



Time preferences and career investments



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HIGHLIGHTS

- We examine how time preferences affect career investments and mobility.
- Workers can invest in work effort and on-the-job search.
- Patience is positively related to work and search effort.
- The relation between patience and job mobility is ambiguous.

ARTICLE INFO

Article history:

Received 6 May 2013

Received in revised form 20 March 2015

Accepted 28 March 2015

Available online 7 April 2015

Keywords:

Time preferences

Job search

Work effort

Job mobility

ABSTRACT

This paper examines the role of time preferences in career investments. We focus on the effects of patience on two types of career investments: work effort and on-the-job search. Whereas the former increases the probability of obtaining a promotion, the latter affects the chance of receiving an outside job offer. We propose a theoretical career model which allows for these two distinct career paths. To test the theoretical predictions, we make use of the DNB Household Survey. This large Dutch longitudinal survey contains detailed information on individual time preferences, on-the-job search behaviour and indicators of work effort. The results show that on-the-job search and work effort increase with patience. The relation between patience and job mobility is more ambiguous. These findings may be hard to reconcile with standard on-the-job search models but can be rationalized by models in which work effort and on-the-job search are substitutes.

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1. Introduction

Climbing up the wage ladder—like any other ladder—takes time and effort. There are two distinct career paths one can follow to reach a higher position: through (internal) promotions or (external) job mobility. First, the worker can stay within the firm and exert high effort on the job in an attempt to obtain a promotion. Second, an employee can search on the job for vacancies in order to increase the chances of receiving an outside offer. Since on-the-job search and work effort involve immediate costs and delayed rewards, they can be considered as investment activities. It can be expected that the extent to which workers are willing to make such career investments depends on how they value future rewards compared to immediate costs. Hence, individual time preferences are likely to be important for this intertemporal decision-making process. This paper therefore examines theoretically and empirically how time preferences are related to career investments and thereby shape the individual's career path.

Recent literature in economics demonstrates that time preferences predict important social and economic outcomes. Using a large Swedish

sample, [Golsteyn et al. \(2014\)](#) show that a high discount rate measured at age 13 years is negatively associated with educational attainment, labour supply and income later in life. [Cadena and Keys \(forthcoming\)](#) also demonstrate that impatience is negatively related to school performance and thereby depresses lifetime income: the earnings gap between 'impatient' and 'patient' individuals is over \$75,000 by the time they reach middle age. Both studies emphasise the role of time preferences in the development of human capital. Other papers (e.g., [Fouarge et al., 2014](#)) assess to what extent economic preferences of recent graduates predict their occupational choice. These previous studies focus on mechanisms before entering the labour market (i.e., educational and occupational choice). We explore whether time preferences affect labour market outcomes through an effect on career investments—that is, after entering the labour market. This channel could indeed be important, given that ample empirical research shows that internal and external job mobility are important sources of wage growth (e.g., [Borjas, 1981](#); [Topel and Ward, 1992](#); [McCue, 1996](#); [Light and McGarry, 1998](#); [Le Grand and Tahlin, 2002](#); [Blau and DeVaro, 2007](#); [Kosteas, 2009](#)).

A limited number of studies have examined the role of time preferences in (post-entry) labour market behaviour. [Paserman \(2008\)](#) and [DellaVigna and Paserman \(2005\)](#) examine the relation between time

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preferences and job search behaviour of unemployed job seekers. Their findings indicate that impatient individuals search less intensively and are less likely to exit unemployment. These results are consistent with the predictions derived from the hyperbolic discounting model. Halima and Halima (2009) and Van Huizen and Plantenga (2014) replicate these findings for France and the Netherlands, respectively. Whereas these studies examine the behaviour of unemployed job seekers, the work of Drago (2006) is more related to our study as he also focuses on career investments of workers. Drago's theoretical model predicts that impatience is positively related to on-the-job search effort and job mobility. A potential limitation is that the model implicitly assumes that on-the-job search is a leisure activity and may therefore overlook some central dimensions of job search, a typical investment activity. However, his empirical findings confirm that more impatient job seekers are more likely to move to other (outside) jobs.¹

This study contributes to this literature in several ways. First, we discuss an alternative, simple model of on-the-job search and work effort with endogenous career investments. Although promotions and job mobility are typically studied in isolation, recent literature stresses that on-the-job search may play an important role in the wage formation of workers staying in the firm (e.g., Cahuc et al., 2006; Postel-Vinay and Turon, 2010; Moen and Rosen, 2013). We follow this literature and argue that on-the-job search and work effort are substitutes, leading to career paths that are mutually exclusive: when a worker accepts an outside job offer, he forgoes promotion opportunities in the current firm (and vice versa). When these interactions between inside and outside mobility are taken into account, we can derive new predictions on how time preferences are related to career investments and mobility. The model shows that patience increases work and search effort (at least within a certain range of the discount rate), but that the relation with mobility is ambiguous.

Second, making use of the DNB Household Survey (DHS), a large Dutch panel study, we assess empirically how time preferences are related to work effort, on-the-job search activities and job mobility. To our knowledge, this is the first study to analyse empirically the relation between time preferences and on-the-job search behaviour. In general, studies on on-the-job search examine job-job transitions and ignore the search process. A final contribution is methodological: whereas most studies rely on (a combination of) rather noisy behavioural proxies for time preferences,² we construct a measure for time preferences using items from the Consideration of Future Consequences (CFC) Scale, a psychological construct that measures an individual's orientation towards the future. We argue that this measure is more precise than those derived from behavioural proxies. Moreover, we compare the estimation results using the CFC scale with those using an indicator based on behavioural proxies: it appears that the results depend crucially on how heterogeneity in time preferences is captured.

Overall, our findings show that more patient workers exert more work effort in the current job and search more intensively for outside positions. The results on job mobility are in general ambiguous, although there is some weak evidence that, in line with previous studies, impatient workers move more frequently from one job to another. The result that patience is positively related to on-the-job search intensity but not (or negatively) associated with job mobility may be hard to reconcile with standard on-the-job search that focus exclusively on external mobility. These findings can, however, be explained by models in

which work effort and on-the-job search are substitutes in determining career progress.

This paper is structured as follows. In the next section, we present the model and derive theoretical predictions on the relation between time preferences and career investments and job mobility. In Section 3, we present the data on time preferences, work effort, search intensity and mobility. Subsequently, we discuss our empirical findings. The final section concludes.

2. Theoretical framework

2.1. A career model

On-the-job search and work effort may be seen as substitutes since both activities increase the chances of improving the worker's future labour market position. However, internal and external mobility are generally examined in isolation. Focusing exclusively on either internal or external mobility, the relation between time preferences and on-the-job search and work effort may seem obvious. Following basic on-the-job search or promotion models, one can easily show that the marginal gains from search or work effort increase with patience—given that these gains materialize in the future. These models therefore predict that more patient workers invest more in both career activities and are more likely to move to another job (within and outside the current firm).

However, if search and work effort are considered jointly in a theoretical model, this may lead to different predictions. Drago (2006) shows that more patient workers invest more in effort, but less in on-the-job search: Drago's model therefore predicts a negative relation between patience and job mobility, for which he finds empirical support. Clearly, this finding is inconsistent with the prediction derived from a standard on-the-job search model. Nevertheless, the assumptions of the model are rather strict: the total level of career effort (i.e., search plus work effort) is exogenous and job search involves immediate net benefits and delayed costs in terms of foregone promotions. Hence, workers allocate their total time between a leisure activity (on-the-job search) and an investment activity (work effort, or 'collaboration'). More impatient workers therefore engage more in the former and less in the latter activity. We propose an alternative career model where the total level of on-the-job search intensity and work effort is endogenous and both activities are modelled as investments (i.e., generating immediate costs and delayed rewards).

2.2. The optimization problem

The structure of our model is in the spirit of Moen and Rosen (2013), who developed a model where on-the-job search and work effort are substitutes. In their 2-period model, the wage in the second period depends on whether the worker found another job (during on-the-job search in period 1) and, if the worker stays within the firm, on his effort exerted in period 1. One of the central premises of the model is that workers receive deferred compensation for effort, which may negatively affect on-the-job search. We also use a 2-period model but focus on the supply side aspects of job search and do not examine general equilibrium issues. In contrast to Moen and Rosen (2013), we allow for a discount rate between the two periods and we do not make the assumption that all outside job offers are accepted.

Workers can climb the career ladder through promotions (internal mobility) and by moving to another job (external mobility). In period 1, workers decide on the allocation of time and energy to work effort ($e \geq 0$) and on-the-job search ($s \geq 0$). Work effort may be interpreted as the amount of effort which is in addition to the minimal acceptable work effort: it represents 'extra-role behaviour', such as working overtime hours, accepting temporary impositions without protest, assisting co-workers and building good relationships with supervisors. On-the-job search effort consists of all kinds of 'screening' (e.g., searching for

¹ Although it is not the focus of their study, Cadena and Keys (2014) also provide evidence that impatient individuals switch more frequently between jobs. Like Drago (2006), the results of Cadena and Keys (2014) are based on the NLSY.

² For instance, Drago (2006) and DellaVigna and Pasherman (2005) use behavioural outcomes, such as smoking, alcohol consumption and having a life insurance, to construct a measure of impatience. However, these proxies are rather noisy measures. In fact, in both studies, the Cronbach's alpha is below conventional norms. The results of Cadena and Keys (2014) are based on a single item (i.e., the interviewer's assessment whether the respondent acts impatient or restless), which is likely to capture various individual characteristics other than time preferences.

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