

Should I Learn or Should I Turn? Implications of Job Mobility for Subsequent Learning at Work

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Abstract

Work learning is the skills and the knowledge that is generated from work practices and in exchange of information at work. While there are good reasons to fear that frequent job changers do not learn thoroughly at work, it is also conceivable that the experience of many types of jobs instead yields greater learning. **Despite this issue's significance for on-going discussions in research and policy, thorough analyses of it are surprisingly sparse.** In this study, we test whether job mobility is positively or negatively associated with subsequent work learning using data from two Swedish representative datasets (LNU and PIAAC). **In order to substantiate both claims, we utilize a wide array of research on human capital, job matching, labor market segmentation and learning motivation. We analyze a broad set of indicators of work learning and show** that job mobility in general is associated with greater total subsequent learning than is job stability.

Introduction

Understanding the mechanisms shaping workers' capacities to learn at work is important for research and policy **dealing with the consequences of structural change. Many occupations have declined (and others have grown) over the past decades, leaving some workers jobless unless they are willing to move to and learn other jobs** (Handel, 2012; Kollmeyer and Pichler, 2013; Murphy, 2014). Job mobility and lifelong learning are accordingly integrated components in policies aimed at helping workers (and countries) adapt to changing labor demand (EC, 2000; OECD, 2006). Few studies have however thoroughly investigated whether greater learning at work actually is best facilitated by job mobility or job stability.

While there are good reasons to expect that manifold experiences of different kinds of jobs yields greater learning throughout work life, there are also good

reasons to expect that too many and too frequent job shifts inhibit thorough learning at work. A positive association between job mobility and subsequent work learning would indicate that frequently mobile workers are well-equipped to adapt to structural change. A negative **association would, on the other hand, indicate that the thorough learning experiences assured by prospective job stability are useful assets in an upgrading economy.**

Studies of the association between job mobility and work learning have mainly analyzed the former as an outcome of the latter (e.g. Dolton and Kidd, 1998; Parent, 1999; Zweimüller and Winter-Ebmer, 2003). Other studies have implied that learning is an important intermediate variable between job mobility/prospective stability and earnings, but generally have not measured it (Borjas, 1981; Mincer, 1986; Goldthorpe and McKnight, 2006). Clues about the relationship can also

be derived from matching theories (Sørensen, 1977; Johnson, 1978; McCormick, DeNisi and Shaw, 1979), research on segmented labor markets (Schmelzer, 2012; Cutuli and Guetto, 2013), comparative political research (Hall and Soskice, 2001) and readings of motivational psychology (Nicholls, 1984; Duckworth *et al.*, 2007).

In sum, despite the importance of the question whether mobile or stable workers learn more in working life, there have been few thorough attempts at directly testing this relationship. Research on neighboring topics, as well as generic research about learning motivation, can however be used to formulate expectations regarding the association. A bundle of mechanisms underlying the expectation that job mobility is negatively linked to subsequent work learning is termed *the loyalty strategy*, while the converse expectation is termed *the new experiences strategy*.

Associations between job mobility and work learning are estimated using data from two waves of the Swedish Level-of-Living survey (LNU 2000, 2010), and the Swedish part of the cross-sectional Programme for the International Assessment of Adult Competencies (PIAAC, OECD, 2018). The labor market of Sweden is particularly relevant to study because institutions tend to support both job stability *and* mobility, rather than biasedly supporting either one of them. Effects of choosing either one of these strategic paths are thus plausibly purer in Sweden than in other (more constrained) settings.

The Loyalty Strategy

Work learning is defined as the skills and the knowledge that is generated from work practices and in exchange of information at work. Work *related* learning taking place off-the-job is not included in the definition. Work learning can be divided into different kinds. *Formal on-the-job-training* is a planned period of training aimed at improving task or job performance. Possible teachers include colleagues, supervisors, or hired tutors. *Informal learning* is direct guidance from supervisors and colleagues in relation to the performance of tasks. *Learning-by-doing* results from the actual performance of work tasks at the work place. Research often focuses on formal on-the-job-training, yet, other kinds of learning are theoretically considered *as* important for key variables such as wage growth (Rosen, 1972; Brown, 1989; Loewenstein and Spletzer, 1999a; Korpi and Tählin, 2018).

The expectation that job mobility is negative for subsequent work learning is formed by the belief that some workers have higher propensities to move around on the

labor market and will thus always tend to be more mobile (Rosen, 1981). This belief makes employers reluctant to make training investments, because such investments are lost in case of further mobility (Mincer, 1986, 1988). A similar prediction can be derived from the employee's perspective: workers knowing that they are particularly prone to be mobile may be reluctant to thoroughly learn a job (Borjas, 1981).

The dynamics between these two beliefs forms a vicious circle in which workers leave jobs because they do not gain sufficient training, and subsequent employers invest even less in their training because they interpret previous exits as reflecting weak employment commitment. One way of proving one's loyalty toward a certain employer is to stay and learn thoroughly despite few explicit learning opportunities. Job mobility can in that sense be thought of as a sorting process, separating determined learners (the stayers) from weakly motivated learners (the leavers). A learning motivation useful in these circumstances is *grit*, i.e. the persistent continuation of learning activities despite seemingly insurmountable obstacles (Duckworth *et al.*, 2007).

The prediction above is the same for formal and informal learning and learning-by-doing, as long as they are costly for the employer. Formal on-the-job training implies a lot of explicit costs (e.g. the payment of a tutor and/or paid time off normal working hours), which most often are covered by employers (Green *et al.*, 2000; Sieben, 2007). For all work learning, employers must also weigh in the productivity difference (net of wage differences) between letting a novice and a fully trained worker perform the task. Workers also have to weigh in more implicit costs of learning in their career-related decisions, such as effort and the opportunity cost of not conducting another job/task.

Nonetheless, the prediction above is conceivably conditional on labor market opportunities. Certain job mobility (e.g. redundancies, unemployment, from fixed-term contracts, downward occupational mobility) are partly shaped by factors out of the hands of the involved workers. Research has indicated that a distinction between voluntary and involuntary job mobility along these dimensions matters for earnings growth and job satisfaction as outcomes of job mobility (Kalleberg and Mastekaasa, 2001; le Grand and Tählin, 2002; Fuller, 2008; Schmelzer, 2012; Kronberg, 2013).

Purportedly, the above (interrelated) distinctions between different kinds of mobility matter also for work learning. Frequent unemployment spells and unstable and insecure work relationships have, for instance, been associated with low-skill and low-quality segments of the labor market (Gallie *et al.*, 1998; Dekker and

van der Veen, 2017). The employer strategy reserving training resources and complex task assignments for organizational ‘insiders’, while relying on cheap, untrained and externally mobile ‘outsiders’ for simpler work tasks, associates fewer employer-provided learning opportunities with these kinds of mobility (Kalleberg, 2003).¹ In line with this prediction, Arulampalam *et al.* (2004) and Cutuli and Guetto (2013), using independent multi-national representative samples, show by means of logistic regression that a fixed-term contract is associated with less formal training in the Nordic countries.

Thus, workers with permanent contracts are most often perceived as winners (or at least not losers) in labor markets stratified by contract duration (Breen, 1997). Nevertheless, interdependencies between organizational insiders and employers constitute another constraint of the stability-learning relationship. Insiders tend to learn a significant amount of firm-related skills valuable for the employer, but these firm-specific assets are generally lost in a job shift (Goldthorpe and McKnight, 2006). A sudden change of labor market strategy from stability to mobility may thus imply an irrevocable loss of one’s class position. Choosing stability over mobility is thus also, in part, a constrained choice for insiders.

In sum, job mobility can take the shape of a vicious circle if employers refrain from investing in mobile workers training and this, in turn, inclines them to continue their careers as ‘job-leavers’. A presence of labor market segmentation and class-bound training inequalities can sharpen these mechanisms by reserving learning-rich environments for insiders. A desire to avoid this detrimental pattern is the main rationale behind *the loyalty strategy*. It states that the most effective way of ensuring lifelong work learning is to avoid job mobility and thereby signal employment commitment. Based on this reasoning, we expect a negative association between job mobility and subsequent work learning.

A number of studies have investigated whether poor training opportunities lead to job mobility in representative samples of workers in the 1980–1990s. Proportional hazards model estimates (mostly) verify that formal training provided by the employer reduces the incidence of leaving an employer in the United States, in contrast to training funded by external sources (Veum, 1997; Loewenstein and Spetzler, 1999b; Parent, 1999). These results are supported by findings from logit model specifications in longitudinal data from the United Kingdom (Dolton and Kidd, 1998) and Switzerland (Zweimüller and Winter-Ebmer, 2003). Cross-sectional analyses further show that firm-specific training reduces job search intensity among workers in Britain (Green *et al.*, 2000),

and among young women in the Netherlands (Sieben, 2007).

That job mobility is an outcome of work learning constitutes the first part of the story of job mobility and work learning, but the other half is missing from the research reviewed above. Explicitly measuring subsequent work learning will capture other dynamics than those leading to job termination, i.e. whether loyalty is associated with better learning opportunities also in the long term. Because the first part of this story is quite well-researched, this study focuses on the second part. In the present section, we have outlined reasons behind the expectation that job mobility is negative for subsequent work learning. Next, we turn to reasons behind the contrary expectation.

The New Experiences Strategy

Job mobility as a way of finding more suitable jobs is the basic mechanism underlying the expectation that job mobility is positive for subsequent work learning. It enables both workers and employers to scrutinize the prospects for a successful match. This matching process helps workers find jobs that fit their particular skills and aptitudes (Johnson, 1978; Jovanovic, 1979). Subsequently enhanced worker-firm complementarities raise returns to training, thus inducing training investments (Mincer, 1988).

A matching process can contain upward, lateral or downward job shifts. In some accounts, workers start out in the bottom of a pyramid shaped job distribution. Those who do not have the ability to advance to more difficult jobs stay at the bottom, while the more able advance over time. Insufficiently matched workers stand in line and wait for older cohorts to retire or for the occupational structure to upgrade (Sørensen, 1977). In other accounts, workers start out all over the job distribution and ‘gravitate’ toward optimally matched positions (McCormick, DeNisi and Shaw, 1979). This gravitation process is particularly important if the schooling system does not provide a ‘reliable’ signal of worker productivity (Gottfredson, 1985).

‘Gravitation’ often refers to the match between ability and work complexity but can also refer to work interests—e.g. investigative or social interests (Nye *et al.*, 2012). Work interests are *horizontally* matched with congruent work environments, as opposed to ability and complexity which are located in a vertical space. Considering horizontal matching, certain workers can actually attract greater training investments by downgrading in the job structure. Insufficient ability at a given level of complexity may trigger downward job

mobility leading to a better horizontal match. Net gains in terms of training investments, considering raised worker-firm complementarities in terms of interests, may thus arise.

A commonly observed feature of individual match improvements is their declining rate as workers learn more about their abilities over time. The positive effect of job mobility on worker-firm complementarities is substantially weaker after an initial ‘job-shopping’ period in the early career (Johnson, 1978; Topel and Ward, 1992). Consequently, positive effects of job mobility on any match-related outcome, including training investments, are expected to be scant among prime-age (and older) workers.

However, workers’ learning capacities change over the life course as a function of their accumulated learning experiences. Learning capacity is determined by two factors: learning skills and learning motivation (cf. Pintrich *et al.*, 1993). Although learning skills supposedly change as a function of accumulated learning experiences, motivation is by definition variable over the life course. Accumulated learning experiences are determining of current learning motivation, because the former contains information which shapes individual *expectations* regarding the latter (Eccles and Wigfield, 2002). For instance, the accumulated accomplishments of learning activities provide a strong signal that subsequent similar activities also are accomplishable. Accumulated learning experiences thus strengthen learning motivation through its effect on workers’ beliefs that they will accomplish similar activities also in the future (their *self-efficacy*, Bandura, 1997).

The repeated accomplishments of *too* similar learning activities are, on the other hand, of little *value* for individual competence development (Eccles and Wigfield, 2002). The sense of progress emerging through the exploration of novel activities is supposedly *the* most important driver of human learning motivation (White, 1959; Deci and Ryan, 2014). Tasks can be novel for the individual in either a vertical (work complexity) or in a horizontal (work interests) sense. While the former most likely is important for individuals’ sense of progress in comparison to the achievements of their peers, the latter is conceivably also important with reference to their own previous achievements (their *ego-involved* vis-à-vis their *task involved* learning motivation, Nicholls, 1984). Job mobility maintains these learning motivations since changes of contexts may assure a stream of novel tasks. Strong learning motivation, in turn, affects work learning through several channels. It attracts training investments, but strongly motivated learners may also actively seek out learning

opportunities (learning-by-doing) and perform better in learning situations.

An updated matching theory considers the changing nature of individual matches as a function of accumulated learning experiences. A worker may want to focus on basic work-life skills in one interest domain at the beginning of the career, and is hence best matched to a unidimensional quite simple job. In the mid-career, the same worker may have grown out of the costume of this entry-level job and wants to advance to more complex tasks, or explore other work interests. The ‘optimal’ match for experienced workers is thus different from what it was at their labor market entry. A desire to avoid work environments insufficiently adaptable to growing needs for a ‘rematch’, is the main rationale behind the *new experiences strategy*. It states that the most effective way of ensuring lifelong work learning is to seek out new learning experiences in different jobs. Based on this reasoning, we expect a positive association between job mobility and subsequent work learning.

Institutional Links

The loyalty and the new experiences strategies are, respectively, linked to coordinated and liberal market economies (CMEs and LMEs), within the ‘varieties of capitalism’ (VoC) framework (Hall and Soskice, 2001). Educational systems in CMEs (e.g. Germany) contain significant elements of vocational tracking and thus provide more ‘reliable’ signals of worker productivity. The need for ‘gravitation’ is thus smaller, which is reflected in stronger employment protection legislation (EPL). Educational systems in LMEs (e.g. the United Kingdom), on the other hand, focus on the development of general learning capacities (Allmendinger, 1989; Hall and Soskice, 2001). ‘Insider-outsider’ cleavages, which are expected to induce negative associations between job mobility and work learning, are supposedly more profound in CMEs. Such cleavages encourage the allocation of complex task assignments, and thus the distribution of learning opportunities, to insiders. In contrast, the greater importance of ‘gravitation’ in LMEs supposedly weakens borders between labor market segments (Gallie, 2009).

However, adaptation to changing global markets has led to new differentiations *within* CMEs. A deregulation of EPL in combination with unemployment insurance (UI) and investments in human capital (e.g. active labor market programs: ALMP) constitutes an adaptation strategy that has been termed ‘flexicurity’ (Muffels and Luijkx, 2008). Denmark and the

Netherlands exemplify this strategy although it has been vindicated rather generally (EC, 2000; OECD, 2006; Goergen *et al.*, 2012). A ‘partial deregulation’ of the labor market, expanding fixed-term contracts while keeping EPL intact for the majority, is an alternative strategy. For instance, temporary contracts have been used to cut employment costs in many CMEs and Mediterranean countries (Barbieri 2009).

The location of Sweden in this space is not obvious. Sweden has a rather general educational system with late and often revocable educational tracking (Erikson and Jonsson 1998), leading to a need for and normative acceptance of ‘gravitation’. From the 1960s and onwards, the labor market has been upgrading (but currently at a slower pace), at first due to an expansion of mid-skilled jobs and later mainly because of a professionalization of the labor force (Handel, 2012; Tählin, 2019). The initially rapid pace of this upgrading, and consequential high rates of job mobility, led to the emergence of several policies in the 1960s which (today) are labeled ‘flexicurity’. These policies have been reconsidered at various points, however. EPL was strengthened in the 1970s, while UI and ALMP were weakened in the 1990–2000s (Erixon, 2010).

In Sweden, temporary contracts have traditionally been common in low-to-mid-skilled public sector jobs. There is also an age-divide, with more than 50 per cent of employed 16–24-year-olds having temporary contracts in recent years. The temporary share went from about 10 to 15 per cent of employment during the 1990s, but has not increased much after that. The distribution of temporary employment has shifted, however, from probationary contracts and temporary vacancy replacements to more insecure contracts (e.g. hourly employment) (SCB, 2015). This shift indicates that temporary employments increasingly have become a permanent solution for employers.

The above policy developments locate Sweden on the verge between CMEs and LMEs and institutions varying support both stability and mobility decisions. Consequently, individual opportunities to choose the loyalty- or the new experiences strategy (or switch between them) are relatively abundant in the Swedish setting. The Swedish case is therefore well-suited for an analytical evaluation of these expectations.

Data

The LNU (2000, 2010) is a Swedish nationally representative survey. Major strengths include a rich set of control variables and a longitudinal design. Work learning is measured in 2000 and 2010 and job mobility in-between the surveys is measured through an occupational

biography. The PIAAC is a cross-sectional representative survey conducted in 2012. A major strength is a variety of measures tapping different dimensions of work learning. The total number of respondents in LNU 2010 is 4415 and the response rate is 61 per cent. Work learning is an activity reserved for gainfully employed people and the sample is thus restricted to this population. Self-employed are also omitted. In order to apply a longitudinal design, only 30–65-year-old workers (in 2010) are included. The analytical sample consists of 1,474 participants. (1,724 were not employed in 2010 and 32 were outside the age limits, 987 were not employed/did not participate in 2000 or had at least one missing value). The total number of respondents in the PIAAC (for Sweden) is 4,469 and the response rate is 45 per cent. Two thousand eight hundred and fifty-five 20–65-year-old employed Swedish respondents with no missing values are analyzed. (1,366 were not employed, 212 had a missing value, and 36 were outside the age limits).

The global measure of work learning in LNU taps into several dimensions of work learning, while four variables in the PIAAC separate different dimensions of work learning. See Table 1 for operationalization and descriptive statistics for all dependent variables.

Job Mobility

Job mobility is commonly divided into external mobility (between organizations) and internal mobility (within organizations). Following Le Grand and Tählin (2002), we distinguish between workers having made (a) no shift, (b) one external job shift, (c) two or more external job shifts, and (d) one or more internal job shifts. A promotion is an internal upward shift according to an objective vertical criterion, such as getting supervisor responsibilities or a job higher up in the occupational hierarchy. Because this refers to a distinct phenomenon governed by different mechanisms (e.g. suitability for more advanced work tasks), we primarily consider estimates for internal mobility controlled for occupation and supervisor responsibilities. Relatively few individuals (11.6 per cent) pursue both external and internal job mobility compared to only one or the other, and we hence do not allow for interactions between them. All measures are top-coded because groups are sparsely sampled at higher levels of mobility. Descriptive statistics for the independent variables and all control variables are shown in Table 2.

In PIAAC, respondents are asked how many organizations they worked for during the last five years. No comparable question is included for internal mobility. We thus categorize mobility into three groups: (a) no

Table 1. Operationalization and distribution for measures of work learning.

Variable	Operationalization	Outcomes values	Distribution	
			2000 (%)	2010 (%)
LNU outcome:				
Work learning (learning dimension: global)	'To what extent does your work mean that you learn new things?'	0 (Not at all) 1 (To a low extent) 2 (To some extent) 3 (To a high extent) 4 (To a very high extent)	4.00 12.21 32.56 30.73 20.49	2.31 10.79 30.46 37.25 19.20
PIAAC outcomes:				<u>2012</u>
Guidance from colleagues (learning dimension: informal)	'In your own job, how often do you learn new work-related things from co-workers or supervisors?'	1 (Never) 2 (Less than once a month) 3 (At least once a month) 4 (At least once a week) 5 (Every day)		4.44 17.78 25.92 31.86 19.96
Learning-by-doing (learning dimension: learning-by-doing)	'How often does your job involve learning-by-doing from the tasks you perform?'	1 (Never) 2 (Less than once a month) 3 (At least once a month) 4 (At least once a week) 5 (Every day)		2.33 13.86 22.22 33.71 27.87
Keeping up-to-date (learning dimension: -)	'How often does your job involve keeping up to date with new products or services?'	1 (Never) 2 (Less than once a month) 3 (At least once a month) 4 (At least once a week) 5 (Every day)		8.14 24.72 25.09 23.79 18.26
On-the-job-training (learning dimension: formal)	'During the last 12 months, have you attended any organized sessions for on-the-job training or training by supervisors or co-workers? How many of these activities did you participate in?'	0 1 2 3 4 or more		67.96 14.60 7.57 3.87 6.00

LNU: The Swedish Level-of-Living surveys 2000 and 2010, $n = 1474$, unweighted estimates.

PIAAC: The Programme for the International Assessment of Adult Competencies 2012, $n = 2855$, weighted estimates.

external shift, (b) one external job shift, (c) two or more external job shifts.

Control Variables

Control variables aim to capture influences of ability (human capital) and working conditions. Human capital raises the labor market value of workers, and may thus affect mobility and stability. Human capital is also useful in learning situations. Working conditions, especially task complexity, are related to differences in learning content between occupations. Occupations are also associated with varying rates of job mobility.

In LNU, control variables are measured in 2010 or introduced as differences between 2000 and 2010, depending on the model specification. *Years of schooling* are measured with the question 'How many years altogether have you been to school or vocational training full-time? (Include all education from elementary school on.)'; *Work experience* is measured with the

question 'Approximately how many years altogether have you spent in gainful employment?'; *Supervisor responsibilities* are measured with the question 'How many persons do you supervise?' At least one subordinate is counted as supervisor; *Job tenure* is counted in years and computed from the occupational biography.

In the PIAAC, *years of schooling* is measured with the question 'Which of the qualifications on this card is the highest you have obtained?' and then recoded into years; *Work experience* is measured with the question 'In total, approximately how many years have you had paid work?'; *Supervisor responsibilities* are measured with the question 'How many employees do you supervise or manage directly or indirectly?' *Job tenure* is measured with the question 'At what age or in which year did you start working for your current employer?' *Literacy skills* are measured through a test battery, encompassing

Table 2. Descriptive statistics.

	Mean/Per cent	Standard error
LNU		
No external job shifts	55.09	
One external job shift	23.47	
Two or more external job shifts	21.44	
No internal job shifts	68.11	
One or more internal job shifts	31.89	
One or more voluntary external shifts	25.64	
One or more external shifts and one unemployment spell	9.02	
One or more external shifts and two or more unemployment spells	4.88	
One or more external shifts from a temporary contract	5.36	
Lateral external mobility	13.16	
Upward external mobility	18.59	
Downward external mobility	13.16	
Woman	48.30	
Years of schooling	13.57	0.08
Job tenure	9.99	0.24
Work experience	26.89	0.27
Supervisor responsibilities	28.56	
Managers (ISCO-88: 1)	7.39	
Professionals (ISCO-88: 2)	24.97	
Associate professionals (ISCO-88: 3)	26.87	
Clerks (ISCO-88: 4)	6.92	
Service workers (ISCO-88: 5)	13.6	
Agricultural workers (ISCO-88: 6)	0.34	
Crafts workers (ISCO-88: 7)	7.39	
Assemblers and operators (ISCO-88: 8)	9.36	
Elementary occupations (ISCO-88: 9)	3.60	
PIAAC		
No external job shifts	51.03	
One external job shift	23.49	
Two or more external job shifts	25.48	
Woman	50.00	
Years of schooling	12.23	0.02
Job tenure	10.01	0.16
Work experience	20.25	0.08
Supervisor responsibilities	34	
Literacy skills	279.36	0.65
Managers (ISCO-08: 1)	5.90	
Professionals (ISCO-08: 2)	23.91	
Associate professionals (ISCO-08: 3)	17.44	
Clerks (ISCO-08: 4)	5.37	
Service workers (ISCO-08: 5)	22.39	
Agricultural workers (ISCO-08: 6)	2.21	
Crafts workers (ISCO-08: 7)	10.70	
Assemblers and operators (ISCO-08: 8)	7.71	
Elementary occupations (ISCO-08: 9)	4.37	

LNU: The Swedish Level-of-Living survey 2010, $n = 1474$, unweighted estimates.

PIAAC: The Programme for the International Assessment of Adult Competencies 2012, $n = 2855$, weighted estimates.

basic assignments as well as complex problems. Not all participants conduct all tests, but missing values have been imputed with the help of scores on other

tests and background questions (OECD, 2018). The first imputed value is used as a proxy for the total score.

Occupations are measured with ISCO 2-digit codes (version 88 for LNU and version 08 for PIAAC).

Analytical Strategy

The longitudinal analysis on LNU data is set up as a comparative pretest-posttest design, estimating work learning at two time-points. Job mobility is observed only in-between the pretest and the posttest. There are two common methods to treat dependent variables in this design. The Regressor method estimates the association between the treatment and the outcome controlled for the pre-treatment outcome value. The Change score method estimates the association between the treatment and the change in the dependent variable (Allison, 1990).

There are several sources of potential bias in the current setting. (1) Differences in unobserved ability, causing heterogeneity between analyzed groups; (2) interactions between time-variant unobserved covariates and unobserved ability, causing heterogeneity in post-treatment paths of analyzed groups; and (3) effects of previous work learning on job mobility and current work learning.

Regarding the first problem, the inclusion of control variables (human capital and occupation) accounts for important heterogeneity between the groups. The longitudinal set-up enables a further control for unobserved ability through the Change score method, eliminating time-invariant heterogeneity from the equation (Allison, 1990). Estimates are attenuated in this specification (see [Supplementary Table SA1](#)). However, this attenuation may be caused by other sources of bias that are particularly severe for change scores as dependent variables, including the ones described above.

The Regressor method, in contrast to the Change score method, provides more efficient and consistent estimates in the presence of unobserved time-variant interactions (Angrist and Pischke, 2009; O'Neill *et al.*, 2016) and endogenous selection (Vaisey and Miles, 2017). In the current set-up, unobserved *time-variant* covariates of include variation in career opportunities (e.g. labor market conditions). This variation likely *interacts* with unobserved ability in the determination of learning outcomes and decisions to stay or leave. Direct effects of previous work learning on job mobility (i.e. endogenous selection) and current work learning (i.e. state-dependence) are also anticipated.

The Regressor method is preferred in the current study because the research above suggests that it better accounts for two out of the three potential biases described above. An assumption is that included control variables sufficiently account for time-invariant

heterogeneity between the groups. Uncontrolled heterogeneity must typically be rather large for severe bias to occur (cf. Vaisey and Miles, 2017: pp. 49). Nonetheless, results based on the Change score method are provided for comparison. None of these methods are viable in the cross-sectional PIAAC. A strong *observed* control for ability to some extent makes up for this, however.

In order to further analyze potential heterogeneities in the association, mobility interceded by unemployment spells, and a temporary contract in 2000 are used as indicators of involuntary mobility in a separate analysis. External mobility is the focus of this analysis and the categorization of it is modified as follows: (1) one or more voluntary external shifts, (2) one or more external shifts and one unemployment spell, (3) one or more external shifts and two or more unemployment spells; (4) one or more external shifts from a temporary contract (without unemployment). A further dimension of the voluntary/involuntary distinction is a separation of job mobility into upward, downward and lateral shifts. An occupational prestige scale (OPS) is used to determine the direction of mobility in another separate analysis.

Other measurable skill-bound constraints (e.g. occupational class) intersect the above dimensions and also produce distinct influences. Sub-samples separated by occupational class (EGP) are thus analyzed separately. The sample is divided into individuals holding jobs that at both time-points are (1) high-skilled (EGP I), (2) medium-skilled (EGP II, V and VI), (3) non-manual low-skilled (EGP III), (4) manual low-skilled (EGP VII). Work experience is another constraining dimension of skill. Three age groups are analyzed separately to capture experience constraints: 20–29, 30–39 and 40–55 (in 2000). Wage growth is another variable reflecting ability. Separate analyses for wage growth tertiles over the observed time-period are therefore also conducted. All stratified analyses omit controls for occupation due to issues of power.

All models are estimated with ordinal logistic regression, given the ordinal character of all (but one) of the measures. Average marginal effects (AMEs) are presented in the results section and full regression tables with odds ratios are presented in the online supplement. Computed estimates in PIAAC are weighted using the included design weight. The ordinary way of computing standard errors is inaccurate using this weight. Standard errors are thus gathered from 80 reruns of the model on differently weighted replications of the dataset (OECD, 2018). We checked for curve-linear effects by adding squared terms for the continuous variables and included them in subsequent models if they were at least borderline significant ($p < 0.15$).

The present argument is causal in the sense that the applied methods aim to estimate learning differences between job stayers and job leavers as rid of the confounding influences of ability and working conditions as possible. One remaining threat against allowing a causal interpretation of the results is that movers may choose to move after having received some prior information about prospective learning opportunities in a subsequent job. This information is presumably rather vague in comparison to information about e.g. a contracted wage raise, however, and quite limited to the initial phase of a new job. A contracted wage raise is usually known before the worker decides to enter a job, but training outcomes are likely a function of match and thus revealed after a period of actual experiences of the job (Johnson, 1978; Jovanovic, 1979; Mincer, 1988).

Results

The Level-of-Living Survey

The main results for LNU are presented in Figure 1 (cf. Supplementary Table SA1). Markers represent AMEs for the mobility groups compared to the stable group,

for each of the five outcome values of work learning (cf. Table 1). The Change score model (Model 5) has nine values, one for each possible difference in the outcome between the two observed time-points.

The analysis is connected to the theoretical set-up as follows. If the loyalty strategy is the most effective way of learning new things in working life, AMEs for low-outcome values should be positive and AMEs for high-outcome values should be negative. If, on the other hand, the new experiences strategy is the most effective way of learning new things in work life, the reversed pattern is expected.

Evident from Figure 1, is that the new experiences strategy is the most effective way of learning new things in work life. Across all model specifications, mobile groups have positive AMEs for high outcome values and negative AMEs for low outcome values. According to Model 4 (the fully controlled Regressor model), workers who have made at least two external job shifts have an 8-per cent point higher chance of learning new things to a very high extent (outcome value 4). Similarly, according to Model 5 (the Change score model), they have a 4-per cent point higher chance of improving their learning with one point, and a 2-per cent point higher chance of

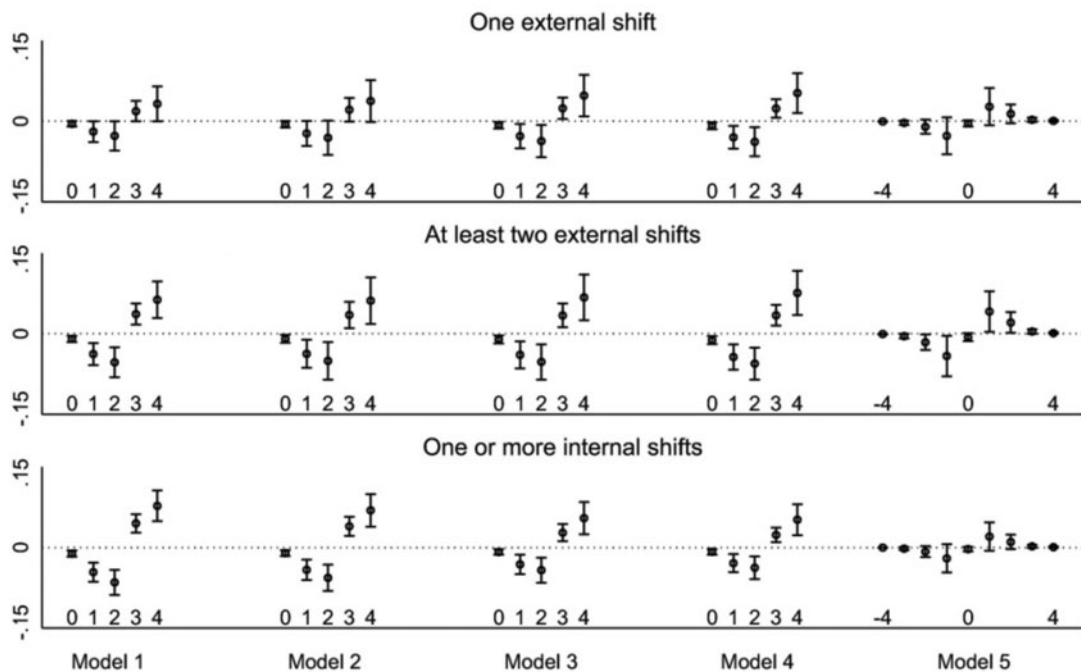


Figure 1. Work learning differences associated with job mobility. Average marginal effects for each outcome value.

Source: The Level-of-Living survey 2000 and 2010; 95% confidence intervals. Controls: Model 1 = Gender; Model 2 adds Human capital; Model 3 adds occupation/supervisor; Model 4 adds a lagged dependent variable; Model 5 enters all variables as change scores.

improving their learning with two points. These differences may appear small, but given that only 24 per cent improve their learning with one point, and only 8 per cent improve their learning with two points, they are actually quite substantial.

The pattern is most distinct for workers who have made at least two external job shifts. This group learn more than the stable group according to all model specifications. Workers who have made one external job shift learn significantly more than the stable group only after accounting for occupation and/or the previous outcome value (Models 3 and 4). The internally mobile have better learning outcomes than the externally mobile in the baseline model. However, human capital (Model 2), occupation and supervisor responsibilities (Model 3), as well as unobserved confounding influences (Models 4 and 5), account for parts of this association.

In Figure 2, an analysis distinguishing between voluntary and involuntary external mobility is presented (cf. Supplementary Table SA2). Associations are both markedly attenuated and non-significant if the mobility is interceded by at least two unemployment spells, for job mobility from a temporary contract (without unemployment), and for lateral mobility. Downward

external mobility and external mobility interceded by one unemployment spell are, on the other hand, both positively associated with work learning. Apparently, the general pattern is also that AMEs are negative for low-outcome values and positive for high-outcome values for all kinds of external mobility, although not always significantly so.

In Figure 3, separate estimates for age groups, occupational classes, and wage growth tertiles are presented (cf. Supplementary Tables SA3–SA5). Note the wider interval of the y-axis (due to larger confidence intervals in the smaller sub-samples). Visual differences between groups in this analysis are mainly due to ceiling effects in the outcome variable. For example, mobile workers within EGPI have a lower chance of scoring 2 and a higher chance of scoring 4 than stable workers but generally do not vary much below 2, while mobile workers within EGPVII have a lower chance of scoring below 2 and a higher chance of scoring above 1 and vary over the whole scale. Estimated odds ratios differ only marginally between these classes (cf. Supplementary Table SA4). The same pattern applies to differences between wage growth tertiles 1 and 3 (cf. Supplementary Table SA5). Only one difference is noteworthy in this

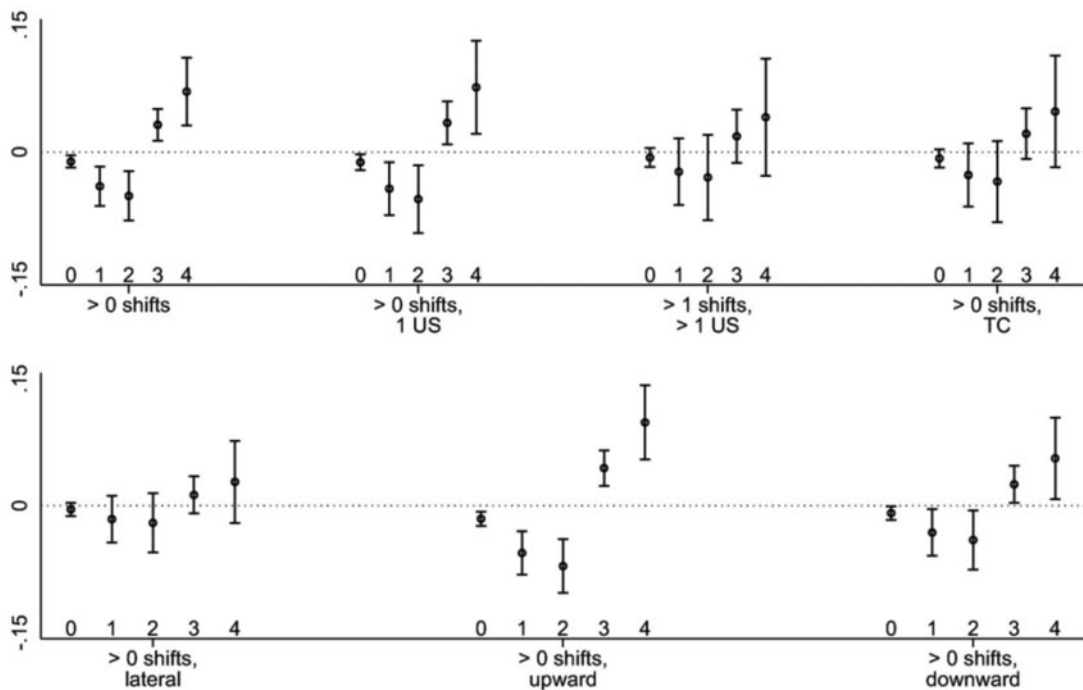


Figure 2. Voluntary/involuntary external job mobility. Average marginal effects for each outcome value.

Source: The Level-of-Living survey 2000 and 2010; 95% confidence intervals. Controls: Same as in Model 4 (see note in Figure 1). US = Unemployment spell, TC = Temporary contact in 2000.

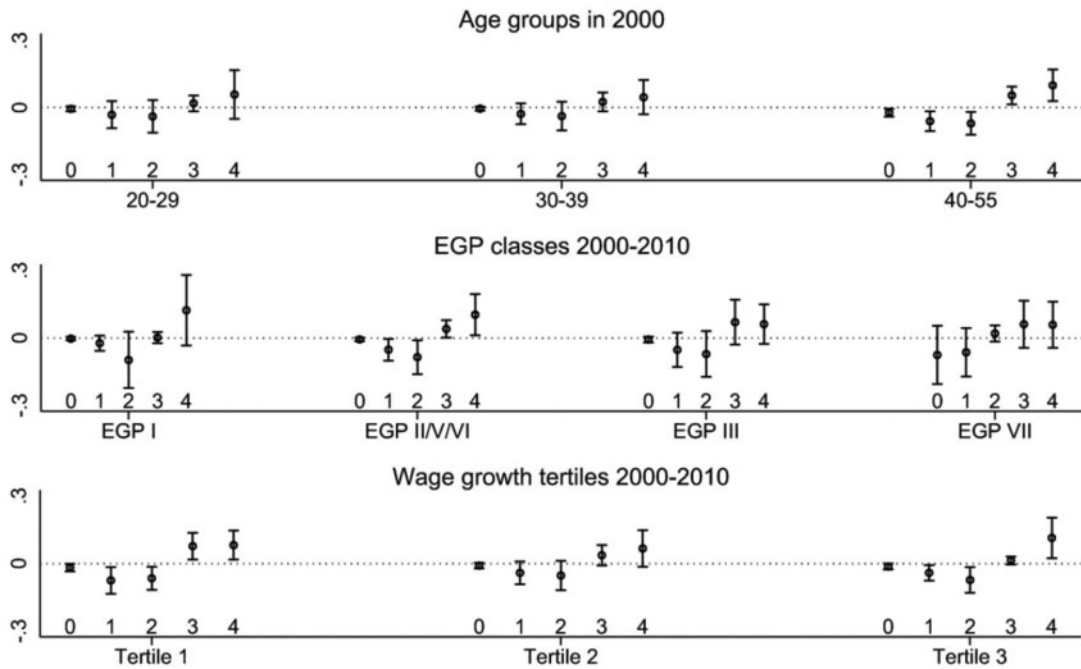


Figure 3. Stratified analyses for at least two external job shifts. Average marginal effects for each outcome value of work learning.

Source: The Level-of-Living survey 2000 and 2010; 95% confidence intervals. Controls: Model 4 (except occupation).

analysis: older workers have a distinctively stronger pattern than the other age groups.

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In Figure 4 (cf. Supplementary Table SA6), results for the outcome *guidance from colleagues* are presented. In Model 1, AMEs are negative for low-outcome values and positive for high-outcome values, suggesting that the new experiences strategy is related to greater subsequent learning in this dimension. However, human capital (Model 2) explains this association for workers who have made one external job shift, and most of the association for workers who have made at least two external job shifts. Apparently, the association between job mobility and subsequent work learning is not explained by these workers receiving more guidance in their subsequent jobs.

In Figure 5 (cf. Supplementary Table SA7), results for the outcome *learning-by-doing* are presented. The pattern is that workers pursuing the new experiences strategy tend to learn more while practicing work tasks than their stable counterparts. While parts of this association are explained by human capital (Model 2), workers who have made at least two external job shifts learn significantly more also controlled for human capital,

occupation, supervisor responsibilities and literacy skills (Models 2–4). This group has a 6-per cent point higher chance to learn every day from the practice of work tasks, as compared to the stable group. Thus, richer learning-by-doing contributes to the positive association between job mobility and subsequent work learning.

In Figure 6, results for the outcome *keeping-up-to-date* are presented. The pattern resembles the previous analysis, but no differences are significant. The positive association between job mobility and subsequent work learning is thus not significantly explained by this learning dimension.

In Figure 7, results for the outcome *formal on-the-job training* are presented. For this outcome, AMEs are negative for low-outcome values and positive for high-outcome values across all model specifications. A greater attendance of formal training programs thus contributes to the positive association between job mobility and subsequent work learning. The association is attenuated in a model controlling for human capital (Model 2), but still significant in a model controlling for occupation, supervisor responsibilities and literacy skills (Model 4). The most mobile group has as a 5-per cent point higher chance of attending any formal on-the-job-training than the stable group.

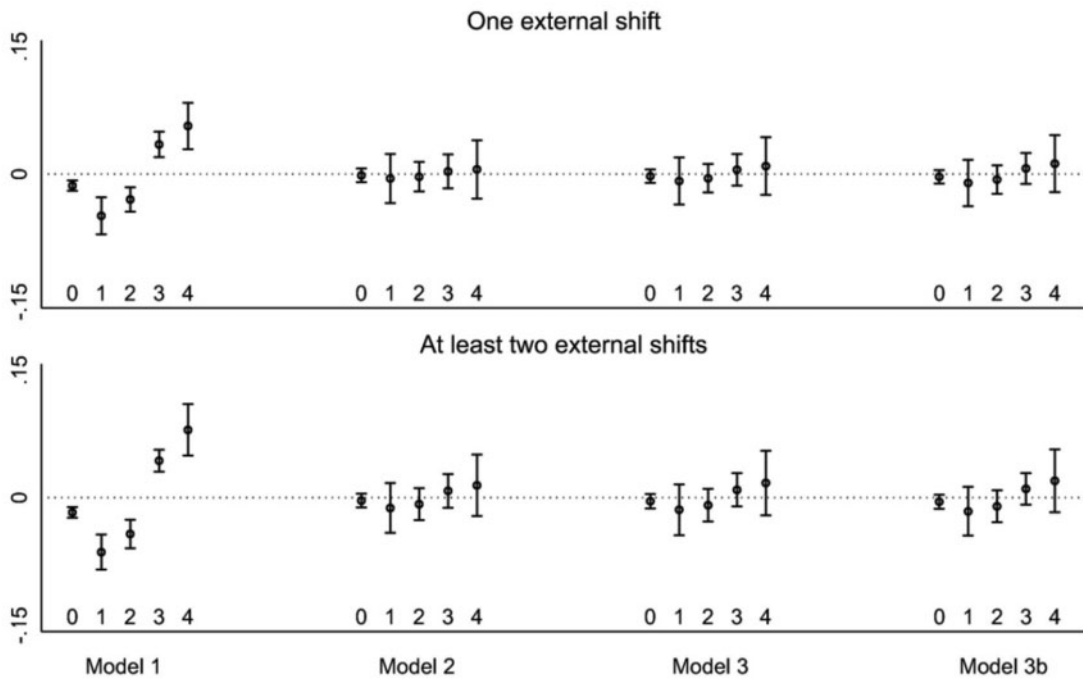


Figure 4. Guidance from colleagues differences associated with job mobility. Average marginal effects for each outcome value.

Source: The Programme for the International Assessment of Adult Competencies 2012; 95% confidence intervals. Controls: Model 1 = Gender; Model 2 adds Human capital; Model 3 adds occupation/supervisor; Model 3b adds literacy skills.

Concluding Discussion

In this study, we have estimated associations between job mobility and subsequent work learning in order to answer the question whether mobile or stable workers learn more at work. Mechanisms behind the expectation that stable workers learn more at work were termed *the loyalty strategy*, while the contrary was termed *the new experiences strategy*. Generally, the longitudinal analysis of a global measure of work learning suggested that mobile workers subsequently learn more at work. The analysis of different dimensions of work learning showed that two aspects of work learning were primarily tied to job mobility: learning-by-doing and formal on-the-job-training. These two learning activities are quite distinct. The former relies on indirect investments, such as time away from already mastered task assignments and the productivity difference between a novice and a fully trained worker (net of any wage differences). The latter is also reliant on employers' willingness to invest in costly tutor fees, time of normal task assignments, etc. Both are however dependent on a joint belief in the future

pay-off to these investments. Either higher rates of job mobility do not contradict these beliefs, or other effects, such as an elevated learning motivation, offset negative influences of these beliefs.

Results suggest that work learning is important in labor market 'gravitation' processes (cf. Johnson, 1978; McCormick, DeNisi and Shaw, 1979; Nye *et al.*, 2012). A better match induces worker-firm complementarities which raises returns to training investments (Mincer, 1988). The detection of a positive association in a sample including prime-age workers, as well as a strong pattern among older workers, means that late-career match improvements also occur. Remarkably, even job mobility leading to a downward shift in terms of occupational prestige was associated with greater subsequent work learning (net of occupational main effects). The pattern for lateral job mobility was weaker (and non-significant), which in almost all of the cases meant job mobility within the same occupation. Suggestively, new jobs containing new work tasks in a vertical and/or horizontal sense, assured by in particular occupational shifts, fulfill workers' (growing) needs for work-life challenges.

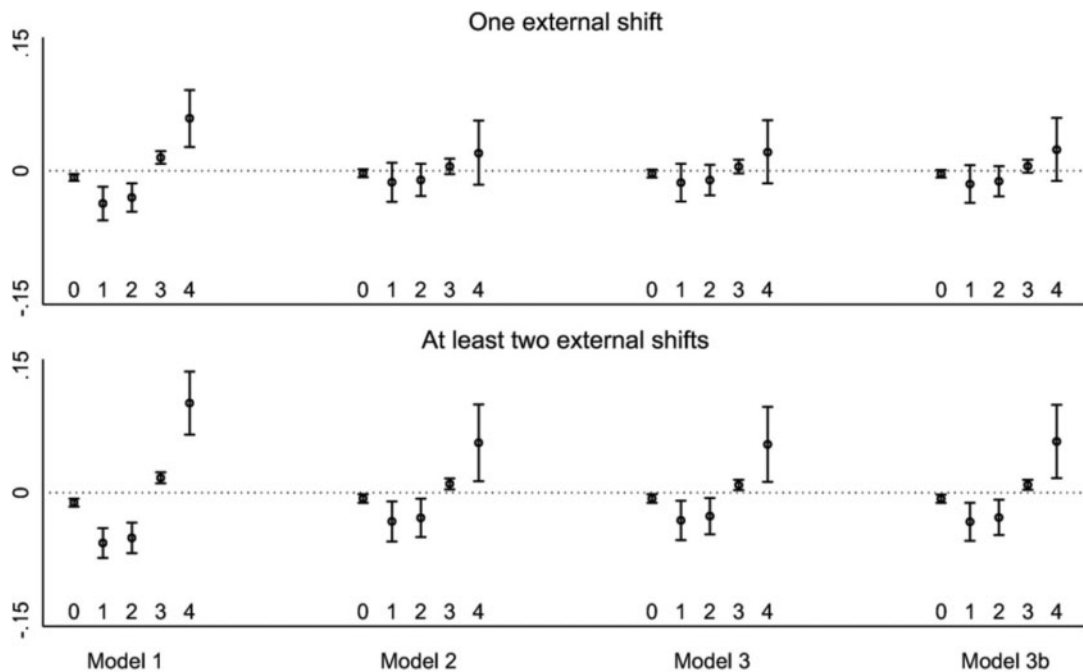


Figure 5. Learning-by-doing differences associated with job mobility. Average marginal effects for each outcome value.

Source: The Programme for the International Assessment of Adult Competencies 2012; 95% confidence intervals. Controls: Model 1 = Gender; Model 2 adds Human capital; Model 3 adds occupation/supervisor; Model 3b adds literacy skills.

This is implied in the statement that innate human desires to explore and gain mastery over novel activities is a most powerful learning motivation (White, 1959; Nicholls, 1984; Deci and Ryan, 2014).

Nevertheless, the positive association was less distinct (and non-significant) for workers primarily conducting job mobility interceded by unemployment spells, as well as for mobility from a temporary contract. As similarly described in a number of previous studies (e.g. Fuller, 2008; Schmelzer, 2012), these groups of mobile workers might include workers who are locked into a vicious circle of unemployment spells and temporary job episodes, yielding fewer subsequent training investments. Single unemployment spells did not have this effect, however, which suggests that moderate unemployment does not inflict on the relationship between job mobility and subsequent work learning.

In the generic Swedish context, mechanisms linked to the loyalty strategy did not prevail however. The uncertainty that a pattern of (previous) job mobility introduces to the job relationship is not, in general, a sufficient reason to withhold training investments or training efforts. This conclusion has relevance for accounts

implying that prospective job stability is a crucial factor behind training investments in a general sense (e.g. Borjas, 1981; Mincer, 1986; Goldthorpe and McKnight, 2006).

The finding that the new experiences strategy is the most effective way of learning new things in working life is in line with recent VoC research (Goergen *et al.*, 2012), suggesting that labor markets in LMEs, promoting the new experiences strategy, generally have higher rates of work learning than labor markets in CMEs, promoting the loyalty strategy. However, the same research also shows that *even higher* rates of work learning are present in the ‘flexicurity’ economies: Denmark and the Netherlands. These economies inspired the design of policies aimed at dealing with problems related to structural change in the early 2000s (e.g. EC, 2000; OECD, 2006). This study suggests that alleged connections between job mobility and lifelong learning in these policy packages are not entirely far-fetched.

Potential heterogeneities in the association were explored in a number of sub-samples, defined by age, occupation, and wage growth. Remarkably, the

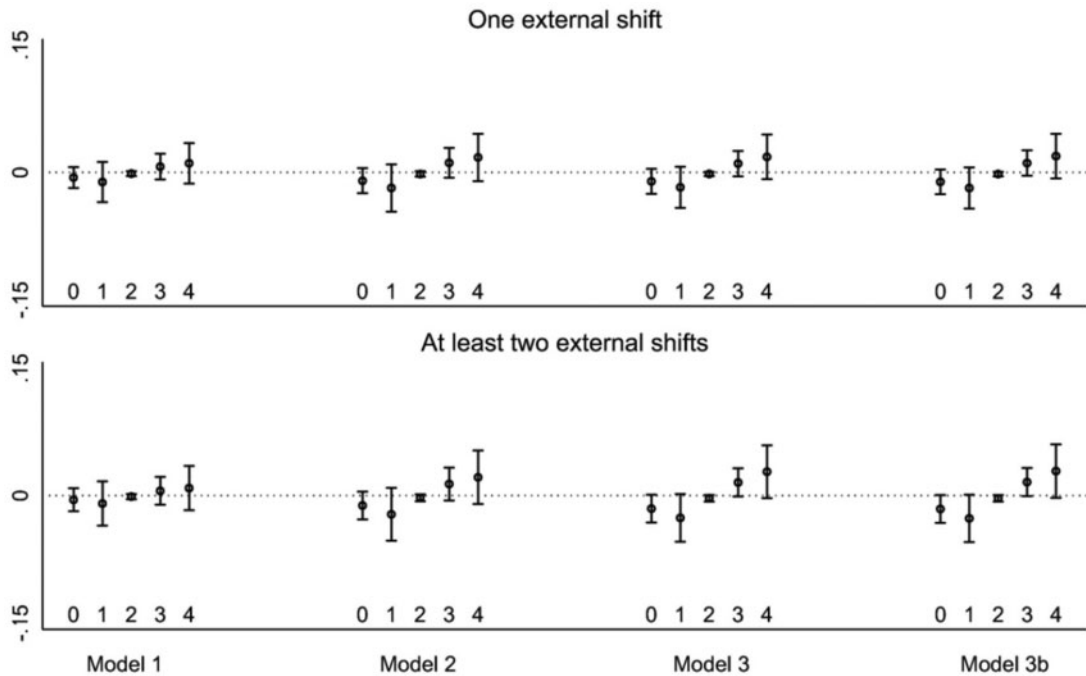


Figure 6. Keeping-up-to-date differences associated with job mobility. Average marginal effects for each outcome value.

Source: The Programme for the International Assessment of Adult Competencies 2012; 95% confidence intervals. Controls: Model 1 = Gender; Model 2 adds Human capital; Model 3 adds occupation/supervisor; Model 3b adds literacy skills.

association between job mobility was rather comparable across these dimensions, which suggest that it is not limited to e.g. the young, the high-skilled, etc. The only noteworthy divergence was a distinctively stronger pattern for older workers in the sample. Perhaps older workers have greater needs for job mobility as a way of maintaining work learning in comparison to less-experienced workers who learn more overall.

We further found that results for external and internal mobility, as respectively compared to stable workers, did not differ much after accounting for human capital, occupation and supervisor responsibilities. Seemingly, the internally mobile have similar learning outcomes as the externally mobile, net of vertically graded differences. Internal mobility combines security, relationships with colleagues, and already attained (organization) specific skills with new experiences and learning opportunities, and may thus be a most advantageous kind of mobility. This path is not open to everyone, however, and demands sufficiently large work organizations. Internal careers are also more sensitive to redundancies and liquidations of firms. External job mobility may hence turn out to be the most advantageous strategy in times when industries, occupations or firms decline.

A source of potential bias in this kind of study is linked to ability differences between workers, supposedly causing both job mobility and work learning. We accounted for such bias through several methodological techniques. First, education and occupation were used as control variables, under the assumption that workers select into educations and occupations based on ability differences. Second, all variables were introduced as change scores in one model specification, eliminating time-invariant effects of unobserved ability. Third, a control for a previous value of the outcome can efficiently, and fairly consistently, account for the confounding influences of interactions between unobserved ability and unobserved time-variant variables (Angrist and Pischke, 2009; O'Neill *et al.*, 2016). This was considered a likely scenario under the assumption that variation in career opportunities (e.g. labor market conditions) and unobserved ability interact and cause both job mobility and work learning. Fourth, an observable dimension of ability is literacy skills, which are highly useful in learning situations involving the interpretation of instructions and the critical judgement of information. Scores reflecting performance in a test battery of literacy skills were added as a control variable.

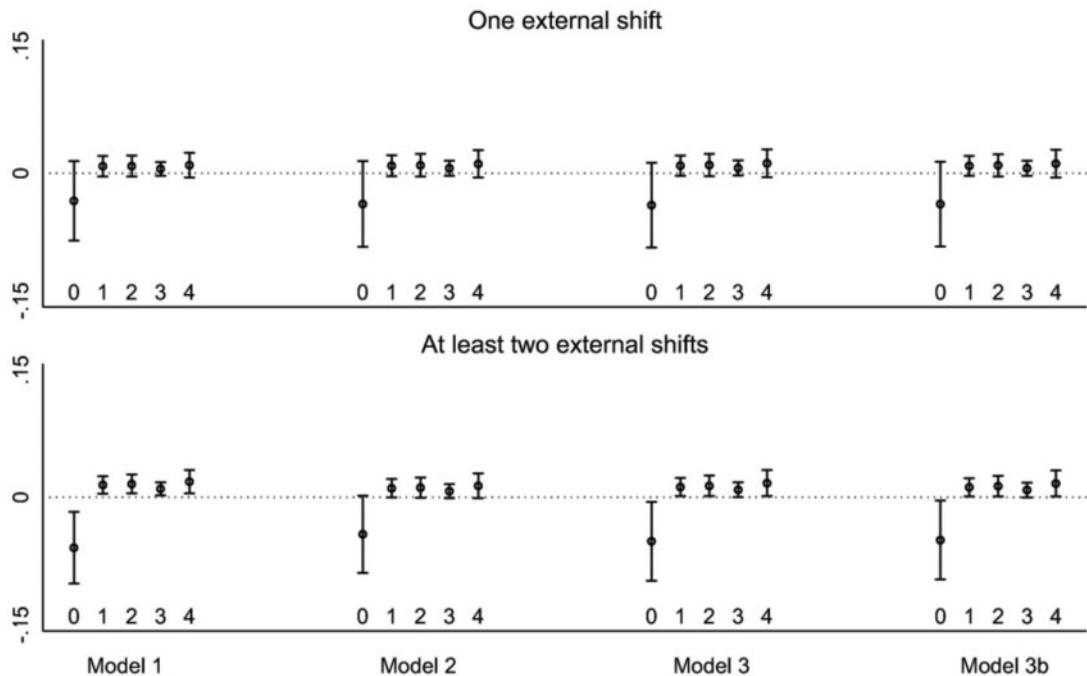


Figure 7. Formal on-the-job-training differences associated with job mobility. Average marginal effects for each outcome value.

Source: The Programme for the International Assessment of Adult Competencies 2012; 95% confidence intervals. Controls: Model 1 = Gender; Model 2 adds Human capital; Model 3 adds occupation/supervisor; Model 3b adds literacy skills.

Positive associations between recurrent external job mobility and subsequent work learning remained significant in all the above specifications. These results are interpreted as quite strong evidence that ability at least does not cause a positive relationship that would otherwise not have been present. The exact strength of this relationship is still open for debate, however, in part due to normal caveats such as sampling error, and in part because there was some variation across models. Other limitations of the data include single-item measures of the underlying learning dimensions. Multi-item scales, allowing for measurement error correction in each dimension, could add further certainty to the estimates. Another limitation is that only two time-points were analyzed. A repeated panel-design with shorter time intervals in-between the surveys could combine the attractive features of, respectively, the Change score and the Regressor method within the same model (Allison, 2009). A simultaneous estimation of effects of job mobility on subsequent work learning *and* effects of work learning on subsequent job mobility, i.e. a combination of the approaches of this study

and previous research on the topic (Veum, 1997; Dolton and Kidd, 1998; Loewenstein and Spetzler, 1999b; Parent, 1999; Zweimüller and Winter-Ebmer, 2003), also has the potential to make the story of job mobility and work learning even more complete.

Note

- 1 Unstable labor market patterns can also be common for high-skilled workers possessing portable complex skills (Kronberg, 2013). Training allowances are not the principal benefit of this group however. Their role is rather to bring external (expert) knowledge into the organization (Kalleberg, 2003).

Supplementary Data

Supplementary data are available at *ESR* online.

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