg and Startz 1983; Farmer and Terrell 1996). Minorities are not hired because of prejudice. The minority responds by investing less in qualifications because they do not expect to be hired and paid on merit. The minority is then not hired because of a lack of qualifications. A vicious circle of inequality follows (Pager and Shepherd 2008; Altonji and Blank 1999). The average human capital of a group can also reflect prior discrimination in the quality of schooling and their current and/or childhood access to health services, credit markets and social and family support (Neal and Johnson 1996; Carneiro *et al.* 2005; Becker 1993; Grodsky and Pager 2005; Pager and Shepherd 2008).

The raw economic definition of discrimination is an unexplained wage gap: the presence of unexplained wage differences after accounting for education, training, experience, job tenure, ability, industry, occupation, location and other observable factors (Ashenfelter and Oaxaca 1987; Renna and King 2007).<sup>6</sup> This definition of economic discrimination is a decomposition technique that attempts to isolate the wage gap into the explained and unexplained. Differences in human capital justify wage differences because the gap arises from a productivity differential. A disparity in returns on the same amount of human capital is potential evidence of discrimination unless there is another justification.

The raw economic definition of discrimination has wide application because wage gaps are decomposed into as many constituent factors as possible. Job seekers may be hired by employers that are free of any bias. These job seekers nonetheless could be disadvantaged by cumulative discriminatory forces acting over many years.

## **1.5 The structure of the review**

Several types of age discrimination against older workers in hiring will be canvassed. These are:

- employer discrimination
- search discrimination
- employee discrimination
- customer discrimination
- information cost-based discrimination.

Economic explanations of each type of discrimination offer insight into what is more and less likely to animate age discrimination. The paper will progressively review each explanation to ascertain which offers the most insight. The plan of the review is as follows. Section 2 covers the different types of age discrimination, Section 3 examines the persistence of discrimination, Section 4 reviews steps to counter age discrimination and Section 5 concludes.

---

<sup>6</sup> This unexplained wage gap can over- or under-estimate discrimination depending on the impact of unobservable variables omitted from consideration. An example is changes to the overall wage distribution. The returns to skill have risen recently, increasing the wage gap between the skilled and less skilled. This increase can affect the wage and employment gap between younger and older workers because the former have more educational qualifications, even if there is no change in the skill distributions between the two groups or in the level of age discrimination.

## **2. TYPES OF AGE DISCRIMINATION**

### **2.1 Prejudice and employer discrimination**

An employer who discriminates due to a prejudice is willing to accept lower profits to avoid hiring the group they dislike. A prejudiced employer pays the desired workers more to attract them and to avoid hiring the undesired group, which can lead to lower wages for the undesired workers and lower profits for the discriminating employers (Becker 1971; Stiglitz 1974; OECD 2008b).

Becker (1971) and Stiglitz (1974) suggest that, if one or more employers refuse to hire workers or systematically undervalue their potential, less prejudiced employers – employers who care more about money – can earn extra profits from hiring the shunned but equally productive workers at bargain wages. These more tolerant employers should outperform their more prejudiced rivals because of this cost advantage, increasing their sales and eventually driving their less tolerant rivals out of business. This will increase in the demand for minority workers, bidding up their wages. The minority workers would have an incentive to seek jobs with the less prejudiced entrepreneurs, since they will pay more.

Discrimination is costly to its victims and the employers who discriminate. These employers are hiring a less productive and less profitable workforce. It is not easy to argue that refusing to hire the most capable workers leads to a competitive edge. Employers who hire the most capable workers profit from doing so. Entrepreneurs who substitute productive efficiency for other objectives put themselves at a disadvantage to those who do not.

Competition can mitigate the entry, survival and growth of discriminatory employers, but it is not a complete answer. Entrepreneurs of sufficiently high ability can survive in the market if they are willing to sacrifice profits for their prejudices (Becker 1971; OECD 2008b). Discrimination is more likely where employers who discriminate do not bear much of the costs of doing so, and this is more likely in markets where competition is restricted (Becker 1971; Alchian and Kessel 1962). Sociological reviews of employment discrimination also note the importance of organisational factors in limiting and empowering individual discretion to act on prejudices (Pager and Shepherd 2008).

When discrimination is driven by prejudices, the wages of workers suffering from discrimination depend on the prejudices of most prejudiced employers with whom they come into contact – this is the marginal employer: it is not the average employer, nor the most prejudiced employer (Becker 1971). The wages paid by the marginal employer are what matters. This is the employer who hires the workers suffering discrimination and pays their wages. It is possible that a single or even many firms may discriminate, but in aggregate, their prejudice might have little or no effect on the wages and employment of minorities because they are hired by the more tolerant employers (Heckman 1998).

Conditions apply to the extent to which competition penalises employer prejudice. If there are no regulatory barriers to hiring and new entry, and if there are no

scale economies constraining increases in the size of the less prejudiced firms, the segregation of workers between the discriminating and non-discriminating firms may occur (Becker 1971). If the supply of minority workers is small relative to the number of unprejudiced employers, there may be no difference in the wages of minority and other workers of equal productivity (Becker 1971).

Minority workers may be employed mostly or exclusively by the less prejudiced firms on equal wages to workers in the majority. If there are insufficient tolerant employers, the minority workers will be hired by the prejudiced employers at a lower wage. Similarly, an increase in the number of minority workers means that they will have to make contact with more prejudiced employers to seek jobs, and the wages offered by them to the minority workers will be lower (Becker 1971).

The extent of age discrimination based on employer prejudice is difficult to ascertain. The earnings of older workers are at a career peak because of their substantial accumulations of human capital. Their lower rate of participation in training is intertwined with good reasons for reduced employee-funded investments in human capital late in their careers. Employers appear to be reluctant to hire older workers but are happy to employ their existing older employees, and many older workers have multi-decade long tenures in their current jobs. More factors are in play, and analysing where the prejudice is strongest, which is in recruitment and job search, may reveal these factors.

## **2.2 Employer prejudices and search discrimination**

Wages may not be equalised by competition when there is employer prejudice because of higher job search costs (Black 1995; Sattinger 1996; Stiglitz 1974). Job seekers have imperfect information on jobs and wages. The growing cost of searching for more information can lead to differences in the wages of workers of equal quality, despite the presence of competition (Polachek 2008; Stigler 1962; Stiglitz 1985). Decisions to apply for the vacancies that are known, and the acceptance of job offers, are based on the incomplete information at hand. Even in industries with a going wage, workers still need information on the stability of employment and hours, location and other conditions. All job searches must stop somewhere. Information is gathered until the expected value of further search no longer outweighs its additional costs (Stigler 1962).

Workers that are discriminated against can face higher job search costs because they do not expect to be hired by prejudiced firms and may have to search longer before they find less prejudiced employers (Black 1995; Sattinger 1996). Both employers and workers will be alert to the reduced job options of minorities.

Higher search costs for minorities may lower asking wages (Black 1995; Sattinger 1996). The asking wage is the lowest wage a worker will accept for a particular type of job rather than keep searching for better options. Asking wages influence the vacancies for which job seekers apply and which job offers are accepted. Job seekers must weigh applying for selected current vacancies or waiting for new openings that better match their skills and asking wage. A better job match<sup>7</sup> will

---

<sup>7</sup> A job match is a pairing of a worker and an employer.

pay more, but suitable vacancies do not open every day. Waiting may not pay off.

Vacancies for minorities are fewer and further between if there is a limited supply of more tolerant employers. Minority job seekers may choose to lower their asking wage rather than chance searching for a better wage offer from a more tolerant employer. Higher search costs can also act to lower the wage that an unprejudiced employer has to offer to recruit minority workers (Black 1995). Job searching is more complicated for older workers because they have more diverse human capital and job histories than younger workers, and finding a vacancy that matches them as well as their last job is not quick. Older job seekers will adjust their asking wages as they learn more about the state of the job market. As a rule, workers quit to better paid jobs and, after layoffs, accept lower paid jobs.

The notion of higher job search costs affecting the asking wages and prolonging the job searches of older workers has resonance. Lahey (2008), Riach and Rich (2002, 2006, 2007a, 2007b), McGregor (2001, 2007), Wilson and Kan (2006), and Davey and Cornwall (2007) all found that older workers are interviewed less often than comparable younger applicants for vacancies. This prolongs job searches, lengthens unemployment spells and affects asking wages. As an example, in 2007, 15.6 per cent of New Zealand unemployed were unemployed for 27 weeks or longer, but 27 percent of unemployed aged 55 and over were unemployed for 27 weeks or longer (Statistics New Zealand 2008a).

Search discrimination offers insight about age discrimination but it is not a full explanation. The wage effects of search discrimination are difficult to detect because older workers are paid more than younger workers because they have more human capital. The empirical evidence is that wages peak between the ages of 50 and 60 in all countries in all professions (Cahuc and Zylberberg 2007).

## **2.3 Employee discrimination**

There is employee discrimination if existing workers dislike working with certain groups and ask for higher wages to work with them, or they are less productive in integrated work sites (Becker 1971). The discriminating employer is responding to employee prejudices, not their own. Employers may prefer to hire a more homogeneous workforce to minimise conflict among their employees.

Competition will not independently penalise employee discrimination. Employee discrimination can persist long term if employee attitudes change slowly. Market pressures will cause, for any given wage, older workers to be hired more in workplaces that are less age-prejudiced, while younger workers are hired more for the most age-prejudiced workplaces. Employee discrimination may result in segregation of workplaces by age with equal wages if there is free entry and scale economies do not limit increases in firm size. There could be lower wages than otherwise for older workers employed in the more integrated workplaces subject to employee age prejudice. Mixed evidence of employee discrimination against older co-workers was found for this review (see Box 1).

**Box 1: Evidence of employee discrimination against older workers**

Lahey (2008) investigated age discrimination by posting fictitious applications by women to thousands of entry-level vacancies. The computer-generated job applications closely matched each other except for age. The evidence suggested employer discrimination: a younger worker was found to be 40 percent more likely to be offered an interview than an older worker. She found no evidence of employee discrimination but she viewed her test as rudimentary.

Levitt (2004), Antonovics et al. (2005) and List (2006) studied discrimination in television game shows that required social co-operation. In common with the workplace, real decisions are made for high stakes in these social environments and the participants are subject to powerful but evolving financial incentives. The winner-take-all prize is linked to the number of consecutive correct answers. The stronger contestants should first co-operate to vote off weaker contestants to build a larger prize pool. Tactics should switch in later rounds to voting off stronger contestants because they have become rivals. Levitt (2004) found evidence of prejudiced-based age discrimination because the voting on older contestants tended to not switch. The younger contestants tended to vote off older contestants in both the early and the later rounds despite this tactic increasing their own chances of losing. List (2006) found that contestants in another game show were willing to pay a financial price to avoid co-operating with the older participants. Studies of game shows also found race and sex discrimination (Levitt 2004; Antonovics *et al.* 2005; Agüero 2008; Lee 2006).

These studies reveal some inter-generational antipathy. The general applicability of these results is nuanced. Many of the tools and organisation forms used to solve daily problems were unavailable. Most workplaces have owners and managers who specialise in monitoring co-operation and promoting productivity. They suffer capital losses if they do not maintain sufficient control of others in the firm and of themselves to ensure that everyone performs to their best and capital gains if they do. Organisational form matters. They change incentives. There is competition among organisational forms for survival; the form that survives in different activities is that which will deliver the product demanded by customers at the lowest price while covering costs (Fama and Jensen 1983). Price *et al.* (2009) found that inter-racial co-operation is strong in teams where workers are operating in a highly visible setting with strong incentives from owners and managers to behave efficiently. Alchian and Demsetz (1972) and Barzel (1982, 1987) proposed that measuring and monitoring team production including changing team membership and input mixes so that effort, output and profits are greater is a leading rationale for the emergence of capitalist business firms.

Employers can profit from transcending employee prejudices because employee diversity can improve team dynamics. Diversity increases the chances of having the information to solve a problem by producing more creative solutions than do homogeneous groups and by having employees with better insights into customer needs (Equal Employment Opportunities Trust 2008; Lazear 1998). Sectors employing a large number of workers responsible for creative decision-making and customer service gain from more employee diversity (Sparber 2009).

The basic quandary about employee discrimination is that men and women get along under a wide range of family, social and economic circumstances as do older and younger people. To account for this quandary, prestige-based theories have been advanced to explain the persistence of employee discrimination.

Goldin (2002, 2006) proposed that changes in male-female occupational segregation over time were based on shifts in employee resistance to the integration of all-male occupations. This resistance was animated by a loss of social status from having the minimum level of skill or strength required for a previously all-male occupation. Employees now have something to lose from integration. The new female hires may reduce the social prestige of the previously all-male occupation. The wider community, through a lack of countermanding information, might perceive occupational skill levels to have been diluted even if the newcomers are actually well qualified. The social status from membership of the occupation is lowered because news of the good qualifications of the newcomers is not yet common knowledge (Goldin 2002, 2006).

A prestige-based explanation of employee discrimination does not carry well for older workers because they have already entered their occupations and jobs when younger. There are a few occupations whose members are mostly young or mature because of the physical demands and tolls of, for example, professional sport or the need for long experience at junior levels such as airline pilots, surgeons, judges and senior counsel. Achieving these credentials might be linked to age-related occupational prestige. Employee discrimination might arise but it could work against younger as well as older co-workers depending on particulars. The suggestion of younger co-workers resisting the continued presence of older co-workers on prestige grounds is further weakened by many older workers in all industries having long-term jobs that take them to retirement without incident.

Any purported link between ageing and declining skills and work capacity would be less of a concern to co-workers than to employers because their focus is their own wages, not the profitability of the firm as a whole. There might be employee discrimination if wages were interdependent. If there was such employee discrimination, its incidence would be less against older workers in leadership roles because this ability usually improves with age. There might be more employee discrimination against older co-workers in jobs that, for example, require cognitive acuity and rapid processing and memory recall in team production situations where the wages of members are linked to team output.

Employee discrimination against older workers is not penalised by competition, and so cannot be ignored. As an explanation of ageism, employee discrimination lacks the interpersonal animosity, tension and desire for occupational prestige that drives other forms of employee discrimination. Employee discrimination has much more power as an explanation of race and sex discrimination and segregation. A message of this review is that several economic explanations that provide considerable insight into other forms of employment discrimination weaken as explanations of age discrimination, once subject to closer scrutiny.

## 2.4 Customer discrimination and job visibility

Consumers can demand employment discrimination, especially when a transaction involves significant customer-worker interaction. Some buyers may pay a higher price to be served by the desired employees and to avoid the group they prefer to shun (Becker 1971; Neumark 1996). When this is the case, firms have an incentive to avoid hiring from the less desired group, or pay them less to make up for the lower price. Competition provides firms with incentives to cater to consumer prejudices, not their own. Some view customer discrimination as the leading driver of race discrimination (Holzer and Ihlanfeldt 1998; Neumark 1996; Coyne *et al.* 2007; Kanazawa and Funk 2001; Kahn 1991a, 1991b).

Customer-driven age discrimination cuts both ways. Customers may prefer to deal with people of their own age: youth fashion shops and retirement investment advice for mature workers are examples. Customer discrimination can result in older workers working more in lower priced outlets and in types of work with less customer contact (Becker 1971; Neumark 1996). There could be a degree of workforce segregation on the basis of job visibility and unequal pay in jobs requiring customer contact. Minorities can escape customer discrimination by specialising in producing goods involving no contact with the final consumers (Cain 1987). The viability of this escape route depends on the relative size of the minority, the relative size and labour intensity of the sector not subject to customer prejudice and the intensity of customer prejudices (Kahn 1991a).

Markets are good at serving consumer wants, so competition will not penalise customer discrimination (Holzer and Ihlanfeldt 1998; Neumark 1996; Kanazawa and Funk 2001). Customer discrimination can linger because their attitudes may change only slowly, and the preferences of a wide group of individuals may need to change. In contrast, prejudice-based employer discrimination requires changes to the attitudes of a much smaller group, and employers are also entrepreneurs facing evolving incentives and they profit from alertness to new opportunities. Because there is ample data,<sup>8</sup> there is a large literature on discrimination in professional sports based on race and nationality (Rosen and Sanderson 2001; Kahn 1991b, 2000). There is evidence of customer, employer and co-worker prejudice against minorities and foreigners but also of social change (Kahn 1991b; Rosen and Sanderson 2001; Hanssen and Andersen 1999; Todd *et al.* 2002; Broyles and Keen 2005). Integration came from entrepreneurs risking the loss of some of their existing customers in return for the anticipated cost savings and greater commercial and sporting success from hiring talented minorities and foreigners (Goff *et al.* 2002; Coyne *et al.* 2007; Coyne *et al.* forthcoming).

Customer discrimination may not be a prominent factor in explaining employment discrimination outside of retail and other areas of customer interaction because the demographic features of the producer are usually not known (Gunderson 2006). The propensity of customer discrimination on the basis of age to favour as

---

<sup>8</sup> The identity and record of every employee, supervisor, manager and employer are precisely known in the professional sports labour market. The performance, training and salaries of every player, team, coach, manager and owner are documented in microscopic detail by clubs, owners, media and fans.

well as harm older workers and its limited applicability to jobs without much customer visibility still leaves a large part of age discrimination unexplained.

## **2.5 Information cost-based discrimination**

### **2.5.1 Information costs of recruitment**

Prejudice can cause discrimination, but extensive age discrimination can persist without it. Information costs can explain a range of puzzles in the labour market – one of these puzzles is the perceived ignorance of employers about the employability of older workers and their use of stereotypes, which repeatedly leads them to forego opportunities for profit by not recruiting on the basis of merit. The best job applicants are not interviewed or hired because of age stereotypes.

The dilemma facing employers is more than the employability of older workers as a group. Their predicament is discovering, at an acceptable cost, which individual job applicant is the best qualified to fill a vacancy. Answering this question comes at a cost, and the answer is imprecise and subject to uncertainties. Labour is the most heterogeneous of production inputs. There is immense diversity between workers in their skills, education, experience and talents. Jobs, employers, workplaces and co-workers vary greatly in ways that matter to the attractiveness of a job and the ability of a worker and their team to be productive. The matching of the right job to the right worker “creates economic value of a magnitude that few other economic processes can” (Lazear and Oyer 2008, p. 19).

### **2.5.2 Recruitment is an investment made under conditions of uncertainty**

Employers do not fully know how applicants will perform in a job or how long they will stay, and they have limited information on the quantity and quality of any prior training. Many jobs last a short time because the worker or the employer gradually learns that they are not well suited. The costs of job turnover such as recruitment and training costs that are not recouped and management time away from production to recruit again encourages employers to be selective in hiring.

Job applicants have private information about their true worth, and employers know more about the job. Differences in the availability of information create an incentive for workers to overstate their qualifications, and employers may understate the demands of the job. Many aspects of an applicant’s record and qualifications are difficult to document even if they are committed to doing so truthfully. The employer must make assessments about a host of unknown, hard to observe and subtle factors such as effort, intelligence, steadiness, punctuality, teamwork, ambition, responsiveness, initiative and intentions to stay or quit based on highly limited observations. The hiring of workers is a major investment decision made under conditions of uncertainty (Spence 1973). The ensuing employment discrimination is the result of “the scarcity of information about the existence and characteristics of workers and jobs” (Phelps 1972, p. 659).

The ignorance and uncertainty of employers about the employability of older job seekers is a subset of a general problem of ignorance and uncertainty about the quality of all applicants. Alert employers that discover better ways of coping with

ignorance and uncertainty about the true quality of job applicants seize a cost advantage over rivals because they can hire a more productive workforce.

### **2.5.3 What powers stereotyping?**

Information cost-based theories of discrimination were advanced by Alchian (1969), Akerlof (1970), Arrow (1973a, 1973b), Phelps (1972), Stiglitz (1973), Aigner and Cain (1977) and Lundberg and Startz (1983) to explain the persistence of employer discrimination in the face of competition.

Information cost-based discrimination occurs when distinctions are made between demographic groups on the basis of real or imagined statistical distinctions between them. Stereotyping on the basis of demographic characteristics is a form of information cost-based discrimination, which is also known as statistical discrimination. Stereotyping is part of the categorisation that everyone uses to make sense of the world around them (Paul 1998). A primary function of the human mind is the classification of sensory perceptions of reality – the mind is an “apparatus of classification” that evolves through experience (Hayek 1952).

Information costs were explored by the post-1970 economic literature on discrimination because employer prejudice can explain the persistence of segregation but it cannot explain wage inequalities that are significantly larger than what can be accounted for by human capital differentials and by a lack of market competition (Arrow 1973b, 1998; Stiglitz 1973, 1974; Phelps 1972). Information cost-based discrimination arises without an invidious motive. It is a reaction to information costs.

There is a desire to maximise profits given the cost of information and uncertainty about the expected productivity of job applicants. Employers have limited information about applicants, and the collection of information is costly. Employers respond to limited information by using easily observable statistical characteristics or stereotypes based on a group’s average behaviours and attributes to infer the expected productivity of individual job applicants.

### **2.5.4 The formation of stereotypes**

Stereotypes differ from prejudices.<sup>9</sup> Prejudices are attitudes about members of a group based solely on their membership of a group. Stereotypes are generalisations that arise from how people collect and process information to form opinions about the characteristics of members of a group. Prejudices arise out of complex psychological and economic processes involving rigid, repressed, authoritarian personalities; in-group/out-group dynamics; ethnocentrism; a suspicion of outsiders; social conflict; economic insecurity and the competition for resources; and the enhancement of egos through projection and scapegoats.

Stereotypes arise more out of the complexity of understanding the world around us. They develop when individuals are unable or unwilling to obtain all of the information needed to make fair judgements. Information is neither free nor

---

<sup>9</sup> Pager and Shepherd (2008), for the purposes of racial discrimination, define racial prejudice as an attitude, racial stereotypes as a belief and racism as an ideology.

freely available, so all opinions are based on limited information. Because they are an attempt to make sense of the world rather than dislike it, stereotypes are more likely than prejudices to change, be updated and discarded after repeated interaction with and learning about members of the group that is stereotyped.

If employers have weak data on the productivity and expected job tenures of individual job applicants, they may use easily observable individual qualities and group averages and other demographic characteristics to save on the costs of more individualised screenings. Group memberships are low-cost screening devices. Employers may factor in knowledge about differences in average group characteristics that relate to the individual productivity characteristics sought. The distinctions can be fine or coarse, with education and age as examples of each.

Information cost-based discrimination can occur equally in markets characterised by competition or monopoly. Prejudiced-based employment discrimination is more likely in markets where there is a monopoly or where competition is constrained (Becker 1971; Alchian and Kessel 1962; Levine *et al.* 2008; Weichselbaumer *et al.* 2007; Weichselbaumer *et al.* 2008; OECD 2008b). Akerlof (1976) defined the difference as prejudice-based employment discrimination persists despite market incentives to the contrary while information cost-based employment discrimination persists because of economic incentives.

An important message of this review is that the employability challenge facing older workers is not necessarily employers having an incorrect perception of them as a group. Vacancies will attract numerous applicants, and many of these will be qualified to different degrees. The employer wants to know more than this.

Employers face an information extraction problem – discovering at an acceptable cost which particular job applicants are the best qualified. Knowing that the job applicants as a group are of a certain average quality and some will be suited to fill the vacancy does not identify these individuals by name for hiring. Various filters and screens are used to sort among and find the best applicants. The cost of information can be high, and it can differ between demographic groups. The next subsections explain information cost-based discrimination.

### **2.5.5 Education as an employability filter**

Employers search for signals<sup>10</sup> and indicators that cannot easily be faked and that are correlated with the actual productivity of job applicants. Employers discriminate on the basis of information costs when they use education as a filter for employability (Arrow 1973b). Education is widely used to short-list and rank job applicants, and its use is greater when filling vacancies where it is more

---

<sup>10</sup> Signals are costly to fake actions by the informed party on one side of potential transactions that indicate to the uninformed parties on the other side that they have certain hard to verify desirable qualities. A common example is successfully investing in extra education or training to indicate ability. High ability workers will succeed at school. Lower ability workers are less able to fake academic success. The extra qualifications may have little direct productive value in prospective jobs but the successful acquisition of the qualification can indicate to prospective employers which job applicants are likely to have more ability, intelligence, perseverance and self-discipline.

difficult to accurately monitor actual job performance (Riley 1979). Previous relevant job experience is another common employability filter.

Educational requirements can be more than a filter through which all applications must pass to go further. The higher the degree, the more information is revealed about job applicants. Résumés of university graduates contain grades, majors and, of course, the place of study. There may be some truth in the belief that graduates from better universities and schools are, on average, more productive. The information-cost barrier is that the grades of applicants are hard to compare because of differences in grading standards between institutions. To save on information costs, employers may hire on the basis of the university, school or courses as well as individual grades and interview performance.

A more careful individualised screening may find some job applicants of great potential from the less well-known institutions or courses, but this extra information comes at a cost, and it can still be imprecise. The profit foregone from not hiring a more productive worker is offset against the cost savings from the less individualised screening of applicants. By reducing net hiring costs, information cost-based discrimination may, on occasion, increase profits.

#### **2.5.6 The impact of stereotypes on wages**

Stereotypes or information cost-based discrimination can lead to lower average wages for groups with lower average productivity and equal average wages for groups with the same average productivity (Phelps 1972; Arrow 1973a, 1973b). The more noise (imprecision) there is in the available information on individual applicants, the greater is the importance of group averages to their wages.

If it is costly to measure individual qualities accurately – the wage of a worker in the upper margin of productivity may be a weighted average of their group's average productivity and what is known of their individual merits. The employer fills in gaps in their knowledge using their beliefs about the average productivity of the demographic group to which the individual applicant belongs.

The use of stereotypes to assess the ability or attitudes of individuals on the basis of group memberships can result in advantage or disadvantage, not because of individual ability or lack of it but because of group memberships (Laughlin 1999). Information cost-based discrimination narrows the wage distribution.

The wages of a worker in the upper margin of productivity will be pulled down towards their group's average wage (Phelps 1972). This is wage compression. Workers whose productivity exceeds the stereotyped performance level of their demographic group will be under-paid. For example, when education is used as a filter, the best university graduates might receive higher offers including scholarships from the best employers because of their stand-out marks. The closer a graduate's record is to the average grade, the more likely they will receive the standard offer. Better, but not obviously outstanding graduates, will receive the same wage offer as average graduates.

This wage compression will pull up the wages of workers at the other tail of productivity from the wage that would have matched their lower individual productivities towards a wage closer to their group's average productivity (Phelps 1972). Information cost-based discrimination has paradoxes. Less information cost-based discrimination will reduce the wages of those with a smaller amount of human capital because a more individualised consideration of their merits should confirm their lower than average productivity (Donohue 2009).

### **2.5.7 Stereotyping and employer learning**

Information cost-based employment discrimination is a response to hiring uncertainty. In such settings, wages can be tied to the speed of employer learning about the true productivity of workers on the job. This is why information cost-based discrimination is more likely to affect workers with shorter labour market histories (Altonji and Blank 1999). In addition, when differences in the output rates of workers are expected to be small, a detailed screening of the quality of applicants before hiring is likely to be unprofitable (Lazear 1998). This is a reason why education is a major determinant of the job opportunities of young workers. The productivity of these new workers is strongly influenced by their schooling, and employers know little else about them. Younger workers of equal education are yet to accumulate enough experience and on-the-job training to create significant further individual differences in their productivity.

As on-the-job human capital builds and employers learn more about individual productivities, the correlation with schooling fades, less weight will be given to group characteristics, and information cost-based discrimination should decline (Pinkston 2006; Altonji and Pierret 2001; Altonji 2005; Lange 2007; Renna and King 2007). This pattern, at first inspection, suggests that older workers are passed the stage where information cost-based discrimination is applicable.

### **2.5.8 Discrimination, short-listing and long careers**

Information cost-based discrimination has two threads: stereotypes about hard to observe worker investments in human capital and the consequences of group differences in the precision of information on individual productivity (Altonji and Blank 1999). This dissection into hard to observe human capital and group differences in the precision of productivity information allows information cost-based discrimination to still offer insights into the hiring of older workers.

The extensive work experience of older workers does not guarantee that the human capital accumulated over a long career is easy for a recruiting employer to observe or to measure with precision. Older workers have long and diverse job histories, and their human capital composition is different to younger workers.

Information cost-based discrimination is more prevalent at the short-listing stage of recruitment. This is where decisions and generalisations based on very limited information must be made. Applicants are yet to benefit from additional discussion, dialogue and information exchange during interviews and reference checks. When an employer is short-listing, training, education, promotions, length and quality of job experience and previous successful changes to better jobs are gauges of relative productivity. Young workers may not have as much human

capital as more mature workers, but more of the human capital of younger workers is acquired formally at schools that issue grades. Their applications will be filtered on the basis of their formal education and what else is known of them.

The amount and quality of on-the-job human capital of prime age workers can be vindicated by regular promotions and successful job changes. In a job application, promotions and job changes are clear independent signals to potential employers that a worker is valued by others and their productivity is increasing. Job changing usually declines in time. The multiple job changes at the start of careers should have turned up good occupational and job matches. The majority of job changes are in the first 10 years of working (Topel and Ward 1992; Light 2005).

Once a worker has found a good job and career match, promotions and pay upgrades at a long-term job with a single employer are possible, and these signal success and rising productivity. Job tenure increases with age in New Zealand and the rest of the OECD area (OECD 1997, 2003; Statistics New Zealand 2008b).

Part of the increase in earnings with age is that workers are more likely to have found better paying jobs. More time in the job market should increase the chances of finding a better job, occupation and career match and climbing the job ladder to high earnings (Burdett 1978; Manning 2000, 2003). The purpose of early and mid-career investments in human capital and job search is to find the job, industry, occupation and career that maximises the potential of the worker. Many older workers should have succeeded in this and now would be focused more on reaping what they have sown – high earnings either in a long-term job or in an established career across multiple jobs within a single industry or occupation that are best suited to their distinctive mix of skills and experience.

Because of past successes in job and career shopping,<sup>11</sup> the chances of finding a better paying job declines with age. The evidence from all datasets studied is that the earnings of older workers are at a peak with little further growth likely (Cahuc and Zylberberg 2007; Dixon 1996; OECD 1998, 2006; Maré and Hyslop 2008). Most earnings growth is in the early years of working lives (Topel and Ward 1992; Farber 1999; Dixon 1996; OECD 1998, 2006; Light 2005; Maré and Hyslop 2008). With less time left to reap a return before retiring, significant and rapid rewards must be expected before any voluntary job change is risked late in a career.

The conundrum is that, with age, a worker seeking a job may have less access to the mechanisms they used when younger to convey credible information about their employability to new employers. Their ability to use regular job changes, promotions and wage rises as they move up the job ladder to signal employability is reduced. The next section explains this information conundrum further.

---

<sup>11</sup> Job shopping is experimentation: moving from job to job and occupation to occupation to find better matches with a worker's skills, talents and inclinations, often for higher pay (Johnson 1978). Younger job searchers first seek a suitable career and then the best job match within that career (Neal 1999).

### **2.5.9 Screening discrimination and on-the-job human capital**

Employers will always make errors in the evaluation of job applicants. One contention about older workers is employers make systematic errors in evaluating their employability and these errors are greater than errors for younger workers.

The average productivity of two groups of workers can be agreed to be equal, but the abilities of individual members of one group can be measured with greater error by employers (Pinkston 2006; Borjas and Goldberg 1978; Aigner and Cain 1977; Neumark 1999; Altonji and Blank 1999). Employers have differing amounts of knowledge about the two groups. The average wage of the group measured with more error can be lower than for the group measured with more accuracy (Aigner and Cain 1977; Altonji and Blank 1999). Wage offers are lower for one group because they are based on a more erroneous estimate of their productivity.

This error in measurement is an example of screening discrimination, which is where employers are less able to evaluate the qualities of job applicants from one group than from another (Pinkston 2006). Screening discrimination can occur even if it is common knowledge that underlying group characteristics do not differ and neither prejudice nor nepotism is affecting the preferences of employers about job candidates (Cornell and Welch 1996). Screening discrimination is more likely to occur and persist when filling vacancies in which the underlying quality sought is important but is difficult for employers to observe (Cornell and Welch 1996). The mobility of the human capital of older workers to new jobs is one such underlying quality that could be difficult to observe and verify.

Many employers fill vacancies by posting a wage offer and waiting for suitable applicants to apply. Older workers apply for the vacancies they believe that match their skills and asking wage. An employer may short-list fewer older workers than otherwise because of an erroneous group generalisation about their productivity and the transferability of their current skills to new jobs. When there is this sort of information cost-based discrimination, many older workers are misperceived to not justify the wage posted. Some better qualified older workers may be short-listed because enough is known about them to overcome the generalisation.

Short-listing decisions and wage offers are a weighted average of a group's average productivity and what extra is known of the individual merits of particular applicants from a demographic group after reviewing applications and interviews. The amount of individual information gathered depends on the cost of acquiring the extra information and what new light is shed by this additional knowledge.

Older workers may send noisier (more imprecise) signals about their productivity when applying for jobs. A long job history does not automatically make for easy measurement of future productivity by potential employers. As workers age, more of their human capital is specific to jobs and occupations and is acquired informally. Older workers have increasingly distinct mixes of specific and general human capital, long and diverse career paths, dissimilar experiences with skill obsolescence and human capital depreciation and different retirement plans.

Human capital is specific when skills and training are useful only in a particular job, firm, industry or occupation and are not useful elsewhere. Skills and training that are useful in all jobs are classed as general human capital. Older workers have more on-the-job human capital and have different organisational roles and responsibilities to many younger workers. Rather than a lack of information, as is the case for young workers, there is a large block of data about individual older workers that is imprecise and of changing meaning.

One source of the measurement error that leads to information cost-based discrimination is the concentration of their work experience in their current job. Many older workers have been in their current job or occupation for an extended time, acquiring increasingly large amounts of firm-specific and occupation-specific human capital, often by informal means on the job and less so by formal certification processes such as schools, universities and formal training.

As a group, the extent to which the growing stock of specific human capital of older workers is central to their productivity is uncertain. The capacity to change jobs may decline with age because of a concentration of experience. A growing stock of human capital specific to one job, occupation or industry makes a worker highly productive where they are, but less able to move to another at the same pay. Any new job will need to match an increasingly idiosyncratic skill set. Both older job seekers and potential new employers will be alert to this growing concentration of experience in their job search and recruitment decisions.

There is considerable evidence that the long-term earnings losses of older high tenure workers that are laid off is 15 percent or more, with higher earnings losses for white collar workers and for workers that change industries (Farber 1999, 2005; Kletzer 1998; Dixon and Stillman 2008). This wage loss would not occur if the human capital of older high tenure workers was mostly composed of general human capital. On-the-job specific human capital turns a worker increasingly into a specialist, and it will take longer to find a vacancy that wants those skills and pays as much as previously. This specialisation increases their current earnings within their chosen field at the cost of reduced job mobility.

Older workers may have a greater share of human capital acquired informally by on-the-job training and learning by doing, rather than through formal training. Independent of the issue of the transferability of specific human capital, potential new employers may find it more difficult to measure the productivity of job applicants if they have relatively large accumulations of informal human capital or there are other significant unobservable attributes, such as higher job quit rates (Havet and Sofer 2008; Sattinger 1998; Kuhn 1993; Lazear and Rosen 1990).

Education, training, promotions and job changes are signals to future employers of success and employability. Because they are lower down the job and career ladder, the abilities, human capital and current productivity of young and prime age workers are more likely to be regularly reaffirmed by promotions and successful job changes. Promotions within a firm are credible signals to employers of employability (Riley 2001). Successive internal and external advancements signal growing productivity to potential new employers (Lazear 1998).

With age, it is common for workers to reach a stage in their careers where they have found a long-term job that is a high-quality match to their skills and experience and pays well. By investing in such a job, they reduce their ability to signal their employability through recent job changes. The longer a worker is in the job market, the more likely they will reach a stage where more promotions are unlikely because they are already assigned to jobs where their potential and the productivity of their human capital and abilities are at their maximums.

Older workers cannot use job changes and recent promotions to signal employability. Past job changes and recent promotions provide independent confirmation to recruiting employers of the employability of job applicants.

If the productivity of an older worker at their current job is much higher than elsewhere, a detailed screening of older workers may be less worthwhile for a new job. This is where the screening discrimination barrier to job mobility for older workers arises. Younger workers, who may have less specific human capital and more general human capital, may be better candidates for more detailed screenings. After a more detailed screening, it is more likely that these younger workers will be found to have general skills that make them productive in new jobs as compared to older workers with a significant amount of human capital tied to one job (Lazear 1998). Any recent job changes and promotions of a younger worker are further signs of having human capital that moves quickly to new jobs. A more detailed screening of older workers may be less likely to uncover new information and justify its cost. Older workers have much experience, but the composition, concentration and informality of this experience can hinder job mobility as well as be the source of large wage premiums in current jobs.

Screening discrimination is more likely to occur and persist when the underlying quality of workers is important but is difficult to observe; where there are numerous applicants; where interviewing of applicants is relatively cheap; where on-the-job performance is difficult to monitor; where employers can quickly learn the true productivity of recruits; with the ease at which hiring mistakes can be corrected, where the costs of errors by recruits are large such as in capital intensive industries, in managerial jobs, in professions, and in jobs such as airline pilots, safety, compliance, finance and control where mistakes and misconduct are calamities for the firm; and where applicants have to acquire job-specific skills (Lazear 1998; Lange 2007; Pinkston 2006; Cornell and Welch 1996).

Screening discrimination implies that starting wages depend less on the initial productivity of the less accurately screened workers, such as older workers, and the influence of on-the-job performance on wages will increase faster with the job tenure of these workers (Pinkston 2003, 2006; Lange 2007). Employer learning about the true productivity of recruits can correct initial errors in wage offers. This may limit job mobility. The earnings of older workers are often at a career peak. If it is not easy to screen their productivity for new jobs, older job seekers will take longer to find jobs that match their current pay. They have less time left before retiring to let wages growth with tenure in a new job correct any errors in their starting wage offer. Older workers can respond to screening discrimination

by reducing job quit rates and undertaking longer searches for jobs that match their current pay despite any loss in productivity from their specific human capital not transferring to the new job. To protect their specific human capital, mature workers would increasingly search for new jobs within the same industry and occupation.

### **2.5.10 The fixed costs of employment and expected job tenure**

Productivity stereotyping is central to many discussions of age discrimination. Discrimination can persist despite common knowledge of the equal actual and potential productivities of workers of different ages if some types of workers quit their jobs earlier (Altonji and Blank 1999; Polachek 1995). This is because employers have an incentive to estimate job quit probabilities when hiring.

There are fixed costs to employing workers: the costs of hiring and training a recruit are the fixed part of the full cost of labour, and wages are the variable costs of labour (Oi 1962, 1983, 1987, 1990). There is evidence that one-third of the first three months of employment are spent in on-the-job training (Mincer 1974; Barron *et al.* 1987, 1989). These fixed costs of employment must be recouped. Recruitment for high wage and more skilled vacancies usually involve higher fixed costs of employment because of greater variability of individual productivities and a greater need for specific training (Oi 1962, 1987). Large employers often undertake longer recruitment searches and screen applicants more intensively to find the higher ability workers that are more productive in jobs requiring a high level of specific training (Oi 1983, 1990; Barron *et al.* 1987, 1989). These more talented workers will expect to be trained and paid higher wages, which reduces their job quit rates.

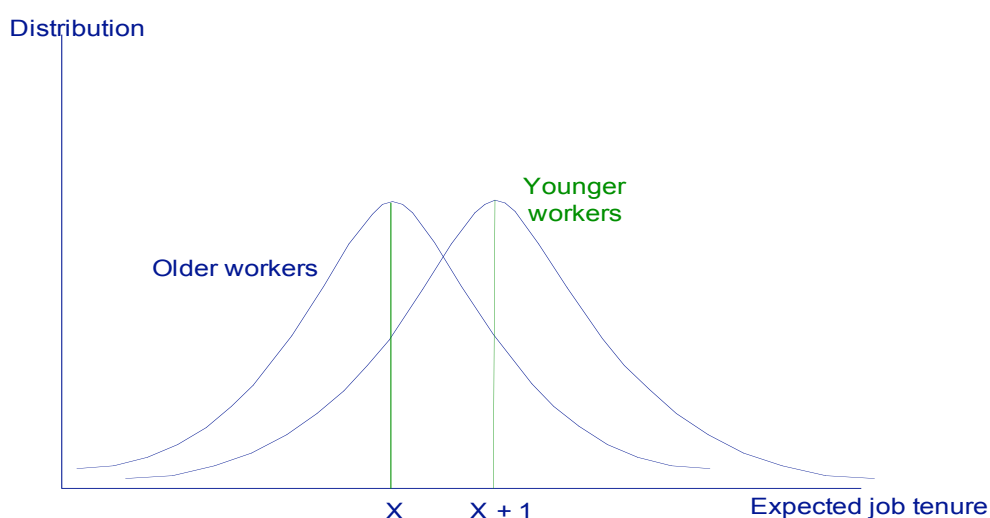
Excessive job turnover also raises the cost of capital. When employers are searching for replacements to fill vacancies and training recruits, their capital and equipment may be underutilised. Employers with more extensive use of capital and equipment may prefer recruits that stay longer because lower job turnover increases the utilisation rate of capital and equipment (Barron *et al.* 1993).

Firms hire the workers that are most profitable and may profit from hiring otherwise identical workers that stay longer. Employers that incur high fixed costs of employment will structure recruitment and wages to reduce job turnover (Oi 1983; Salop and Salop 1976; Lazear 1998). Longer job tenures allow employers more time to recoup hiring and training costs and increase the utilisation of capital and equipment. Workers with high quit probabilities will be recruited more for low training jobs that use less capital and pay less (Barron *et al.* 1993).

Older workers are more likely to apply for higher wage, higher skill and capital intensive vacancies within their occupations because of their greater experience and larger accumulations of human capital. The higher fixed costs of filling these vacancies will give employers an incentive to prefer workers that stay longer. Older job seekers, because retirement is on the horizon for them as a group, may have difficulty signalling their true job quit intentions to employers (Straka 1992).

Workers know more about their true plans to stay than employers. Employers respond by screening the backgrounds of applicants for proxies for likely job tenure. If younger workers as a group have longer average expected job tenures, as illustrated in Figure 2, they may be more attractive to hire, despite the assumption of known equal actual and potential productivity of older workers. The average younger worker in Figure 2 is assumed, for the sake of illustration, to stay one period longer than the average older worker. In the absence of good individual data on job quit probabilities, employers may be influenced by the possibly higher average expected job tenure of younger workers when hiring.

**Figure 2: Illustrative expected job tenures by age**



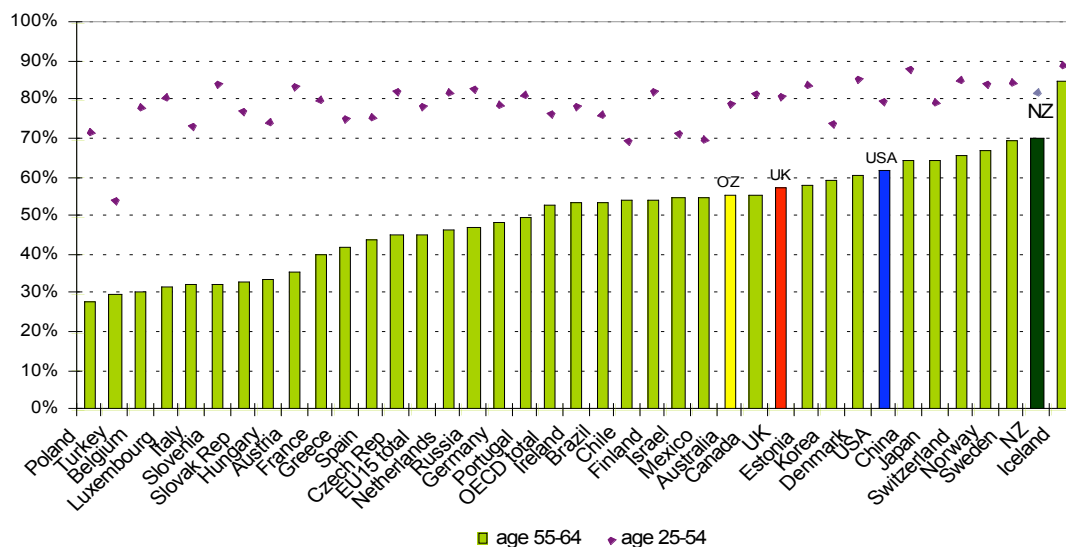
There is evidence that jobs with higher fixed costs of employment, such as jobs with specific training, are more often filled internally or by younger workers.<sup>12</sup> There is also evidence that workers with higher expected job quit rates are hired for jobs with less training, fewer promotions and which use less capital (Lazear and Rosen 1990; Barron *et al.* 1993; Neumark 1999; Altonji and Blank 1999).

OECD (1998) data for nine overseas countries suggests that workers aged 45–55 have comparable job tenures to prime aged workers, but past age 55, the probability of staying in a job for five more years declines sharply. Shorter expected job tenures could give rise to job tenure-based discrimination against older workers in other OECD member countries.

The extent to which these results on the probability of staying in a job apply to New Zealand is affected by institutional differences and the much higher rates of labour force participation of New Zealand older workers. For example, the labour force participation rate of New Zealand workers who are aged 55–64 is the second highest participation rate in the OECD area, see Figure 3, and is significantly higher than the Australia, US and UK. In comparison, the labour force participation rate of New Zealand workers aged 25–54 is in the same band as many other OECD member countries, see Figure 3.

<sup>12</sup> See Adams and Heywood 2007; Disney *et al.* 2001; Dong *et al.* 2007; Heywood *et al.* 1999; Heywood and Siebert 2009; Hutchens 1986, 1987, 1988, 1989, 2007; Hirsch *et al.* 2000; Daniel and Heywood 2007.

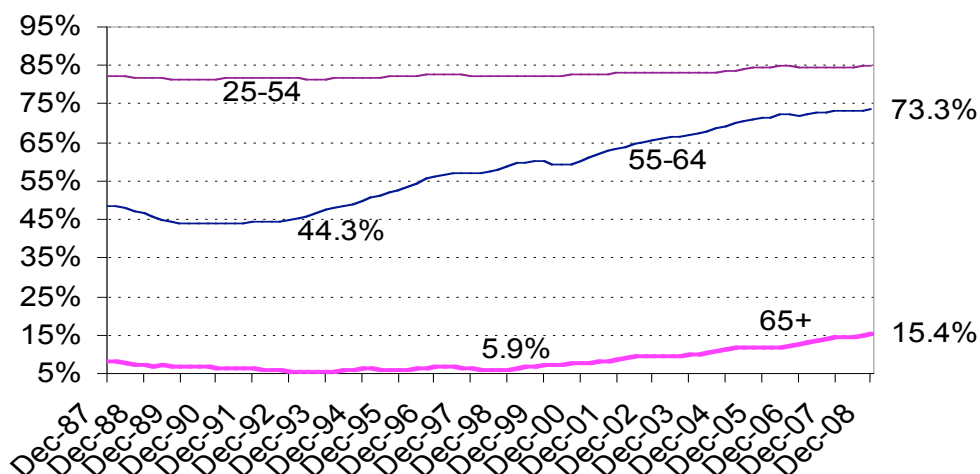
**Figure 3: Percentage of the population employed by age, OECD 2006**



Source: OECD (2008a).

Figure 4 shows that the labour force participation rate of New Zealand workers aged 55–64 grew from 44.5 percent in 1992 to 73.3 percent at the end of 2008. The labour force participation rate of New Zealand workers aged 65 and over grew from 5.9 percent in June 1998 to 15.4 percent in 2007, see Figure 4.

**Figure 4: New Zealand labour force participation rates by age group, 1987–2008**



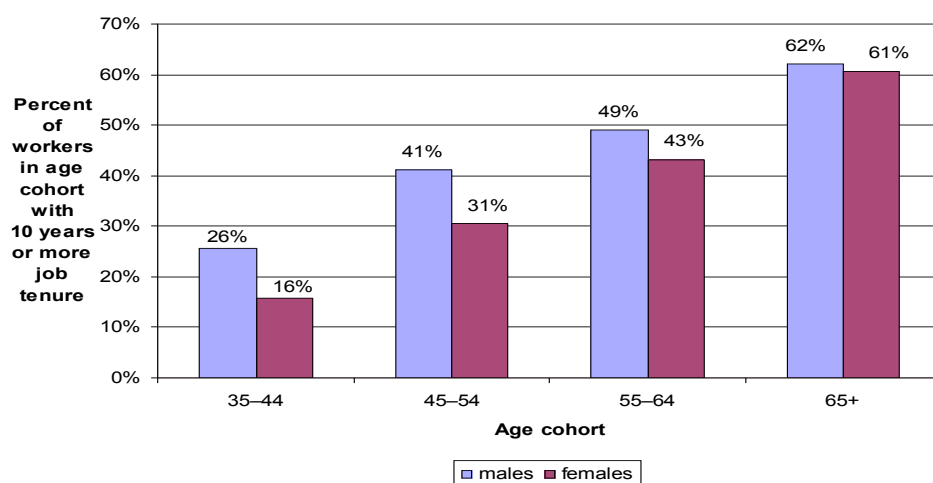
Source: Department of Labour calculations from the Household Labour Force Survey, Statistics New Zealand.

The post 1992 turnaround in the labour force participation rate of older workers followed the phased increase in the eligibility age of New Zealand superannuation from age 60 in 1992 to age 65 in 2002. In 1997–98, the income tax surcharge on New Zealand superannuation was removed. The age-related work test

exemptions for older unemployment benefit recipients were removed in 2007. Many other OECD member countries have public and private pension schemes and unemployment and disability provisions that encourage early retirement and which penalise working past the full retirement age (OECD 1998, 2006, 2007; Heywood and Siebert 2009). The rapid growth in the labour force participation of older New Zealanders suggests that many employers are hiring older workers in large numbers despite any concerns about, for example, their likely job tenure.

The job tenures of New Zealand older workers are, for example, comparable to those in the USA. In 2008, one-half of male workers<sup>13</sup> aged 55–64 in the US and in New Zealand and about one-half of female workers aged 55–64 in the US and 43 percent of New Zealand female workers<sup>14</sup> aged 55–64 have held their current job for 10 years or more (Bureau of Labor Statistics 2008) – see Figure 5. Figure 5 also shows that just over 60 percent of male and female workers aged 65 and over in New Zealand have held their current job for 10 years or more. This compares to 57 percent of male workers and 53 percent of female workers aged over 65 holding their current job for 10 years or more in the USA (Bureau of Labor Statistics 2008). The labour force participation rate of workers aged 65 and over is similar in the US and New Zealand (Statistics New Zealand 2009).

**Figure 5: Job tenure of 10 years or more by age group, New Zealand, March quarter 2008**



Source: Statistics New Zealand (2008b), table 5.

Comparing job tenure data between countries is complicated by confounding factors. Job tenure is sensitive to the quantity of specific and general training

<sup>13</sup> The New Zealand job tenure data includes the self-employed. The employee tenure data from the USA is a sample of wage and salary earners.

<sup>14</sup> Data combining the job tenures of men and women is not presented because the labour force participation of older females is affected by many confounding factors in addition to those affecting older men. These include sex discrimination, gender ageism, human rights and employment laws, the expansion of the services sector, rising real wages, higher levels of education, more household labour savings devices, declining family sizes, the postponement of childbearing, child and elder care responsibilities, the availability of child and age care, and changing aspirations and attitudes, all of which affect occupational, educational and training choices at the start and over the lifecycle.

provided in different countries. The high real wages in the USA are based, in part, on working with more human and physical capital than workers elsewhere. If older workers in the US and New Zealand worked with the same amount and composition of human capital, New Zealand older workers might have longer job tenures because of fewer incentives to retire early and at the age of 65.

When seeking a job with a significant firm-specific training element, the challenge is for the older job seeker to signal in a credible manner that their intentions to stay are as strong as prime age workers competing for the job (Straka 1991). The signals that New Zealand older workers send to employers about their job stay intentions may be more credible than those by older workers abroad.

There is more support for older workers in New Zealand for continued employment. There are no mandatory retirement ages and no income or asset tests on New Zealand Superannuation. KiwiSaver and other private superannuation schemes do not require workers to quit their jobs to draw benefits. Public and private pension schemes overseas can require workers to quit their jobs to become eligible and reduce the benefits of those who keep working. If public or private superannuation rules in New Zealand included income or work tests, it would be more difficult for older workers to credibly signal their intentions to employers to not retire and to stay in current and new jobs.

The evidence on retirement transitions is that most New Zealanders do not stop working at their 65<sup>th</sup> birthday. Instead, they stop work at a wide range of ages (Dixon and Hyslop 2008). Phased retirement transitions, involving part-time work or multiple transitions in and out of employment before a final exit, are far more common than discrete transitions from full-time work to non-employment (Dixon 2008). The labour force participation rate of workers aged 65 and over in New Zealand is one of the highest in the OECD area (Statistics New Zealand 2009). In 2006, 43 percent of men aged 65–69 and 25 percent of women aged 65–69 were in the labour force. Between 1986 and 2006, the labour force participation rate of men aged 65–69 increased by 134 percent; for women aged 65–69, their labour force participation rate quadrupled (Statistics New Zealand 2009).

More study of the implications of job tenure for age discrimination is worthwhile. The interaction between expected job tenure and the fixed costs of employment is an important – or may even be the most important – driver of age discrimination.

### **2.5.11 Variance-based discrimination**

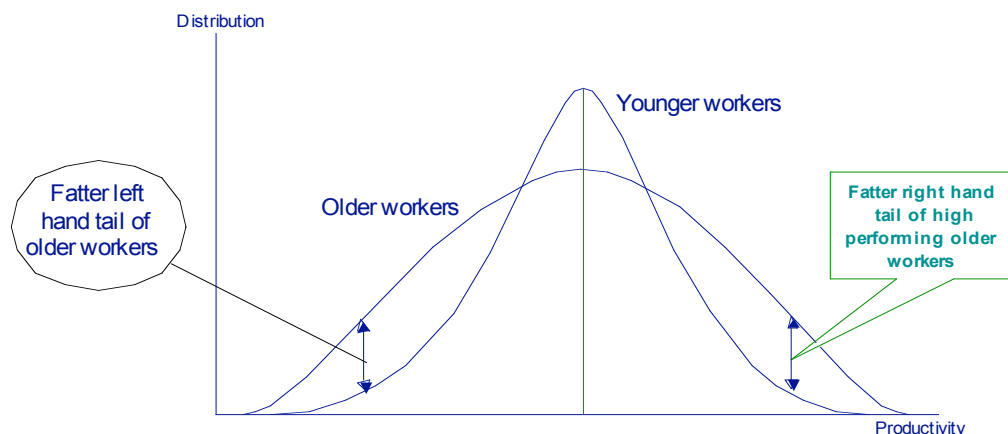
Information cost-based discrimination can extend beyond averages and be based on the variance in the productivity and job tenures of different groups (Phelps 1972; Aigner and Cain 1977; Lundberg and Startz 1983, Altonji and Blank 1999).

A leading difference between younger and older workers in studies of work capacity and biological ageing is an increased range of job performance. Studies show far more variation in productivity within age groups than between them (OECD 1998, 2006; Productivity Commission 2005; Meadows 2003).

The literature on biological ageing and work capacity is united around the view that older workers are more diverse than younger workers. Many writers reject the view that older workers are, on average, inferior in labour productivity, but accept an increased range in job performance (Meadows 2003; Meadows and Volterra Consulting 2004; OECD 1998, 2006; Productivity Commission 2005). Any measured difference in average job performance of older workers is attributed to “a significant deterioration in a minority of older people” (Meadows 2003, p. 18).

This proposition about the increased range of job performance of older workers is illustrated in Figure 6 below. Older and younger workers have the same average productivity, normalised to 1 in Figure 6, but the distribution of the productivities of older workers has a larger variance. The distribution of younger workers is conjectured to be more focused around the mean, with thinner tails, as shown in Figure 6. The productivity distribution of older workers has more variance with less focus around the mean and fatter tails because of a larger range in job performance, as shown in Figure 6. Older workers are conjectured in Figure 6 to be proportionately more in both the upper margin and lower tail of job performance. The fatter right hand tail for older workers in Figure 6, tagged with a rectangular balloon, accounts for the exceptional older workers. The fatter left tail for older workers is the minority of older people, tagged with the bubble in Figure 6, subject to a significant deterioration in job performance. Older workers compensate for each other when their group productivity is measured so the average performance for older workers and younger workers is equal in Figure 6.

**Figure 6: Variance-based discrimination**



If the cost of more detailed screenings of applicants is high, risk averse employers may prefer to hire more from the applicant pool with the smaller variance in likely job performance (Phelps 1972; Aigner and Cain 1977). This is an example of variance-based discrimination. Average job performance is the same but the job performance of one group is more varied than is the other.

There is an upside to variable job performance if the employer can keep the benefits of hiring a risky recruit who turns out to be a star worker and they can correct hiring mistakes easily (Lazear 1998). The discovery of a star must be inside information so rival employers cannot quickly detect and poach the star worker. Younger risky workers may be more appealing to hire than are older risky workers because younger workers have more time left in the workforce for their

new employer to reap the value of discovering stars (Lazear 1998; Burgess *et al.* 1998; Bollinger and Hotchkiss 2003).

The hiring opportunities for risky workers are not evenly distributed across different job types. Risky workers are more attractive to hire in growing industries because the firm has plenty of time to profit from finding a star. Risky workers can be more appealing to hire when their mistakes are not too costly, but good job performance has a large upside such as in the production of knowledge and innovation. Risky workers are more costly for jobs in complex, interdependent systems of production where one mistake by a recruit can have major costs for the firm. Risky workers will be more attractive to hire for more routine work where job performance concentrates near the average (Lazear 1998).

Baron and Kreps (1999) labelled this recruitment risk taxonomy as stars, guardians and foot-soldiers. Stars hold jobs with limited downside risk but high performance is very good for the firm. Researchers are in this category. Employers will consider a wide range of applicants because they want risk-takers and innovators. The costs of hiring errors are small for stars, and the firm must cast widely before finding the more exceptional workers. Guardians have opposite responsibilities. Bad performance can be a calamity but good job performance is only slightly better than an average job performance. Airline pilots and safety, compliance, finance and controller jobs are examples. Dual control is common in guardian jobs. The employer focus is unacceptably low job performance and not associating rewards and promotions with risky behaviours. Employers will closely screen applicants for guardian jobs, impose long apprenticeships and may limit recruiting to port-of-entry jobs. Those between these two risk profiles are foot-soldiers – employees with narrow ranges of good and bad possible outcomes; the best applicant willing to accept the going wage is hired (Baron and Kreps 1999).

When perceived as a riskier hire, older job seekers may have a better chance to be hired as stars or foot-soldiers or where their true productivity is quickly established on the job. Because of their time in the labour market, some older workers are likely to have reached levels of job or occupational responsibility that convert their jobs into guardian-type positions. Older workers who have made a career in guardian-type positions may face frustrations when changing jobs. Long apprenticeships or recruitment at more junior levels disadvantages older workers because they are usually on career high wages in their current job. They may find working their way up again from port-of-entry jobs unattractive and out of time.

The hiring of risky workers will vary: with the cost of more intensive screening relative to the wages paid; with the significance of the job and the cost of errors by recruits; when the difference in output between good and not so good workers is large; when diversity makes a worker good at one job but bad at another; with the extent to which team productivity depends on the weakest link; with the speed of learning a recruit's true productivity and the firm can profit from this discovery by keeping this knowledge private or there are barriers to job mobility; and with the ease at which hiring mistakes can be corrected (Altonji and Pierret 2001; Burgess, Lane and Stevens 1998; Lazear 1998; Lange 2007).

### 3. THE PERSISTENCE OF AGE DISCRIMINATION

#### 3.1 Is prejudice enough?

Competition and legal and institutional factors will sometimes soften and, at other times, magnify the impact of prejudice-based discrimination (Becker 1993). To the extent that age discrimination is driven by prejudice, older workers may cluster into those industries and occupations with more competition and less scale economies, less teamwork, more self-employment and less customer visibility. The employers that are less prejudiced and that suffer from the least employee and customer pressure to discriminate will hire older workers more.

The drawback of relying on prejudice as an explanation for discrimination is a misgiving that much more is going on (Arrow 1973a, 1973b; Stiglitz 1973, 1974; Phelps 1972). Employer discrimination is costly, evidence of employee-based age discrimination is limited and customer discrimination affects a limited range of jobs involving personal interaction and can benefit older workers in some cases. Arrow (1973a, 1998) noted pointedly that prejudiced-based explanations of discrimination predict the absence of what they were trying to explain!<sup>15</sup>

There is some intergenerational hostility, but ageism lacks the biting 'us and them' attitude that powers so many other prejudices – everyone wants to grow old and has older family and friends, and a good many employers and managers are in the same age bracket as older job seekers (Posner 1995, 2000).

If competition penalises prejudice and ageism lacks the 'us and them' that is the crucible of so many prejudices, more is needed to explain the evidence of the persistence of age discrimination in employment. Ageism is rarely about avoiding social contact. It is more about productivity stereotypes. For example, the 1965 US Department of Labor report that argued for a federal age discrimination law was not based on prejudice. The report focused on stereotypes about older workers and the ample evidence of age ceilings on hiring (Neumark 2001, 2003). The initial successes of the age discrimination provisions in human rights and

---

<sup>15</sup> Sociological conceptions of prejudice also suggest that prejudices do not always lead to discrimination. Social and economic variables can reinforce and counteract beliefs, and beliefs will vary in individual intensity. In some cases, the past casts a long shadow over present preferences, and some preferences become deeply rooted as habits, traditions and culture (Becker 1992, 1996, 2006). Individual preferences can be situation-induced and interest-induced beliefs (Elster 1983). Robert K. Merton pioneered a taxonomy made up of: the unprejudiced non-discriminator – the all weather liberal; the unprejudiced discriminator – the fair weather liberal; the prejudiced non-discriminator – the timid bigot; and the prejudiced discriminator – active bigot. Fair weather liberals and timid bigots support or do not support discrimination depending on whether it is easy, expedient or profitable to do so (Palmore 1999; Merton 1949). There is a large body of psychological literature on implicit or unconscious bias. This literature goes beyond explanations of prejudice based on rigid, repressed, authoritarian personalities; economic insecurity; competition for resources and in-group/out-group dynamics. See Project Implicit at [www.projectimplicit.net](http://www.projectimplicit.net) and see <https://implicit.harvard.edu/implicit> for an implicit bias test. There is also a law and economics literature on implicit bias, see Jolls and Sunstein 2006a, 2006b.

employment laws in New Zealand were the elimination of mandatory retirement ages and the use of age ceilings in hiring (McGregor 2007).

The US Department of Labor's 1965 report argued that age discrimination differed fundamentally from sex and race discrimination because ageism was not based on animus or on an antagonism between age groups (Neumark 2001, 2003). The US report highlighted assumptions made by employers about the ability and performance of older workers that were not justified (Neumark 2001, 2003). This challenge of stereotyping persists to today (McGregor and Gray 2002).

### **3.2 The role of information cost savings**

Information cost-based discrimination can occur in well functioning markets. No special assumptions are required about the presence of particular market failures, bad motives, inattention to higher labour costs or a lack of competition to explain the persistence of age discrimination. Competition and the profit motive are assumed to operate in full, and entrepreneurs are alert to new opportunities to cut costs. Policy analysis of age discrimination does not need to rely on fragile assumptions about the way markets work. Prejudice-based discrimination will persist if people are willing to pay higher prices or give up profits to indulge their prejudices. Information cost-based discrimination will persist if it saves on the cost of gathering more detailed information. This is an important qualification.

Recruitment is not a choice unfettered by competition. Employers forfeit profits if they fail to hire the best and most capable job applicants. The employers that focus on hiring on merit are more likely to survive. When cheaper ways of screening individual applicants are discovered, they will displace generalisations.

Plenty of businesses fail because they do not keep an eye on their costs or they are undercut by more efficient and innovative rivals and new entrants. Employers that are passive about their costs put themselves at a competitive disadvantage to more alert rivals. This competitive threat gives employers an incentive to correct errors and keep costs low by hiring the most capable workers.

Nonetheless, there are many reports of age discrimination in different markets in many countries with strong competition in the labour and product markets concerned. Age discrimination occurs outside of monopolies or where market competition is restricted. More must be happening than a systematic refusal of employers to keep their labour costs low by hiring on merit regardless of age.

As Alchian (1969) has noted, information costs are particularly high in labour markets as compared to other markets. Because of this, behavioural responses to information costs are likely to be particularly pronounced in the labour market. These information costs are important to shaping the beliefs of employers about older workers. They result in information cost-based age discrimination.

Information cost-based discrimination arises when it is costly to gather more detailed data about the productivity and likely job tenures of job applicants. Some applicant data lacks credibility because it relies on self-interested assurances of applicants about their abilities and job tenure plans or the quality of training,

which employers cannot easily verify. Older workers have more on-the-job training whose quality is hard to measure and more human capital that is job-specific. It may be cheaper to generalise. This decision will be based on the net cost of hiring errors from using stereotypes and the cost of gathering more information.

### **3.3 Employer beliefs are neither fixed nor uniform**

For information cost-based discrimination to persist, the stereotypes need to be somewhat accurate – they may not fit well many individual members of the group, but they need to be tolerably correct on average (Schwab 2000). The initial accuracy of stereotypes will vary. Employers will make different assumptions.

It is improbable that all employers will have the same stereotype about older workers and that they will maintain this stereotype across time and place in the face of competition and technological and social change. It is difficult to identify a process whereby employers are able to learn what each other's stereotypes currently are and exchange new information as circumstances change.

It is not plausible that all employers lack a capacity to learn and to change their beliefs about older workers. Inflexibility is a long-standing opening for more alert and more creative entrepreneurs to enter or to expand. Prejudice is penalised by competition. Inaccurate fixed beliefs about market conditions are also penalised by competition. The central task of entrepreneurs is to be alert to changing market conditions and act on any profit opportunities that come to their notice.

The employers with the more accurate stereotypes will hire a more productive workforce. Less accurate stereotypes are penalised by competition in the same way that prejudice is made costly.

Business survival, contraction and expansion are not random events. Inaccurate perceptions are an entrepreneurial opportunity for others. Those employers that pay more attention to merit and hire more of the best applicants will expand at the expense of those that do not. This evolutionary process will reduce the number of employers with less accurate beliefs about older workers.

The durability of stereotypes should be undermined by the routine turnover in the identity of employers. Firms close, others open. Ownership changes hands and managerial employees move on. New products and production processes emerge and the quality of existing products continually improves. Industries expand and contract with shifts in consumer demand and technological change. Employers are entrepreneurs. They must continually reassess the value and mix of their labour, capital, technology, and other inputs, stay alert to new opportunities and revise their forecasts of the every changing market conditions ahead. This process will continually reward those entrepreneurs who update their beliefs fastest.

### **3.4 Belief formation and change**

Times change, and beliefs change with the times. The information cost discrimination hypothesis has the advantage that there is no requirement that

stereotypes, social norms and habits about older workers are any more or less resistant to the social and economic forces that have maintained and swept aside many other social and cultural customs in recent decades. Stereotypes and social norms about older workers are affected by the same factors forming, shaping, preserving and changing other habits and traditions. Some beliefs change fairly quickly. Other beliefs can be more habitual, tradition bound and slow to adapt.

Economic and social behaviour can be habitual in that it can be done with limited thought (Becker 1992, 1996; Posner 2006). By transforming behaviour from the deliberate to the habitual, often through repetition, we save on cognitive effort and information costs. The cost of making a choice habitual is a sunk cost, which means that, once the behaviour becomes habitual, it is cheap to continue with it. This discourages change, since new costs would be incurred to learn fresh behaviours and practices (Becker 1992, 1996; Posner 2006). Despite this barrier, habits respond as economic circumstances, technologies and incentives change.

Economic and technological changes have induced enormous and rapid changes in many habitual behaviours, social norms,<sup>16</sup> beliefs and traditions (Becker 1992, 1996, 2006). For example, social views and practices about family size, marriage and divorce, care of elderly parents, men and women living together and having children without being married, and gays and lesbians have undergone deep changes since 1945 (Becker 1991, 1992, 1996, 2006). The start of significant economic growth in industrialised and underdeveloped countries with vastly different cultures invariably resulted in great improvements in women's education levels, reduced family sizes, more divorces, delayed marriage and more people living together without marriage (Becker 1991, 1992, 1996, 2006). Economic growth and technological progress are powerful forces for social change.

### **3.5 Forces for change**

Stereotypes about older workers are not special. They are not quarantined from the social and economic processes of attitude formation,<sup>17</sup> employer learning and competitive survival that changed for the better employer beliefs and perceptions about other groups of workers that were discriminated against in the past.

The notion that stereotypes do not change misses a leading purpose of the market process, which is learning. Entrepreneurs use current and forecasted price and cost changes to learn about the relative scarcity of resources, the profits or losses associated with proposed and past business ventures, and to notice previously unseen opportunities. Competition penalises those entrepreneurs who do not learn and who are slow to adjust to new market conditions.

In the case of stereotypes and social norms about older workers, there is no requirement for detailed co-ordination across society, possibly including legislation, enforcement and education, for there to be social and economic

---

<sup>16</sup> See Elster (1989) and Young (2006) for general discussions of the economics of social norms. See Posner and Rasmusen (1999) and Posner (2002) for general discussions of the creation and enforcement of social norms.

<sup>17</sup> See Elster (1983, 1984, 1996, 1998) and Becker (1996) for discussions of preference formation.

change. This is usually a major barrier to change. A single alert entrepreneur can break through and employ the older workers that were undervalued by rivals.

Employers profit from learning from their own mistakes and those of others. This introduced a self-correction mechanism into the market process. A mistake by one entrepreneur is a profit opportunity for other more alert entrepreneurs. The entrepreneur's task is to be alert to new opportunities created by changes in market conditions that are overlooked or not seen by others. Erroneous information in the labour market is an entrepreneurial opportunity.

In the labour market, if the value of some workers because of their age is misperceived, alertness to this undervaluation is an opening for entrepreneurial profit to more perceptive employers. Profits arise from superior foresight and judgement and the uncovering of undervalued resources. By seizing the opportunity and gaining the profit, the entrepreneur calls attention to the undervaluation and sets forces into motion that eventually eliminate it.

In the case of employer discrimination, entrepreneurs take advantage of the opportunities that were rejected by others because of their prejudices or incorrect stereotypes. Errors in valuing resources manifest themselves as profit opportunities for the more alert. When the entrepreneur acts to profit from this discovery, they bid up the wage where it has been too low and bid down the wage that is too high, reducing or eliminating the differential.

Entrepreneurship will not correct all errors, but the entrepreneurial profits from alertness to undervaluation and overvaluation are systemic incentives to reduce gaps if entrepreneurs are free to enter or expand in the market. Large industries have arisen in the goods, commodity, futures and financial markets to profit from the implementation of entrepreneurial discoveries coming from the alertness to discrepancies in prices and the inferior forecasts and judgement of others.

The modern labour market, too, devotes resources to screening the quality of job applicants, assessing on-the-job performance and spotting talent for promotion. The market is not perfect, but it can correct mistakes and reward entrepreneurial alertness to undervalued workers. The more perceptive employers are rewarded for finding ways to hire more productive workforces.

An example of labour market entrepreneurship is the reduction of racial and nationality discrimination in sport. The discrimination was overcome by entrepreneurial alertness to the additional commercial and team success of hiring highly talented minorities and foreigners outweighing the loss of some existing customers (Goff *et al.* 2002; Coyne *et al.* 2007; Coyne *et al.* forthcoming). The pioneering teams recognised a latent demand of consumers and invigorated it by revealing to their fan base the rising costs of their prejudices and the advantages of social change: the ability of their team to win more often (Goff *et al.* 2002; Coyne *et al.* 2007; Coyne *et al.* forthcoming). It is possible that good performance on the job and the profits from switching to hiring on merit can eliminate discrimination by employers, co-workers and customers over time when there is competition (Groothuis and Hill 2004, 2008).

Entrepreneurial entry can have the same effect on discrimination as innovation by incumbents. Levine *et al.* (2008) found that the removal of regulatory restrictions on inter-state and intra-state branch banking by US states<sup>18</sup> from the mid-1970s to the mid-1990s reduced the racial wage gap in banking by spurring new entry. The wage gap change was particularly large in those states with a comparatively high degree of racial bias. The repeal of branch banking restrictions eliminated between 20 and 30 percent of the racial wage gap. The OECD (2008b) concluded that regulatory barriers to competition explain 20–40 percent of the variation in the gender wage gap in a cross-section of member countries. Weichselbaumer and Winter-Ebmer (2007) and Weichselbaumer *et al.* (2008) analysed studies from 61 countries and found strong evidence that gender wage gaps were smaller in economies with more competition in their markets, more openness to trade and which have anti-discrimination laws.

There is evidence of on-the-job employer learning about groups of workers that they discriminated against on the basis of information costs in initial hiring. For example, as employers learn about the true productivity of minority employees after hiring, the wage increases of these employees are based increasingly on their individual performance, rather than the characteristics of the minority group to which they belong (Altonji 2005; Altonji and Pierret 2001; Lange 2007; Pinkston 2006, 2009; Renna and King 2007).

There is, therefore, evidence from many countries and industries suggesting that competition and entrepreneurship will penalise prejudice against and inaccurate employer beliefs about the productivity of workers. This evidence of updating of beliefs about minorities suggests that the stereotypes of employers are neither fixed nor unfettered by competition and entrepreneurial entry. Beliefs, prejudices and stereotypes change when they become more and more costly. Anti-discrimination laws outlaw and penalise prejudice and discrimination. Competition and deregulation, too, expand opportunities and change minds.

### **3.6 The power of demographic trends**

A strong market force for change is the rising cost of not hiring on merit what is the fastest growing pool of workers. An early finding about discrimination was that, when minorities are a very small percentage of the workforce, the costs of the discrimination mainly fall on these minorities. When a minority represents a larger percentage of the society, the costs of employment discrimination are borne by both the minority and increasingly by the majority (Becker 1971). Discrimination is less likely when the discriminators must pay more of its costs.

Demographic trends will increasingly penalise ageism in employment. Recall Figure 1, which showed that, by 2020, older workers are expected to change from being the smallest to the largest age group in the New Zealand workforce. By 2020, one in four workers will be over age 55. In 1990, older workers were 9

---

<sup>18</sup> Many state legislatures prohibited the entry of out-of-state banks and restricted the number of branches that a bank could open within state borders. There were also federal prohibitions on inter-state branch banking.

percent of the workforce. Each of the other workforce age groups is expected to increase in number only by a minor degree in the years ahead. Most growth in the future labour force will be accounted for by older workers.

The costs of not hiring older workers on merit will rise rapidly. Employers that do not hire on merit will limit their access to the talents of what will become the largest age group in the New Zealand workforce by 2020. They put at risk their own business survival as they compete among themselves for a diminishing pool of younger workers. Not surprisingly, a 2008 survey of New Zealand recruitment consultants found that their attitudes and those of employers towards older workers is becoming increasingly positive (McPherson 2008a, 2008b).

## **4. COUNTERING AGE DISCRIMINATION**

### **4.1 What is the origin of the discrimination?**

Anti-discrimination strategies need to vary with the origin of the discrimination. Public policy must be crafted with the source of the discrimination in mind. If the source of age discrimination is the prejudices of employers, policies can be targeted to specifically influence their hiring behaviour. If the source of the age discrimination is the preference of customers about who they interact with, different policies and social marketing strategies are required.

The advantage of combating age-based employer prejudice is regulatory compliance strategies, and social marketing can stress that hiring on merit has its own reward. It raises the profits of the firm because the most qualified and productive applicants are now hired. Employer discrimination reduces profits.

Discrimination that is based on employee or customer preferences is a greater challenge because employers that change their hiring practices risk reduced profits. Employers that go against employee or customer prejudices and pioneer non-discrimination may lose sales and face workplace conflict. It is still possible to change the impact of the preferences of co-workers and customers. For example, pioneering entrepreneurs have successfully overcome prejudices by alerting co-workers and customers to the costs of their prejudices and showing them the many gains from greater interaction with previously disfavoured groups.

If information cost-based discrimination raises profits, it will not be worn down by competition. Information cost-based discrimination is not evidence of market failure but it is no less damaging to its victims because it is information cost-based (Phelps 1972, p. 561). Overcoming social inequalities does not require that its source be a market failure. Society can act through normal democratic and legal means to reduce inequalities that are considered to be undesirable.

Countering information cost-based discrimination requires different strategies to those combating prejudice-based discrimination. Mechanisms are needed to transfer credible information about the productivity of workers to employers. An answer to information cost-based discrimination is to close information gaps. Countering information cost-based discrimination will call for better proxies for productivity and job tenure than age if the profit motive is to reinforce other incentives to comply. Without these better proxies, the market will search for its own, substituting coarser proxies that are correlated with those previously used. Public policy should anticipate this and have counterstrategies.

### **4.2 Reinforcing and offsetting market processes**

Regulatory design strategies must account for market incentives to offset the intended effects of a proposed regulation. An example is the use of formal qualifications as a coarse proxy for age. The current cohort of older workers has fewer formal education qualifications than younger workers. When a new technology requires greater use of skills and formal education, it would be difficult to prove when the increased use of formal education qualifications as a job

requirement is genuine or is spurious. Employers can also substitute capital for labour or they can reduce the scale of activities where older workers are employed. Another response is the relocation and expansion of activities in places with fewer older workers. The demographic make-up of the new locations and increased commuting times could reduce the number of older job applicants.

An anti-discrimination policy is more effective if it works in unison with market institutions that have developed to counteract the malady at hand, be it employer prejudice or inaccurate stereotypes. Knowing that discrimination will vary with factors such as the costs of more intensive screenings of applicants, the seniority of the job, the fixed costs of employment, the speed at which a recruit's true productivity is revealed on the job and the ease at which hiring mistakes can be corrected help explain what public policy is seeking to remedy.

### **4.3 The role of pioneering information**

The idea is to design regulatory compliance and social marketing strategies to enlist the profit motive to work with the aims of public policy. Measures to counter information cost-based discrimination may need to change the mechanisms employers use to gather information when recruiting. Affirmative action is an example of a policy that changes information flows about job applicants.

Holzer and Neumark (1999, 2000a, 2000b) found that, following the introduction of affirmative action, employers changed their personnel policies and screening methods. They incurred additional costs to collect and process more information about job applicants and increased the demographic diversity of applicant pools because certain past practices were closed to them. Significantly higher use was made of drug tests and physicals, reference checks, education and requiring written applications. Holzer and Neumark (1999, 2000a, 2000b) suggested that affirmative action programmes increased the number and intensity of recruitment and screening practices, made employers more willing to hire women and minorities, increased the number of minority or female applicants and employees, and increased the provision of training and formal evaluations. These effects were strongest where imperfections in information were larger and when information cost-based discrimination was previously used. Affirmative action appears to result in the hiring of female and minority employees whose credentials were weaker than the employees hired before but their job performance generally was not.

Occupation segregation by sex based on the prestige of previously male-only occupations was also overcome by better information flows. A combination of credentialisation, the shattering of stereotypes by pioneering women and better information about individual women's productivities allowed women to enter previous male-only occupations. Examples are librarians, bank tellers, teachers, telephone operators, sales and clerical positions, police, fire fighting, machinery operation and typing (Goldin 2002, 2006). The change in male-only occupational barriers to women was intertwined with other trends such as machines replacing strength, and the occupational segregation was much stronger in old industries than in new industries (Goldin 2002, 2006). Overcoming age stereotypes will also

entail credentialisation, the shattering of stereotypes by pioneers and better information about individual productivities. Competition and entrepreneurship will impose costs on prejudices and ignorance and encourage employers to be alert to new opportunities, to continuously reconsider stereotypes and to focus more and more on individual merits as applicant-specific information becomes available.

## **5. SUMMARY AND RECOMMENDATIONS**

### **5.1 Summary**

This review aimed to widen the New Zealand debate about what causes age discrimination to persist and wane. Several forms of discrimination were reviewed – employer discrimination, search discrimination, employee discrimination, customer discrimination and information cost-based discrimination.

The reason for the review was that the extent and the persistence of each form of discrimination needs to be explained if the origin and effects of the discrimination are to be comprehended and effective countermeasures found. The source of the age discrimination is an important factor influencing whether it will last and the ease at which it can be countered by employment and human rights laws.

Information cost-based discrimination is the most plausible account for age discrimination. No special assumptions are needed about the presence of particular market failures, bad motives, an inattention to labour costs or a lack of competition to explain the persistence of the information cost-based discrimination. Rival explanations based on employer, employee and customer prejudice provide insight into race and sex discrimination, but they weaken as explanations of age discrimination after closer scrutiny. Search discrimination has resonance but is not the whole story.

It is the quality of information that is the leading factor in discrimination against older workers. Information costs are higher in the labour market than in many other markets and induce large behavioural responses by workers and employers to contain these costs. This interacts with the great diversity between older workers and their skills, experiences and talents and between jobs, occupations, careers and workplaces. In addition, the expected job tenures of older workers may be shorter. Much of the human capital of older job applicants is hard to measure because it is specific to previous jobs and is acquired informally on the job. Specific human capital increasingly turns a worker into a specialist, and it will take longer before a vacancy opens for those particular skills at the same pay.

The cost of more detailed individual screenings of the productivity and likely job tenures of older job applicants encourages the use of group averages. It is not ignorance or prejudice that sustains much of age discrimination. Instead, it is uncertainty and the cost of acquiring more information to reduce these uncertainties, and these information costs can differ between groups.

The fixed costs of hiring and training new workers may be just as important as or more important in driving age discrimination as are productivity stereotypes. This form of age discrimination is driven by differences that employers anticipate in the job tenures of different demographic groups when filling jobs that require significant amounts of firm-specific training and other fixed costs of employment.

Information cost-based discrimination is more entrenched than discrimination based on prejudice or ignorance, and it can occur where there is competition or

monopoly. Discrimination based on prejudice or ignorance is an opening for more tolerant or perceptive employers to hire the undervalued workers at bargain wages. Employers forfeit profits if they fail to hire the most capable job applicants. Entrepreneurs profit from piercing ignorance, correcting errors and overcoming misperception and prejudice. This starts a process that bids up the wages of the undervalued workers, and the more perceptive firms will expand at the expense of their more recalcitrant rivals. In contrast, information cost-based discrimination will persist despite competition if the information cost savings outweigh the cost of hiring errors.

## **5.2 Recommendations**

Anti-discrimination strategies need to vary with the origin of the discrimination. The difference in the two types of employment discrimination is that prejudice-based discrimination can persist despite market incentives to the contrary while information cost-based discrimination persists because of economic incentives.

Anti-discrimination policies need to know if they are working in unison with market incentives that penalise prejudice and ignorance and when they will need to overcome market forces regarding information cost savings. If the source of the discrimination is the preference of some customers, different policies and social marketing strategies are required. The preferences of a large group may need to change, and the market will not be reinforcing these efforts. By contrast, employer discrimination requires changes in the attitudes of a much smaller group, and their failure to hire on merit is penalised by competition.

Discrimination is no less disappointing to those affected because it is information cost-based. Market failure is not a precondition to moving against inequalities. Society can elect that a particular inequality or market outcome is undesirable and act through normal democratic means to try and correct it.

Information cost-based discrimination is likely to wane when more individualised screenings of the merits of workers becomes cheaper and more reliable. Regulatory compliance strategies and social marketing could provide more accurate proxies for productivity and likely job tenure than age. Another response that some countries are exploring in various policy contexts is training passports. These passports would allow workers to better document their training record. Such proposals strike at the heart of the problem – barriers to the exchange of credible information between employers and job seekers about individual productivity. Such steps reinforce policy objectives because they make information cost-based discrimination less profitable.

A strong force for social change is the rising business cost to employers themselves of not hiring on merit what is now the fastest growing pool of workers. By 2020, older workers will change from the smallest age group to the largest in the workforce, with one in four workers to be over age 55. The other workforce age groups will increase only slightly in number. Employers that do not hire on merit risk their own business survival as they compete among themselves for a shrinking pool of younger workers.

## REFERENCES

- Adams, S. 'Passed Over for Promotion Because of Age: An Empirical Analysis of the Consequences.' *Journal of Labor Research* 23, no. 3 (Summer 2002): 447-461.
- Adams, S, and Heywood, J. 'The Age of Hiring and Deferred Compensation: Evidence from Australia.' *Economic Record* 83 (2007): 174-190.
- Aguero, J. *Stereotypes and Willingness to Change Them: Testing Theories of Discrimination in South Africa*. Working paper. Department of Economics, University of California, Riverside, 2008.
- Aigner, D, and Cain, G. 'Statistical Theories of Discrimination in Labor Economics.' *Industrial and Labor Relations Review* 30, no. 2 (January 1977): 175-87. Retrieved from <http://www.jstor.org/stable/2522871> (25 June 2008).
- Akerlof, G. 'The Market for Lemons: Quality Uncertainty and the Market Mechanism.' *Quarterly Journal of Economics* 84, no. 3 (August 1970): 488-500. Retrieved from <http://www.jstor.org/stable/1879431> (25 June 2008).
- Akerlof G. 'The Economics of Caste and of the Rat Race and Other Woeful Tales.' *Quarterly Journal of Economics* 90, no. 4 (November 1976): 599-617. Retrieved from <http://www.jstor.org/stable/1885324> (25 June 2008).
- Alchian, A. 'Information Costs, Pricing and Resource Unemployment.' *Economic Inquiry* 7, no. 2 (1969): 109-128.
- Alchian, A, Allen, W, and Hoel, A. *Universal Economics*. Oxford University Press, 2005.
- Alchian, A, and Demsetz, H. 'Production, Information costs and Economic Organization.' *American Economic Review* 62, no. 5 (December 1972): 777-795. Retrieved from <http://www.jstor.org/stable/1815199> (25 June 2008).
- Alchian, A, and Kessel, R. 'Competition, Monopoly, and the Pursuit of Pecuniary Gain.' In *Aspects of Labor Economics*, edited by H G Lewis. Princeton University Press, 1962. Retrieved from <http://www.nber.org/books/univ62-2> (10 November 2008).
- Altonji, J. 'Employer learning, statistical discrimination and occupational attainment.' *American Economic Review* 95, no. 2 (2005): 112-117.
- Altonji, J, and Blank, R. 'Race and Gender in the Labor Market.' In *Handbook of Labor Economics*, (vol. 1) edited by O Ashenfelter and D Card. Elsevier, 1999: 3143-3259. Retrieved from [http://www.econ.yale.edu/~jga22/website/research\\_papers/altonji%20and%20blank.pdf](http://www.econ.yale.edu/~jga22/website/research_papers/altonji%20and%20blank.pdf) (25 June 2008).

- Altonji, J, and Pierret, C. 'Employer Learning and Statistical Discrimination.' *Quarterly Journal of Economics* 116, no. 1 (February 2001): 313-350.
- Antonovics, K, Arcidiacono, P, and Walsh, R. 'Games and Discrimination: Lessons from 'The Weakest Link'.' *Journal of Human Resources* 40, no. 4 (Fall 2005): 918-47.
- Arrow, K. 'The Theory of Discrimination.' In *Discrimination in the Labor Market*, edited by O Ashenfelter and A Rees. Princeton, NJ: Princeton University Press, 1973a. Retrieved from <http://www.irs.princeton.edu/pubs/pdfs/30a.pdf> (25 June 2008).
- Arrow, K. 'Higher education as a filter.' *Journal of Public Economics* 2, no. 3 (July 1973b): 193-216.
- Arrow, K. 'What Has Economics to Say about Racial Discrimination?' *Journal of Economic Perspectives* 12, no. 2 (Spring 1998): 91-100. Retrieved from <http://www.jstor.org/stable/2646963> (25 June 2008).
- Ashenfelter, O, and Oaxaca, R. 'The Economics of Discrimination: Economists Enter the Courtroom.' *American Economic Review* 77, No. 2 (May 1987): 321-325. Retrieved from <http://www.jstor.org/stable/1805472> (17 November 2008).
- Baron, J, and Kreps, D. *Strategic Human Resources: Frameworks for General Managers* (1<sup>st</sup> ed.). Wiley, 1999.
- Barron, J, Black, D, and Loewenstein, M. 'Employer Size: The Implications for Search, Training, Capital Investment, Starting Wages, and Wage Growth.' *Journal of Labor Economics* 5 no. 1 (1987): 76-89. Retrieved from <http://www.jstor.org/stable/2535035> (9 October 2008).
- Barron, J, Black, D, and Loewenstein, M. 'Job Matching and On-the-Job Training.' *Journal of Labor Economics* 7, no. 1 (January 1989): 1-19.
- Barron, J, Black, D, and Loewenstein, M. 'Gender Differences in Training, Capital, and Wages.' *Journal of Human Resources* 28, no. 2 (Spring 1993): 343-364. Retrieved from <http://www.jstor.org/stable/146207> (8 October 2008).
- Barzel, Y. 'Measurement Costs and the Organization of Markets.' *Journal of Law and Economics* 25 (April 1982): 27-48.
- Barzel, Y. 'The Entrepreneur's Rewards for Self-Policing.' *Economic Inquiry* 25, no. 1 (January 1987):103-116.
- Becker, G. *The Economics of Discrimination* (2<sup>nd</sup> ed.). Chicago: University of Chicago Press, 1971.

Becker, G. *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education* (2<sup>nd</sup> edition). Cambridge MA: National Bureau of Economic Research, 1975. Retrieved from <http://www.nber.org/books/beck75-1> (25 June 2008).

Becker, G. *A Treatise on the Family* (2<sup>nd</sup> ed.). Harvard University Press, 1991.

Becker, G. 'Habits, Addictions, and Traditions.' *Kyklos* 45, no. 3 (1992): 327-45.

Becker, G. 'Nobel Lecture: The Economic Way of Looking at Behavior.' *Journal of Political Economy* 101, no. 3 (June 1993): 385-409. Retrieved from <http://www.jstor.org/stable/2138769> (25 July 2008).

Becker, G. *Accounts for Tastes*. Harvard University Press, 1996.

Becker, G. *On the Economics of National Culture-BECKER*. Becker-Posner Blog, 2 April 2006. Retrieved from [http://www.becker-posner-blog.com/archives/2006/04/on\\_the\\_economic.html](http://www.becker-posner-blog.com/archives/2006/04/on_the_economic.html) (29 October 2008).

Black, D. 'Discrimination in an Equilibrium Search Model.' *Journal of Labor Economics* 13, no. 2 (April 1995): 309-334. Retrieved from <http://www.jstor.org/stable/2535106> (25 June 2008).

Blank, R, Dabady, M, and Citro, C. (Eds). *Measuring Racial Discrimination*. National Research Council of the National Academies, The National Academies Press, 2004. Retrieved from [http://www.nap.edu/openbook.php?record\\_id=10887&page=R1](http://www.nap.edu/openbook.php?record_id=10887&page=R1) (20 November 2008).

Bollinger, C, and Hotchkiss, J. 'The Upside Potential of Hiring Risky Workers: Evidence from the Baseball Industry.' *Journal of Labor Economics* 21, no. 4 (October 2003): 923-944. Retrieved from <http://gatton.uky.edu/faculty/Bollinger/Eco707/JOLEbaseball.pdf> (25 June 2008).

Borjas, G, and Goldberg, M. 'Biased Screening and Discrimination in the Labor Market.' *American Economic Review* 68, no. 5 (December 1978): 918-22. Retrieved from <http://www.jstor.org/stable/1811323> (25 June 2008).

Broyles, P, and Keen, B. 'Consumer Discrimination in the NBA Trading-Card Market.' *The Sport Journal* 8 (2005): 250-258.

Burdett, K. 'A Theory of Employee Job Search and Quit Rates.' *American Economic Review* 68, no. 1 (March 1978): 212-220. Retrieved from <http://www.jstor.org/stable/1809701> (25 June 2008).

Bureau of Labor Statistics. *Employee Tenure in 2008*. Washington, DC: United States Department of Labor, 26 September 2008.

Burgess, S, Lane, J, and Stevens, D. 'Hiring Risky Workers: Some Evidence.' *Journal of Economics and Management Strategy* 7, no. 4 (1998): 669-676.

Cahuc, P, and Zylberberg, A. *Labor Economics*. MIT Press, 2007.

Cain, G. 'The Economic Analysis of Labor Market Discrimination: A Survey.' In *Handbook of Labor Economics* (vol. 1), edited by O Ashenfelter and R Layard., Elsevier (1987): 693-785.

Carneiro, P, Heckman, J, and Masterov, D. 'Labor Market Discrimination and Racial Differences in Premarket Factors.' *Journal of Law and Economics* 48, no. 1 (April 2005): 1-39.

Cornell, B, and Welch I. 'Culture, Information, and Screening Discrimination.' *Journal of Political Economy* 104, No. 3 (June 1996): 542-571

Coyne, C, Isaacs, J, Schwartz, J, and Carilli, A. 'Put me in, Coach, I'm ready to play.' *Review of Austrian Economics* 20 (2007): 237-246.

Coyne, C, Isaacs, J, and Schwartz, J. 'Entrepreneurship and the Taste for Discrimination.' *Journal of Evolutionary Economics* (Forthcoming). Retrieved from <http://www.ccoyne.com> (8 December 2008).

Daniel, K, and Heywood, J. 'The Determinants of Hiring Older Workers: U.K. Evidence.' *Labour Economics* 14 (January 2007): 35-52.

Davey, J. *Workforce Ageing – An Issue for Employers Stage 1 and 2 Report – January 2008*. IPS WP 08/04. Wellington: Institute of Policy Studies and New Zealand Institute of Management, April 2008. Retrieved from <http://ips.ac.nz/publications/publications/show/222> (29 July 2008).

Davey, J, and Cornwall, J. *Maximising the Potential of Older Workers Update to 2007*. Wellington: New Zealand Institute for Research on Ageing, Victoria University of Wellington, 2007. Retrieved from [http://www.victoria.ac.nz/nzira/downloads/MAX\\_POT\\_FINA\\_REPORT.pdf](http://www.victoria.ac.nz/nzira/downloads/MAX_POT_FINA_REPORT.pdf) (25 June 2008).

Department of Labour. *45 Plus: Choices in the labour market. Final Report – Stage 1 Review of literature on programmes of career information, advice and guidance for mature non-participants*. Wellington: Department of Labour, November 2006. Retrieved from <http://www.dol.govt.nz/publication-view.asp?ID=219> (25 June 2008).

Department of Labour. *Workforce 2020 Forces for Change in the Future Labour Market of New Zealand*. Wellington: Department of Labour, October 2008.

Disney, R, Hawkes, D, and Heden, Y. 'Declining Job Opportunities for Older Workers in Britain: The Role of Job-specific Characteristics.' *Education and*

*Employment Economics Group Annual Conference, 2-4 July 2001*. Retrieved from <http://www.essex.ac.uk/ilr/eeeg/Conference3/Programme.html> (25 June 2008).

Dixon, S. 'The Distribution of Earnings in New Zealand.' *Labour Market Bulletin* 1 (1996): 45-100. Retrieved from [www.dol.govt.nz/PDFs/lmb961c.pdf](http://www.dol.govt.nz/PDFs/lmb961c.pdf) (25 July 2008).

Dixon, S. *Transitions from work to retirement*. LEED Reports. Wellington: Statistics New Zealand, November 2008. Retrieved from <http://www.stats.govt.nz/leed/reports.htm> (17 February 2009).

Dixon, S, and Hyslop, D. *The Employment and Retirement Transitions of New Zealanders Aged in their 60s: Evidence from LEED*. LEED Reports. Wellington: Statistics New Zealand, May 2008. Retrieved from <http://www.stats.govt.nz/leed/reports.htm> (25 June 2008).

Dixon, S, and Stillman, S. *The Impact of Firm Closure on Workers' Future Employment and Earnings*. LEED Reports. Wellington: Statistics New Zealand, September 2008. Retrieved from <http://www.stats.govt.nz/leed/reports.htm> (17 February 2009).

Dong, X-Y, Jones, D, Kato, T. *Earnings-Tenure Profiles: Tests of Agency and Human Capital Theories Using Individual Performance Data*. IZA discussion paper No. 3122. Bonn: Institute for the Study of Labor Study (IZA) October 2007. Retrieved from <http://ftp.iza.org/dp3122.pdf> (25 September 2008).

Donohue, J. 'The Law and Economics of Antidiscrimination Law.' In *Handbook of Law and Economics*, edited by A M Polinsky and S Shavell. Elsevier B.V. 2009. Retrieved from <http://www.nber.org/papers/w11631.pdf> (25 June 2008).

Elster, J. *Sour Grapes: Studies in the Subversion of Rationality*. Cambridge, UK: Cambridge University Press, 1983.

Elster, J. *Ulysses and the Sirens: Studies in Rationality and Irrationality*. Cambridge, UK: Cambridge University Press, 1984.

Elster, J. 'Social Norms and Economic Theory.' *Journal of Economic Perspectives* 3, no. 4 (Autumn 1989): 99-117.

Elster, J. 'Rationality and the Emotions.' *Economic Journal* 106 (September 1996): 1386-1397.

Elster, J. 'Emotions and Economic Theory.' *Journal of Economic Literature* 36, no. 1 (March 1998): 47-74.

Equal Employment Opportunities Trust. *Diversity & Equality - Evidence of positive business outcomes and how to achieve them A review of the literature*. Auckland: Equal Employment Opportunities Trust, June 2008.

Fama, E, and Jensen, M. 'Agency Problems and Residual Claims.' *Journal of Law and Economics* 26 (June 1983).

Farber, H. 'Mobility and Stability: The Dynamics of Job Change in Labor Markets.' In *The Handbook of Labor Economics*, edited by O Ashenfelter and D Card. Elsevier Science, 1999: 2439-2483. Retrieved from <http://www.irs.princeton.edu/pubs/pdfs/400.pdf> (25 June 2008).

Farber, H. 'What do we know about job loss in the United States? Evidence from the Displaced Workers Survey, 1984-2004.' *Economic Perspectives* Federal Reserve Bank of Chicago (2Q/2005): 13-28. Retrieved from [http://www.chicagofed.org/publications/economicperspectives/ep\\_2qtr2005\\_part2\\_farber.pdf](http://www.chicagofed.org/publications/economicperspectives/ep_2qtr2005_part2_farber.pdf) (25 June 2008).

Farmer, A, and Terrell, D. 'Discrimination, bayesian updating of employer beliefs, and human capital accumulation.' *Economic Inquiry* 34 no. 2 (April 1996): 204-19.

Friedman, D. *Price Theory: An Intermediate Text*. South-Western, 1990. Retrieved from <http://www.daviddfriedman.com/Academic/Academic.html> (9 March 2009).

Ghosheh Jr. N, Lee, S, and McCann, D. *Conditions of work and employment for older workers in industrialized countries: Understanding the issues*. Conditions of Work and Employment Series No.15. Geneva: ILO, 2006. Retrieved from <http://www.ilo.org/public/english/protection/condtrav/publ/15cwe.htm> (25 June 2008).

Goff, B, McCormick, R, and Tollison. R. 'Racial Integration as an Innovation: Empirical Evidence from Sports Leagues.' *American Economic Review* 92, no. 1 (2002): 16-26.

Goldin, C. *A Pollution Theory of Discrimination: Male and Female Occupations and Earnings*. NBER Working Paper no. 8985. Cambridge, Mass: National Bureau of Economic Research, June 2002. Retrieved from <http://www.nber.org/papers/w8985> (25 October 2008).

Goldin, C. 'The Rising (and then Declining) Significance of Gender.' In *The Declining Significance of Gender?* edited by F D Blau, M C Brinton, and D B Grusky. New York: Russell Sage Foundation, 2006: 67-101. Retrieved from [www.economics.harvard.edu/faculty/goldin/files/risingsign.pdf](http://www.economics.harvard.edu/faculty/goldin/files/risingsign.pdf) (10 October 2008).

Goldin, C, and Rouse, C. 'Orchestrating Impartiality: The Impact of Blind Auditions on the Sex Composition of Orchestras.' *American Economic Review* 90, no. 4 (September 2002): 715-41. Retrieved from <http://post.economics.harvard.edu/faculty/goldin/files/orchestra.pdf> (25 June 2008).

Grodsky, E, and Pager, D. 'The Structure of Disadvantage: Individual and Occupational Determinants of the Black-White Wage Gap.' *American Sociological Review* 66, no. 4 (2005): 542-567. Retrieved from [http://www.princeton.edu/~pager/asr\\_grodsky&pager.pdf](http://www.princeton.edu/~pager/asr_grodsky&pager.pdf) (4 February 2009).

Groothuis, P, and Hill, J. 'Exit Discrimination in the NBA: A Duration Analysis of Career Length.' *Economic Inquiry* 42, no. 2 (April 2004): 341-349.

Groothuis, P, and Hill, J. 'Exit Discrimination in Major League Baseball: 1990–2004.' *Southern Economic Journal* 75, no. 2 (October 2008): 574-590.

Gunderson, M. 'Male-Female Wage Differentials: How Can that Be?' *Canadian Journal of Economics* 39, no. 1 (February 2006): 1-21.

Hanssen, A, and Andersen, T. 'Has Discrimination Lessened Over Time? A Test Using Baseball's All-Star Vote.' *Economic Inquiry* 37 (1999): 326-352

Havet, N, and Sofer C. 'Why do women's wages increase so slowly throughout their career? A dynamic model of statistical discrimination.' *Labour* 22, no. 2 (June 2008): 291-314. Retrieved from [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1024470](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1024470) (1 October 2008).

Hayek, F.A. *The sensory order*. London: Routledge & Kegan Paul, 1952.

Heckman, J. 'Detecting Discrimination.' *Journal of Economic Perspectives* 12, No. 2 (1998): 101-116.

Heywood, J, Ho, L-S, and Wei, X. 'The Determinants of Hiring Older Workers: Evidence from Hong Kong.' *Industrial and Labor Relations Review* 52, no. 3 (April 1999): 444-459. Retrieved from <http://www.jstor.org/stable/2525144> (25 June 2008).

Heywood, J, and Siebert, S. *Understanding the Labour Market for Older Workers: A Survey*. IZA Discussion Paper 4033. Bonn: Institute for the Study of Labor (IZA) February 2009. Retrieved from <http://ftp.iza.org/dp4033.pdf> (March 2009).

Hirsch, B, Macpherson, D, and Hardy, M. 'Occupational Age Structure and Access for Older Workers.' *Industrial and Labor Relations Review* 53, no. 3 (April 2000): 401-18.

Holzer, H, and Ihlanfeldt, K. 'Customer Discrimination and Employment Outcomes for Minority Workers.' *Quarterly Journal of Economics* 113, no. 3 (August 1998): 835-867.

Holzer, H, and Neumark, D. 'Are Affirmative Action Hires Less Qualified? Evidence from Employer-Employee Data on New Hires.' *Journal of Labor Economics* 17, no. 3 (July 1999): 534-569. Retrieved from <http://www.jstor.org/stable/2660677> (25 July 2008).

Holzer, H, and Neumark, D. 'Assessing Affirmative Action.' *Journal of Economic Literature* 38, no. 3 (September 2000a): 483-568. Retrieved from <http://www.jstor.org/stable/2565419> (25 July 2008).

Holzer, H, and Neumark, D. 'What Does Affirmative Action Do?' *International Labour Relations Review* 53, no. 2 (January 2000b): 240-271.

Human Rights Commission. *Introduction to the Human Rights Act*. Wellington: Human Rights Commission, May 2008. Retrieved from <http://www.hrc.co.nz/home/hrc/resources/resources.php#comp> (11 September 2008).

Hutchens, R. 'Delayed Payment Contracts and a Firm's Propensity to Hire Older Workers.' *Journal of Labor Economics* 4 (1986): 439-57.

Hutchens, R. 'A Test of Lazear's Theory of Delayed Payment Contracts.' *Journal of Labor Economics* 5, no. 4 part 2 (October 1987): S153-S170. Retrieved from <http://www.jstor.org/stable/2534916> (25 June 2008).

Hutchens, R. 'Do Job Opportunities Decline with Age?' *Industrial and Labor Relations Review* 42, no. 1 (October 1988): 89-99. Retrieved from <http://www.jstor.org/stable/2523174> (25 June 2008).

Hutchens, R. 'Seniority, Wages and Productivity: A Turbulent Decade.' *Journal of Economic Perspectives* 3, no. 4 (Autumn 1989): 49-64. Retrieved from <http://www.jstor.org/stable/1942909> (25 June 2008).

Hutchens, R. 'Job opportunities for older workers: When are jobs filled with external hires?' In *Population change, labor markets, and sustainable growth: towards a new economic paradigm*, edited by A Mason and M Yamaguchi. Amsterdam: Elsevier, 2007: 133-159. Retrieved from <http://digitalcommons.ilr.cornell.edu/articles/72/> (25 June 2008).

Johnson, W. 'A Theory of Job Shopping.' *Quarterly Journal of Economics* 92, no. 2 (May 1978): 261-278. Retrieved from <http://www.jstor.org/stable/1884162> (25 June 2008).

Jolls, C, and Sunstein, C. 'The Law of Implicit Bias.' *California Law Review* (2006a).

Jolls, C, and Sunstein, C. 'Debiasing through Law.' *Journal of Legal Studies* 35 (2006b): 199-241.

Kahn, L. 'Customer discrimination and affirmative action.' *Economic Inquiry* 29, no.3 (1991a): 555-571.

Kahn, L. 'Discrimination in Professional Sports: A Survey of the Literature.' *Industrial and Labor Relations Review* 44 (April 1991b): 395-418.

Kahn, L. 'The Sports Business as a Labor Market Laboratory.' *Journal of Economic Perspectives* 14, no. 3 (Summer 2000): 75-94.

Kanazawa, M, and Funk, J. 'Racial Discrimination in Professional Basketball: Evidence from Nielsen Ratings.' *Economic Inquiry* 39, no. 4 (2001): 599-608.

Kletzer, L. 'Job Displacement.' *Journal of Economic Perspectives* 12, no. 1, (Winter 1998): 115-136.

Kuhn, P. 'Demographic Groups and Personnel Policy.' *Labour Economics* 1 (1993): 49-70.

Lahey, J. 'Age, Women, and Hiring: An Experimental Study.' *Journal of Human Resources* 43 (2008): 30-56.

Lange, F. 'The Speed of Employer Learning.' *Journal of Labor Economics* 25, no. 1 (January 2007): 1-35.

Laughlin, S. *Barriers to Women's Career Progression: A Review of the Literature*. Working Paper no. 6. Wellington: State Services Commission, November 1999. Retrieved from [http://www.ssc.govt.nz/upload/downloadable\\_files/WkPap6.pdf](http://www.ssc.govt.nz/upload/downloadable_files/WkPap6.pdf) (4 February 2009).

Lazear, E. *Personnel Economics for Managers*. New York: John Wiley & Sons, 1998.

Lazear, E, and Oyer, P. 'Personnel Economics.' In *Handbook of Organizational Economics*, edited by R Gibbons and D J Roberts. Princeton University Press, forthcoming. Retrieved from <http://faculty-gsb.stanford.edu/oyer/wp/handbook.pdf> (23 September 2008).

Lazear, E, and Rosen, S. 'Male-Female Wage Differentials in Job Ladders.' *Journal of Labor Economics* 8, no. 1 (1990): S106-23.

Lee, J. *American Idol: Evidence of Same-Race Preferences*. IZA Discussion Paper 1974. Bonn: Institute for the Study of Labor (IZA). Retrieved from <http://ftp.iza.org/dp1974.pdf> (3 February 2009).

Levine, R, Levkov, A, and Rubinstein, Y. *Racial discrimination and Competition*. NBER Working Paper 14273. Cambridge, MA: National Bureau of Economic Research, August 2008. Retrieved from <http://www.nber.org/papers/w14273> (10 November 2008).

Levitt, S. 'Testing Theories of Discrimination: Evidence from Weakest Link.' *Journal of Law and Economics* 47, no. 2 (2004): 431.

Light, A. 'Job Mobility and Wage Growth: Evidence from the NLSY79.' *Monthly Labor Review* 128 (February 2005): 33-39. Retrieved from <http://www.bls.gov/opub/mlr/2005/02/art5full.pdf> (25 June 2008).

List, J. 'Friend or Foe? A Natural Experiment of the Prisoner's Dilemma.' *Review of Economics and Statistics* 88, no. 3 (August 2006): 463-471.

Lundberg, S, and Startz, R. 'Private Discrimination and Social Intervention in Competitive Labor Market.' *American Economic Review* 73, no. 3 (June 1983): 340-347. Retrieved from <http://www.jstor.org/stable/1808117> (25 June 2008).

McGregor, J. *Employment of the Older Worker. A Project from Massey University funded by the Public Good Science Fund*. Palmerston North: Massey University, 2001. Retrieved from <http://www.neon.org.nz/documents/employment%20of%20the%20older%20worker.pdf> (25 June 2008).

McGregor, J. *Employment of Older Workers, Retirement Commissioner's 2007 Review of Retirement Income Policy*. Wellington: Retirement Commission, 2007.

McGregor, J, and Gray, L. 'Stereotypes and Older Workers: The New Zealand experience.' *Social Policy Journal of New Zealand* 18 (June 2002): 163-177. Retrieved from <http://www.msd.govt.nz/about-msd-and-our-work/publications-resources/journals-and-magazines/social-policy-journal/spj18/stereotypes-and-older-workers18-pages163-177.html> (25 June 2008)

McPherson, J. *Barriers and beyond: recruiters tell their stories*. Auckland: Equal Employment Opportunities Trust, November 2008a.

McPherson, J. *Older Workers Employers Speak out*. Auckland: Equal Employment Opportunities Trust, September 2008b.

Manning, A. 'Movin' On Up: Interpreting the Earnings-Experience Profile.' *Bulletin of Economic Research* 52, no. 4 (October 2000): 261-295. Retrieved from <http://cep.lse.ac.uk/pubs/download/DP0380.pdf> (16 October 2008).

Manning, A. *Monopsony in Motion*. Princeton University Press, 2003.

Maré, D, and Hyslop, D. *Cyclical Earnings Variation and the Composition of Employment*. LEED Reports. Wellington: Statistics New Zealand, March 2008. Retrieved from [www.stats.govt.nz/leed/reports.htm](http://www.stats.govt.nz/leed/reports.htm) (1 July 2008).

Meadows, P. *Retirement ages in the UK: a review of the literature*. Employment Relations Research Series No.18. London: Department for Business, Enterprise and Regulatory Reform, 2003. Retrieved from [www.berr.gov.uk/files/file11528.pdf](http://www.berr.gov.uk/files/file11528.pdf) (25 June 2008).

Meadows, P, and Volterra Consulting. *The Economic Contribution of Older People*. London: Age Concern England, January 2004. Retrieved from [http://www.ageconcern.org.uk/AgeConcern/Documents/regions\\_economic\\_contribution\\_report\\_0758.pdf](http://www.ageconcern.org.uk/AgeConcern/Documents/regions_economic_contribution_report_0758.pdf) (13 October 2008).

Merton. R. 'Discrimination and the American Creed.' In *Discrimination and National Welfare*, edited by R M Maclver. New York: Harper & Brothers, 1949: 99-126.

Mincer, J. *Schooling, Experience and Earnings*. Columbia University Press, 1974. Retrieved from <http://www.nber.org/books/minc74-1> (25 June 2008).

Murray, J. *Age Discrimination in Employment: A Review*. Auckland: Equal Employment OpportunitiesEEO Trust, 2002.

Neal, D. 'The Complexity of Job Mobility among Young Men.' *Journal of Labor Economics* 17, no. 2 (April 1999): 237-261. Retrieved from <http://www.jstor.org/stable/2660645> (25 June 2008).

Neal, D, and Johnson, W. 'The Role of Premarket Factors in Black-White Wage Differences.' *Journal of Political Economy* 104, no. 5 (October 1996): 869-895. Retrieved from URL: <http://www.jstor.org/stable/2138945> (25 June 2008).

Neumark, D. 'Sex Discrimination in Restaurant Hiring: An Audit Study.' *Quarterly Journal of Economics* 111, no. 3 (August 1996): 915-41.

Neumark, D. 'Labor Market Information and Wage Differentials by Race and Sex.' *Industrial Relations* (1999): 414-45.

Neumark, D. 'Age Discrimination in the U.S: Assessment of the Evidence.' In *Outlawing Age Discrimination: foreign lessons, UK choices*, edited by Z Hornstein. Bristol UK: Joseph Rowntree Foundation, 2001: 43-62. Retrieved from <http://www.jrf.org.uk/bookshop/details.asp?pubID=375> (25 July 2008).

Neumark, D. 'Age Discrimination Legislation in the United States.' *Contemporary Economic Policy* 21, no. 3 (July 2003): 297-317. Retrieved from <http://www.socsci.uci.edu/~dneumark/Neumark%20CEP%202003.pdf> (27 August 2008).

Neumark, D. *Reassessing the Age Discrimination in Employment Act*. Research Report. Washington, DC: AARP Public Policy Institute, 2008. Retrieved from [http://www.aarp.org/research/work/agediscrim/2008\\_09\\_adea.html](http://www.aarp.org/research/work/agediscrim/2008_09_adea.html) (28 August 2008).

Neumark, D, and Stock, W. 'Age Discrimination Laws and Labor Market Efficiency.' *Journal of Political Economy* 107, no. 5 (October 1999): 1081-1125. Retrieved from <http://www.socsci.uci.edu/~dneumark/Neumark%20and%20Stock%20JPE%201999.pdf> (25 June 2008).

Neumark, D, and Stock, W. 'The Labor Market Effects of Race and Sex Discrimination Laws.' *Economic Inquiry* 44, no. 3 (July 2006): 385-419.

- OECD. 1997. 'Is Job Insecurity on the Increase in OECD Countries?' *OECD Employment Outlook 1997*. Paris: OECD, 1997: 129-160. Retrieved from <http://www.oecd.org/dataoecd/19/17/2080463.pdf> (25 June 2008).
- OECD. 'Work-force Ageing in OECD Countries.' *OECD Employment Outlook 1998*. Paris: OECD, 1998: 123-151. Retrieved from <http://www.oecd.org/dataoecd/8/53/2080254.pdf> (25 June 2008).
- OECD. 'Upgrading Workers Skills and Competencies.' *OECD Employment Outlook 2003*. Paris: OECD, 2003: 237-296. Retrieved from <http://www.oecd.org/dataoecd/62/57/31775229.pdf> (25 June 2008).
- OECD. *Live Longer, Work Longer: A synthesis report*. Paris: OECD, 2006. Retrieved from [http://www.oecdwash.org/PDFFILES/live\\_longer\\_work\\_longer.pdf](http://www.oecdwash.org/PDFFILES/live_longer_work_longer.pdf) (25 June 2008).
- OECD. *Pensions Reform: The Unfinished Agenda*. Policy Brief. Paris: OECD, September 2007.
- OECD. *OECD Factbook 2008: Economic, Environmental and Social Statistics*. Paris: OECD, 2008a.
- OECD. 'The price of prejudice: labour market discrimination on the grounds of gender and ethnicity.' *OECD Employment Outlook 2008*. Paris: OECD, 2008b.
- Oi, W. 'Labor as a Quasi-Fixed Factor.' *Journal of Political Economy* 70, no.6 (December 1962): 538-555. Retrieved from <http://www.jstor.org/stable/1828778> (25 June 2008).
- Oi, W. 'Fixed Employment Costs of Specialized Labor.' In *The Measurement of Labor Costs*, edited by J Triplett. Chicago: University of Chicago Press, 1983: 63-116. Retrieved from <http://www.nber.org/books/trip83-1> (10 October 2008).
- Oi, W. 'Fixed factors.' In *The New Palgrave: A Dictionary of Economics*, edited by J Eatwell, M Milgate, and P Newman. London and New York: Macmillan and Stockton, 1987: 384-385.
- Oi, W. 'Employment Relations in Dual Labor Markets ("It's Nice Work If You Can Get It").' *Journal of Labor Economics* 8, no. 1 part 2 (1990): S124-S149.
- Pager, D, and Shepherd, H. 'The Sociology of Discrimination: Racial Discrimination in Employment, Housing, Credit and Consumer Markets.' *Annual Review of Sociology* 34 (2008):181-209. Retrieved from [www.princeton.edu/~pager/annualreview\\_discrimination.pdf](http://www.princeton.edu/~pager/annualreview_discrimination.pdf) (20 January 2009).
- Palmore, E. *Ageism Negative and Positive*. (2nd ed.). Springer Publishing Company, 1999.

- Paul, A. 'Where bias begins: The truth about stereotypes.' *Psychology Today* May/June 1998. Article ID 703. Retrieved from <http://www.psychologytoday.com/articles/index.php?term=19980501-000029&page=1> (4 February 2009).
- Phelps, E. 'The Statistical Theory of Racism and Sexism.' *American Economic Review* 62, no. 4 (September 1972): 659-661. Retrieved from <http://www.jstor.org/stable/1806107> (25 June 2008).
- Pinkston, J. 'Screening discrimination and the determinants of wages.' *Labour Economics* 10, no. 6 (December 2003): 643-658.
- Pinkston, J. 'A test of screening discrimination with employer learning.' *Industrial and Labor Relations Review* 59, no. 2 (January 2006): 267-284. Retrieved from <http://digitalcommons.ilr.cornell.edu/ilrreview/vol59/iss2/5/> (25 June 2008).
- Pinkston, J. 'A Model of Asymmetric Employer Learning with Testable Implications.' *Review of Economic Studies* 76, no. 1 (2009): 367-394.
- Polachek, S. 'Earnings Over the Life Cycle: What Do Human Capital Models Explain?' *Scottish Journal of Political Economy* 42, no. 3 (August 1995): 267-289. Retrieved from <http://bingweb.binghamton.edu/~polachek/reprints/Polachek%20Scottish%20J.%201995.pdf> (25 June 2008).
- Polachek, S. 'Earnings Over the Lifecycle: The Mincer Earnings Function and Its Applications.' *Foundations and Trends in Microeconomics* 4, no. 3 (2008): 165-272. Retrieved from <http://ftp.iza.org/dp3181.pdf> (25 June 2008).
- Popper, K. *Conjectures and Refutations*. London: Routledge, 1963.
- Posner, E. *Law and Social Norms*. Harvard University Press, 2002.
- Posner, R. *Ageing and Old Age*. Chicago: University of Chicago Press, 1995.
- Posner, R. *Labor Law Lecture – 27 April 2000*. Washington: College of Labor and Employment Lawyers, 27 April 2000. Retrieved from [http://www.laborandemploymentcollege.org/Lecture\\_Series/Lecture042700.pdf](http://www.laborandemploymentcollege.org/Lecture_Series/Lecture042700.pdf) (25 June 2008).
- Posner, R. *The Economics of National Cultures – Posner*. Becker-Posner Blog, 2 April 2006. Retrieved from [http://www.becker-posner-blog.com/archives/2006/04/the\\_economics\\_o\\_3.html](http://www.becker-posner-blog.com/archives/2006/04/the_economics_o_3.html) (29 October 2008).
- Posner, R, and Rasmusen, E. 'Creating and Enforcing Norms, with Special Reference to Sanction.' *International Review of Law and Economics* 19 (1999).

- Price, J, Lefgren, L, and Tapper, H. *Interracial Workplace Cooperation: Evidence from the NBA*. NBER Working Paper No. 14749. Cambridge, Mass: NBER, February 2009.
- Productivity Commission. *Economic Implications of an Ageing Australia*. Research Report. Productivity Commission, 2005. Retrieved from <http://www.pc.gov.au/study/ageing/docs/finalreport> (25 June 2008).
- Renna, F, and King, R. 'Labor Discrimination over the Career of Young Workers.' *Atlantic Economic Journal* 35, no. 3 (2007): 269-78.
- Riach, P, and Rich, J. 'Field Experiments of Discrimination in the Market Place.' *Economic Journal* 112 (November 2002): 480-518.
- Riach, P, and Rich, J. *An Experimental Investigation of Age Discrimination in the French Labour Market*. IZA Discussion Paper 2522. Bonn: Institute for the Study of Labor (IZA), December 2006. Retrieved from <http://ideas.repec.org/p/iza/izadps/dp2522.html> (25 June 2008).
- Riach, P, and Rich, J. *An Experimental Investigation of Age Discrimination in the Spanish Labour Market*. IZA Discussion Paper 2654. Bonn: Institute for the Study of Labor (IZA), March 2007a. Retrieved from <http://ideas.repec.org/p/iza/izadps/dp2654.html> (25 June 2008).
- Riach, P, and Rich, J. *An Experimental Investigation of Age Discrimination in the English Labor Market*. IZA Discussion Paper 3029. Bonn: Institute for the Study of Labor (IZA) September 2007b. Retrieved from <http://ideas.repec.org/p/iza/izadps/dp3029.html> (25 June 2008).
- Riley, J. 'Testing the Educational Screening Hypothesis.' *Journal of Political Economy* 87, no. 5 part 2, (October 1979): S227-S252. Retrieved from <http://www.jstor.org/stable/1829916> (25 June 2008).
- Riley, J. 'Silver Signals: Twenty-Five Years of Screening and Signaling.' *Journal of Economic Literature* 39, no. 2 (June 2001): 432-478. Retrieved from <http://www.jstor.org/stable/2698245> (25 June 2008).
- Rosen, S, and Sanderson, A. 'Labour Markets in Professional Sports.' *Economic Journal* 111, no. 469 Features (February 2001): F47-F68.
- Salop, S, and Salop, J. 'Self-Selection and Turnover in the Labor Market.' *Quarterly Journal of Economics* 90, no. 4 (1976): 619-27.
- Sattinger, M. 'Search and discrimination.' *Labour Economics* 3, no. 2 (September 1996): 143-167.
- Sattinger, M. 'Statistical Discrimination with Employment Criteria.' *International Economic Review* 39, no. 1 (February 1998): 205-237. Retrieved from <http://www.jstor.org/stable/2527238> (25 September 2008).

Schwab, S. 'Employment Discrimination'. In *The Encyclopedia of Law and Economics* (vol. 3). edited by B Bouckaert and G De Geest. *The Regulation of Contracts 5530*. Northampton, MA: Edward Elgar, 2000: 572-95. Retrieved from <http://allserv.rug.ac.be/~gdegeest/5530book.pdf> (25 June 2008).

Sparber, C. 'Racial Diversity and Aggregate Productivity in US Industries: 1980-2000.' *Southern Economic Journal* (January 2009).

Spence, A.M. 'Job Market Signaling.' *Quarterly Journal of Economics* 87, no. 3 (1973): 355-374.

Statistics New Zealand. *National Population Projections: 2006 (base) – 2061*. Wellington: Statistics New Zealand, 24 October 2007. Retrieved from <http://www.stats.govt.nz/products-and-services/hot-off-the-press/national-population-projections/national-population-projections-2006-base-hotp.htm> (7 July 2008).

Statistics New Zealand. *Labour Market Statistics: 2007*. Wellington: Statistics New Zealand, March 2008a. Retrieved from <http://www.stats.govt.nz/analytical-reports/Labour+Market+Statistics+2007.htm> (29 July 2008).

Statistics New Zealand. *Survey of Working Life: March 2008 Quarter*. Wellington: Statistics New Zealand, 9 December 2008b.

Statistics New Zealand. *The Labour Force Participation of New Zealanders Aged 65 Years and Over, 1986–2006*. Wellington: Statistics New Zealand, February 2009.

Stigler, G. 'Information in the Labor Market.' *Journal of Political Economy* 70, no. 5 part 2 (October 1962): 94-105.

Stiglitz, J. 'Approaches to the Economics of Discrimination.' *American Economic Review* 63 no. 2 (May 1973): 287-295. Retrieved from <http://www.jstor.org/stable/1817088> (25 June 2008).

Stiglitz, J. 'Theories of Discrimination and Economic Policy.' In *Patterns of Racial Discrimination*, edited by G. von Furstenber *et al.* D.C. Heath and Company (Lexington Books), 1974: 5-26. Retrieved from [http://www2.gsb.columbia.edu/faculty/jstiglitz/download/papers/1974\\_Theories\\_of\\_Discrimination\\_and\\_Economic\\_Policy.pdf](http://www2.gsb.columbia.edu/faculty/jstiglitz/download/papers/1974_Theories_of_Discrimination_and_Economic_Policy.pdf) (25 June 2008).

Stiglitz, J. 'Equilibrium Wage Distributions.' *Economic Journal* 95 (September 1985): 595-618. Retrieved from [http://www2.gsb.columbia.edu/faculty/jstiglitz/download/papers/1985\\_Equilibrium\\_Wage\\_Distributions.pdf](http://www2.gsb.columbia.edu/faculty/jstiglitz/download/papers/1985_Equilibrium_Wage_Distributions.pdf) (25 June 2008).

Straka, J. *The demand for older workers: the neglected side of a labor market.* ORS working paper series no. 52. Washington, DC: United States Department of Health and Human Services, Social Security Administration, Office of Research and Statistics, September 1992. Retrieved from <http://www.ssa.gov/policy/docs/workingpapers/wp52.pdf> (27 January 2009).

Todd, J, Brown, R, and Miles, S. 'Measuring Discrimination in Major League Baseball: Evidence from the Baseball Hall of Fame.' *Applied Economics* 34, no. 2 (January 2002): 167-178.

Topel, R, and Ward, M. 'Job Mobility and the Careers of Young Men.' *Quarterly Journal of Economics* 107 (1992): 439-79.

Weichselbaumer, D, and Winter-Ebmer, R. 'The effects of competition and equal treatment laws on gender wage differentials.' *Economic Policy* 4 (2007): 235-287. Retrieved from [http://fodok.jku.at/fodok/publikation.xsql?PUB\\_ID=11263](http://fodok.jku.at/fodok/publikation.xsql?PUB_ID=11263) (10 November 2008).

Weichselbaumer, D, Winter-Ebmer, R, and Zweimüller, M. 'Market Orientation and Gender Wage Gaps: An International Study.' *Kyklos* 61, no. 4 (2008). Retrieved from <http://ftp.iza.org/dp2918.pdf> (10 November 2008)

Wilson, M, and Kan, J. *Barriers to entry for the older worker.* Research report. Auckland: University of Auckland Business School, October 2006. Retrieved from [http://www.hrc.co.nz/hrc\\_new/hrc/cms/files/documents/27-Oct-2006\\_12-23-08\\_Final\\_HRC\\_research\\_report\\_7\\_Oct.doc](http://www.hrc.co.nz/hrc_new/hrc/cms/files/documents/27-Oct-2006_12-23-08_Final_HRC_research_report_7_Oct.doc) (25 June 2008).

Wilson, M, Parker, P, and Kan, J. 'Age biases in employment: Impact of talent shortages and age on hiring.' *University of Auckland Business Review* 9, no. 1 (Autumn 2007): 33-41. Retrieved from <http://www.uabr.auckland.ac.nz/files/articles/Volume13/v13i1-age-biases-in-employment.pdf> (25 July 2008).

Wood, G, Harcourt, M, and Harcourt, S. 'The effects of age discrimination legislation on workplace practice: a New Zealand case study.' *Industrial Relations Journal* 35, no. 4 (July 2004): 359-71.

Young, H.P. 'Social Norms.' Prepared for the *New Palgrave Dictionary of Economics* (18 July 2006). Retrieved from <http://www.economics.ox.ac.uk/Research/wp/pdf/paper307.pdf> (9 March 2009).

