Careers in Finance*

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Abstract: Using unique, hand-collected data about the careers of 481 individuals who became hedge fund managers, we analyze the speed with which they rise to top positions in asset management and the risk of setbacks in their careers. We find that workers who start their career from low-level jobs rise faster and more steadily to top positions than workers starting from medium-level jobs. Male workers have better initial jobs and rise faster to the top, while graduate education improves the initial job level but increases the time to achieve a top position. Mobility across employers, which typically peaks between the third and ninth year of careers, is on average associated with slower careers**:** workers that switch employer more frequently have take more time to achieve the final job level in their career, suggesting that learning about workers' skills or match quality occurs is more effective within firms than in the marketplace. Finally, we analyze the impact of macroeconomic conditions on finance workers' careers and find that recession years are associated with a higher probability of being demoted.

Keywords: careers, finance, mobility, turnover, promotions, hedge funds.

JEL classification: G20, G23, J24, J62, J63.

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1 Introduction

The careers of finance workers differ from those of their non-finance counterparts in at least three ways. First, they are typically faster than those of non-finance workers. Using Execucomp data from 1992 to 2016, the CEOs of U.S. non-financial firms take on average 22 years since graduation to achieve their position, while the corresponding figure for financial firms is 20 years, and for asset management firms it is 19 years. In our own data, we find that careers in the hedge fund industry are even faster, as it takes on average 11 years to rise to the top.[1] Moreover, the wage profiles of finance workers are typically steeper than those of non-finance workers: in 2000, their profiles were on average 2% steeper (Philippon and Reshef, 2012).

Second, the careers of finance workers tend to be riskier, in line with the fact that finance firms typically carry more risk than non-finance ones: while some rise to the top, others make limited progress, or even experience setbacks, switching to jobs involving less power or leaving finance altogether. Also wages are more volatile in finance: in 2000 the wage profiles of finance workers were 8% more dispersed than for non-finance ones (Philippon and Reshef, 2012).

Third, finance employees typically earn considerably larger salaries that non-finance workers with similar qualifications and ability, a fact at least partly related to the previous two: to induce qualified individuals to undertake these risky careers, they must pay a commensurate risk premium. Moreover, also the ability to acquire decision-making power early on may involve the ability to affect one's own compensation, for instance by negotiating bonuses and sharing in the firm's profits.

Most of the academic and media attention has focused on the last one of these three aspects of finance careers – the spectacular differential between the pay of finance

[1] In order to determine the years to reach a CEO position we assume that workers enter the labor market at age 24 and, in the case of multiple-firms CEOs, we focus on the first CEO position, as in Shoar and Zuo (2016). We compute the corresponding figures in our data by considering the time elapsing from year of undergraduate completion and the achievement of one of the following positions: CEO, chairman or president and, in the context of hedge funds and limited partnerships, founder, founding partner, general partner or owner.

professionals and that of comparable non-finance workers, and the contribution of the finance premium to the gains of top wage-earners since the 1980s (Philippon and Reshef, 2012; Kaplan and Rauh, 2010, 2013; Bell and van Reenen, 2013; Célérier and Vallée, 2015).

In this paper, instead, we focus on the first two aspects of finance careers: the speed with which finance workers "rise to the top" and the risk of setbacks in their careers. We investigate these two aspects by analyzing the careers of a sample of 481 individuals who at some point in their career were employed as managers in a hedge fund present in the Lipper-Tass database in 2007-14. For each of them, we observe gender, education, and year of entry in labor market, as well as all the job changes within and across firms, which include not only hedge funds but also banks, insurance companies, mutual funds and non-financial companies. We characterize their jobs in terms of the "decision making power" typically associated with them within corporate hierarchies. These data allows us to fill a gap in the literature, which so far has not investigated the careers of finance workers. Moreover, as these data provide the full work histories of managers, they allow us to measure their mobility across tasks and across firms over their entire career.

We start by exploring the role of initial conditions – educational attainment, gender, initial job or stock market performance in the early phase of their career – in financial careers. As finance is increasingly complex, a training that develops quantitative skills and versatility in problem-solving should be particularly important asset: Philippon and Reshef (2012) document that the expansion of the U.S. finance industry triggered by deregulation has been followed by increases in both relative job complexity and relative education. We find that graduate education improves the initial job level but increases the time to achieve a CEO position, and that a training in economics or finance per se has no significant effect on careers.

Gender differences can also play a prominent role in a risk-based industry such as finance: as documented by a vast literature, women are more risk-averse than men (Byrnes, Miller and Schafer, 1999), and risk aversion predicts career choices after

graduation (Sapienza, Zingales and Mastripieri, 2009). Moreover, women trade less aggressively than men (Barber and Odean, 2001). Gender may also matter because finance companies and trading rooms are very competitive environments, where males tend to impose their leadership (Reuben, Sapienza and Zingales, 2012). Indeed, in our sample male workers have better initial jobs and become CEOs faster.

Moreover, financial markets shocks have been shown to have important and lasting effects on the careers of investment bankers: Oyer (2008) documents that buoyant stock market encourages MBA students to go directly into investment banking upon graduation, which in turn has a huge and lasting effect on their career choice and earnings. Relatedly, Schoar and Zuo (2016) show that the career paths of CEOs are persistently affected by the macroeconomic conditions that prevail when they enter the labor market: those that start out during recessions hold fewer jobs and become CEOs more quickly, but end up heading smaller firms and receiving lower compensation than their non-recession peers. In our sample, neither recessions nor abnormally large fluctuations in the stock market in the year of graduation are not significantly associated with the initial job level, but individuals who graduate in a recession take longer to achieve a top-level position.

Next, we investigate whether mobility across employers is associated with faster or slower careers, where speed refers not only to a worker's career advancement, but also to the time required to reach his or her final job level (which may involve promotions as well as demotions). One view is that learning about employees' talents occurs faster within the firm than in the marketplace: if so, promotions or demotions should occur faster for employees who stay within the same firm for long stretches of time than for those who switch employers often. Indeed, firms are known to have "fast-track" internal promotion paths for deserving employees (Baker, Gibbs and Holmstrom, 2001). In this view, mobility across employers delays employees' optimal task assignment (Acharya, Pagano and Volpin, 2016). The opposite view is that mobility accelerates learning employees' and employers' characteristics, as well as the quality of their match, during workers' careers (Farber, 1994; Farber and Gibbons,

1996; Flinn, 1986; Jovanovic, 1979; Moscarini and Thomsson, 2007; Papageorgiou, 2014; Topel and Ward, 1992). This view rests on the assumption that a job match is a "pure experience good", in the sense that "the only way to determine the quality of a particular match is to form the match and 'experience it'" (Jovanovic, 1979, p. 973).[2] We find that workers that switch employer more frequently have slower and more unstable careers, and take longer to achieve the final job level in their career, suggesting that learning about workers' skills or match with employers occurs more within firms than via a process of search and matching in the marketplace.

Finally, we ask to what extent promotions or demotions in the careers of finance workers are affected by negative shocks.[3] We address this question in two ways. First, we focus on the impact of macroeconomic fluctuations on workers' careers. Exploiting the panel dimension of our dataset, we use within-worker variation to test whether recessions affect the probability of promotion and/or demotion. We find that the probability of demotion in recession years is 40% higher than in other years, while the probability of promotion is unaffected. This finding suggests that economic downturns may make workers' careers more fragile. Second, we study whether workers' careers are affected by bad performance of their employers.[4] We focus on the segments of careers when the individuals in our sample were employed in hedge funds, for which we have comparable return data as well as information about their termination. Hedge funds are particularly suited to analyze the issue at hand, as their typical performance is very volatile and their liquidation is not a rare event, especially upon unsatisfactory performance. So we investigate whether, upon the liquidation of a hedge fund, the

[2]In principle, mobility across employers may also be prompted by the lack of opportunities for further career advancement within the firm, for instance because higher-level jobs in the corporate hierarchy are already occupied by smart people. In this case, a fast-advancement (though possibly high-risk) strategy is to take a higher position in a smaller company or even create a new one, for instance found a hedge fund.

[3]For company directors, Ferris, Jagannathan and Pritchard (2003) document that the past performance of firms for which an individual serves as a director correlates with his or her number of subsequent directorships, a finding that they ascribe to an improvement in reputation.

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subsequent labor market options of its employees are negatively affected, and how persistent is this "scarring effect". [This part of the analysis is still to be carried out.] So far, evidence of such scarring effects is only available for non-finance workers: Graham, Kim, Li and Qiu (2015), analyzing employer-employee matched panel data from the US Census for thirty states from 1985 to 2008, document a persistent drop in wages following bankruptcy of about 15%. Relatedly, Hochfellner, Montes, Schmalz and Sosyura (2015) show that workers in German firms that were affected by the financial crisis experienced persistent earnings losses of approximately €2,400 per year, nine weeks longer unemployment spells, and a lower probability of climbing the job ladder than workers in unaffected firms.

The paper is organized as follows. Section 2 illustrates the structure of the data set and describes the characteristics of the workers in our sample and their careers. Section 3 investigates the relationship between employees' characteristics and their initial job. Section 4 examines the profile of workers' careers and relates their speed and instability to both their characteristics and their mobility across employers. Section 5 explores whether the careers of workers in our sample are affected by market-wide shocks, and particularly by the financial crisis. [In future work, this section will also contain evidence on the impact of the closure of hedge funds on the subsequent career of their employees.] Section 6 concludes.

2 Data

Our sample is formed by people who at some point in their career become managers in hedge funds: in this sense, our sample is selected on the basis of a career outcome as in several recent studies that condition on people who became CEOs and analyze how outcomes vary with the CEO's background characteristics, such as Benmelech and Frydman (2015), Graham, Harvey and Puri (2013), Kaplan, Klebanov and Sorensen (2012), Malmendier, Tate and Yan (2011), and Schoar and Zuo (2016). However, differently from these studies, the workers in our sample do not necessarily become CEOs or even high-level managers: they may just as well rise to low- or mid-level

managerial tasks, and may also drop from a high-level job later in their career – and in fact they often do as they approach retirement. In any event, our approach differs from that of studies where workers are sampled when they enter the labor market, such as Oyer (2008) and Oreopoulos, von Wachter and Heisz (2012). In what follows we explain how our sample is constructed and describe its characteristics.

2.1 Data Construction

We collect data about the characteristics and career paths of a sample of workers who in 2007-2014 held managerial positions – though not necessarily top ones – in at least one hedge fund present in the Lipper Hedge Fund Database (TASS).[5] As we shall see, most of the workers in the sample have also held other positions and have been employed by other companies during their careers, namely other asset management companies (mutual funds, pension funds, private equity funds, etc.), banks, insurance companies, consultancies or even outside the financial sector.

To construct the data set, we randomly draw the names of 1,582 hedge fund managers from the TASS database, drawing samples of similar size for each year from 2007 to 2014.[6] The TASS database contains biographical information about hedge fund managers (name and surname, name and address of the fund where they work, start and end dates of their job, type of job, i.e. portfolio or marketing manager), about the investment companies that employ them, and about the funds managed by the company, since typically each investment company owns several hedge funds. To complete this information with the previous and subsequent work histories of these managers, we hand-collected and cross-checked data about their education (degrees and respective dates, subject and school for each degree), year of the first job, as well as

[5]TASS contains quantitative and qualitative information about 21,000 hedge funds, such as monthly performance, addresses, inception date, investment focus, management, parent company, as well as names and surnames of employees, the investment company employeing them, the hedge fund for which they worked and their job position. The database not only contains data of "live" funds that are still actively reporting, but also those of "live" funds that do not report anymore.

[6]We drew samples of 253 managers in 2007, 184 in 2008, 176 in 2009, 182 in 2010, 180 in 2011, 170 in 2012, 158 in 2013 and 279 in 2014.

the start dates, end dates, employers and job level held throughout the worker's career. These data were drawn from individual resumes available on a major professional networking website, together with data available on Bloomberg, Businessweek and companies' websites. For many managers the information about education and/or employment history was too incomplete to be usable: for 411 managers (25.98% of the initial sample) no biographical information could be found; for other 690 managers (43.61%) it was highly incomplete. Hence the final sample consists of 481 managers only (30.40% of the initial sample) with complete information about education and the highest job level attained, and at most small gaps in their work history.

We classify the jobs held by the workers in our sample during their lifetime in eight groups, which reflect the level of the position of each job within the corporate hierarchy of financial firms. The code associated with each level is meant to measure the decision power associated with each job in the finance industry: (i) non-finance jobs (coded as -1); (ii) typical entry-level positions (0); (iii) qualified clerical positions, including traders and analysts (1); (iv) advisory or strategy-design positions, including senior traders and senior analysts (2); (v) low managerial positions, which typically involve managing a specific team or fund (3); (vi) middle managerial positions (4); (vii) high managerial positions, except the top ones (5); (viii) top managerial positions (6), which include CEO and founder (typically referred to hedge funds). To illustrate the type of jobs in each of these classes, Table 1 lists some of the job titles in each class; for brevity, we do not report all the job descriptions in our data.

[Insert Table 1]

We also classify the quality of the universities and colleges from which the workers in our sample obtained their undergraduate or graduate degrees, based on the overall QS World University Rankings,[7] grouping them in three classes: (i) the top 15, (ii) those ranked in positions from 16 to 40, (iii) all remaining ones.

[7]Available at http://www.topuniversities.com/qs-world-university-rankings.

2.2 Sample Structure

Table 2 describes the characteristics of the workers in our sample. Almost all of them have university education – either a college degree (43%) or a master degree (51%), or even higher degrees (4%), mostly in economics and finance (69%). Typically they start their career in the finance industry – in hedge funds (20%), other asset management companies (41%) or banks (10%). At the start of their careers, about half of them take a low-level entry position, but a sizeable fraction (19%) starts from top jobs. The distribution of workers by cohorts (defined on the basis of college completion) is reasonably uniform, except for the under-representation of the employees who entered the labor market between 1960 and 1980. In our sample, 14% of the workers started their careers during a recession, based on the business cycle dating database of the National Bureau of Economic Research (NBER). Consistently with anectodal evidence about gender imbalance in finance, the sample is dominated by males (91%).

[Insert Table 2]

2.3 Initial Jobs and Typical Career Paths

Figure 1 shows that people in our sample enter asset management careers from the very start: in almost all cohorts the entry-level position is in either asset management or more specifically in hedge funds. The fraction of those who enter the labor market with a position in a hedge fund increases steeply in the 1980s and 1990s – when hedge funds started to boom and to be widely viewed as a prestigious and highly paid career path in finance. Importantly, this happens well before 2001, when the increase in the fraction of entry-level positions in hedge funds is likely to be driven by our sampling strategy (as the individuals in the sample are effectively required to have been employed by hedge funds at least for some time in 2007-14).

[Insert Figure 1]

The distribution of initial jobs in these fund managers' careers appears to have changed considerably over the past 50 years. As shown by Figure 2, the cohort that entered the labor market between 1960 and 1980 featured a bimodal distribution of initial jobs, with most people starting either close to the bottom (as traders and analysts) or close to the top (as high-level managers). But over time the number of those entering at the top or even in the middle of the job distribution has been decreasing, with the youngest cohort – the cohort entering between 2001 and 2013 – almost entirely concentrated in the two lowest job levels. This may reflect increasing competition among people entering into asset management careers over the past 50 years.

[Insert Figure 2]

Table 3 provides summary information about the careers of the individuals in the sample. On average, workers switch employer every 6.7 years. Many of the workers in the sample rise quite fast to the top: on average it takes 8.5 years to achieve a top-level job (defined as a level-5 or level-6 position) and 11 years to become a CEO, to be compared with 22 years in U.S. non-financial firms (see Schoar and Zuo, 2016). Indeed 69% of the workers in the sample become CEOs. However, this partly reflects the fact that a sizeable fraction of the people in the sample start already at high positions. A typical worker advances by 12% of a step per year, implying that it takes him or her more than 8 years to get promoted to the next level. Moreover, the typical career is unstable: the absolute value of changes in job levels (i.e., counting both promotions and demotions) averages to 24% per year, namely twice the average advance per year.

[Insert Table 3]

The table also provides information about mobility across jobs and across employers. The relative frequency of job level switches is 9% per worker-year, more often

consisting in promotions (6%) than demotions (2%).[8] Workers have a 14% probability of switching employer in any given year, and those who do are slightly more likely to change job as well (55%) than those who stay with the same employer (1%). This figure is very close to that reported for non-finance workers by Moscarini and Thomsson (2008): based on U.S. census data, they estimate that about 40% of all occupational transitions are internal to an employer. Workers that switch employer are more likely to be promoted (40%) than demoted (16%).

Figure 3 provides an illustrative example of a career path in our sample: it refers to the worker with the median entry-level job in the oldest cohort. The worker starts from a level-2 job, and by the end of the first decade is promoted to a level-4 job, and then jumps to a top-level position after 15 years of experience; finally, he moves down to a lower managerial position after 35 years of experience, likely close to retirement. The lower line in the figure illustrates that after his first 22 years of experience this individual starts taking positions also in other companies, and at the peak of his career holds as many as six positions in different companies, illustrating that after rising to the top in one's company, successful managers also extend their span of control over others.

[Insert Figure 3]

Career paths differ considerably depending on their starting point, as shown in Figure 4, which plots the "most likely career paths" of workers, conditional on their initial jobs: each plot refers to a group of workers with a different initial job level, and the position of a circle indicates the job level that workers of that group attain most frequently in the corresponding year of their career, while the size of the circle indicates the magnitude of the corresponding frequency. Surprisingly, workers that

[8]Unfortunately it is not possible to compare the yearly frequency of job level switches in our sample with those reported in studies on workers in non-finance jobs, because our job levels are likely to encompass a larger number of occupations than the three-digit occupations used in such studies: Kambourov and Manovskii (2008) report a 20% annual rate of job changes across three-digit occupations, based on 1968–1997 PSID information, and Moscarini and Thomsson (2008) find that "about 3.5% of workers employed in two consecutive months report different three-digit occupations, implying a significant change of career", using U.S. Census data for 1979–2006 (p. 809).

start from low jobs (levels 0 and 1) tend to rise to the top faster and more predictably than those who start from some intermediate jobs (levels 2 and 4). More predictably, the few individuals who start from high-level jobs (levels 5 and 6) tend to remain at the top: in particular, those who start at the very top, such as CEOs, are most likely to remain at that level throughout their careers, while those who start a notch below are likely to experience a drop in their job level towards the end of their career, like the individual in Figure 3. By the same token, the degree of persistence in the initial task shown in Figure 5 – i.e. the fraction of people who retain their initial job level in a given year of their career – drops fastest for people who start from low initial job levels, and more and more slowly for those that start from higher positions, while it does not decline at all for people who start at the top – except transiently and slightly in the middle of the career.

[Insert Figures 4 and 5]

The way in which the probability of becoming a CEO evolves over time, conditional on a given initial job, tells a similar story. Figure 6 plots the frequency of those who rise to the top task level at each point of their career, conditional on starting from a given job level; the size of each circle measures the number of observations on workers with that job experience and initial task. The probability grows fastest for people starting from the lowest job level, and its path becomes flatter for people starting from intermediate levels: in particular, for those who start from level 4 the probability of rising to the top task drops from about 40% to 30% after 15 years of experience and remains at that lower level until the end of their careers. And, strikingly, while the probability of getting to the top rises monotonically to about 80% for those starting from level 5 (except at the very end of the career), the probability of those who start at the top declines to about 80% (except, again, at the very end of the career).

[Insert Figure 6]

3 Initial Jobs and Employee Characteristics

In the first step, we want to understand what determines the type of job that workers obtain when they first enter the labor market. From Table 2, we know that entry-level jobs differ widely across workers, which by itself implies very different subsequent career paths, as shown by the figures presented in the previous section. Hence we inquire which of the workers' characteristics can account for this heterogeneity in their entry level positions: in Table 4 we estimate a regression where the dependent variable is the job level in a worker's first job, excluding observations for the 23 workers initially holding non-finance jobs – the reason being that the quality of these jobs is very heterogeneous, ranging from "harvest worker" to "solicitor", and for the 23 workers for which we do not have reliable information on their first job.

[Insert Table 4]

All the specifications of the regressions presented in Table 4 include the worker's gender and educational attainment, degree subject and school quality (referred to the highest degree) as explanatory variables. The specifications also include alternative control variables to capture the macroeconomic or financial market situation on the year of graduation of the relevant individual: a "recession" dummy variable equal to 1 if the individual graduated in a recession year and 0 otherwise (column 1), a "boom" dummy variable equal to 1 if the stock market rose by at least 10% and a "bust" variable equal to 1 if the market dropped by at least 10% in the graduation year and 0 otherwise (column 2), a "stock market crisis" dummy based on Reinhart-Rogoff 's definition[9] (column 3), and cohort fixed effects for individuals completing their undergraduate degree (column 4).

Only gender and the attainment of a master and of a certificate have explanatory power, with males and master graduates being more likely to start their career with a

[9]This dummy equals 1 for 1989, 1990, 1991, 2000, 2001, and 2008, and 0 otherwise (see www.carmenreinhart.com/data).

higher-level job, and – surprisingly – the attainment of certificates being significantly correlated with lower initial job levels. The macroeconomic conditions (recession) or financial market circumstances (boom, bust, crisis) do not appear to play a significant effect on the initial job obtained by the managers in our sample. However, worker characteristics may still affect their subsequent career path, considering that the career of many of them features relatively low persistence – especially for those starting from low-level jobs. To this issue we turn in the next section.

4 Career Profiles and Mobility across Employers

In this section, we investigate how mobility across employers and across jobs changes over careers, and how the speed and stability of careers correlates with the characteristics of employees and with their mobility across employers. In particular, as mentioned in the introduction, we are interested in determining whether the careers of workers who switch employers frequently differ from those that tend to stay in the same firm for most of their life.

As shown by Figure 7, mobility across employers rises over the first three years of work experience, peaks between the third and the eighth year of job experience, and then gradually declines towards zero over the rest of the career. This is somewhat different from what the labor literature documents for non-finance workers, where mobility across employers declines throughout the careers, being highest for youngest employees (Jovanovic, 1979; Topel and Ward, 1992). The pattern of mobility in our sample appears to be the same irrespective of education (Figure 8), gender (Figure 9, where the spikes are to be attributed to the paucity of observations for female workers), or cohort (Figure 10).

[Insert Figures 7, 8, 9 and 10]

Mobility across jobs has a very similar time profile, increasing in the first three years, peaking in the subsequent six, and then almost monotonically declining, as

shown by Figure 11. This suggests that over time there is learning about employees' attitudes and skills, gradually leading each worker to settle into the most congenial job. Also the pattern of mobility across jobs – like that of mobility across employers – seems broadly unaffected by education (Figure 12), gender (Figure 13, where again the spike at the end of the career depends on the very low number of senior female workers in the sample), and cohort (Figure 14).

[Insert Figures 11, 12, 13 and 15]

This naturally raises the question whether this learning process occurs mostly "within the firm" or "in the market", that is, in the context of a stable relationship with a single employer (or at most a few employers) or rather via a process of search that allows employees to experience the quality of their match with different employers and jobs. Figure 15 provides a first tentative answer to this question: mobility across jobs is much lower for "stayers" (workers in the bottom 25% of the distribution of mobility across employers) than for "movers" (workers in the top 75% of the distribution of mobility across employers), and declines much faster for the former than for the latter. This suggests that stayers converge much more rapidly to their final job level than movers, i.e. that there is more effective learning "within the firm" than "in the market".

A more formal test of this hypothesis is provided by the regressions reported in Table 5, which analyze how the speed and stability of careers correlate both with workers' characteristics and with their (lack of) mobility across employers. In the table, there are three different dependent variables, for each of which we present two specifications – the first without and the second with cohort fixed effects. In columns 1 and 2, the dependent variable is "years to final task", namely the number of years that elapse before the employee first attains permanently his or her observed job level at 20 years of experience: this can be considered as a measure of the speed of learning, rather than as a measure of the speed of professional advancement, considering that the employee can eventually settle in a low-level job, potentially after demotions with

persistent effects. [10] In columns 3 and 4, the dependent variable is "years to CEO", which measures the number of years before an employee achieves the top level job: these regressions are estimated using only observations for workers that eventually achieve top jobs, i.e. they are conditional on professional success as those by Schoar and Zuo (2016), who also estimate time to CEO regressions. In columns 5 and 6, the dependent variable is the "instability" of careers, measured by the average absolute value of changes in job levels over the entire career of an employee (i.e., including both promotions and demotions): these regressions are based on the whole set of employees, except for those starting from non-finance jobs.[11]

[Insert Table 5]

The regressors include the same worker characteristics already used in the regressions of Table 4, plus a dummy variable capturing the degree of "immobility" of workers (labeled Stayer25), which equals 1 for workers in the lowest quartile by mobility across employers and 0 otherwise, and two variables capturing variation in the workers' initial job levels, namely a dummy variable for low initial job levels (0, 1 and 2), and another for intermediate initial job levels (3 and 4), so that the benchmark is the group starting from high job levels (5 and 6). The latter are included to take into account that the years to the final task, the years to CEO and the degree of mobility across employers are likely to differ depending on one's initial job level.

The regressions in Table 5 show that low mobility is significantly and negatively correlated with all three dependent variables, in all specifications: "stayers" feature faster learning (lower time to the final task), faster advancement (fewer years to CEO) and steadier careers (lower instability). The regressions also show that graduate education slows down progress to a CEO position by about 2 years but a degree in

[10] For this variable we have fewer observations because we keep only workers with a career length of at least 20 years.

[11] A possible concern is that this measure of the instability of careers may be correlated with average career speed, as measured by the average change in job levels over the employee's career. However, the results of the regressions in Tables 5, 6 and 7 are qualitatively unchanged if they are re-estimated after scaling the "instability" variable by average career speed.

economics or finance accelerates it by 2.3 years, implying that a MBA is on balance associated with a negligible effect. A degree in economics or finance is also associated with a steadier career, when cohort fixed effects are not included. Also, graduating during a recession is associated with a longer time (2 extra years) to a CEO position when cohort fixed effects are not included, consistently with the findings of by Schoar and Zuo (2016). Finally, consistently with Figures 4, 5 and 6, workers starting from a low initial position take less time to reach their final job as well as a CEO position and feature less instability in their careers than those starting from intermediate positions, although obviously have slower and more unstable careers than people starting from top-level positions.

The initial job of a worker might in principle not only affect the intercept but also the slope coefficient estimates in regressions like those of Table 5: specifically, one would expect that mobility may affect more the ability to learn about a worker's ability to become a CEO if he starts from a very low initial job level than if he starts for a middle management position. This indeed turns out to be the case: when the specifications of Table 5 are re-estimated separately for workers starting from low-level jobs – in Table 6 – and from medium-level ones – in Table 7 – one finds that low mobility has a larger impact on learning, career progress and stability for the former group than for the latter. The regressions in these two tables also show that a degree from a medium-level school (but not a top one) accelerates the career of employees starting from a low-level position, while a degree from a top school (but not a medium one) accelerates the career of employees starting from a mid-level position.

[Insert Tables 5 and 6]

5 Sensitivity of Careers to Negative Shocks

Finally, we focus on the impact of macroeconomic fluctuations on workers' careers. Exploiting the panel dimension of our dataset, we use within-worker variation to test whether recessions affect the probability of promotion or demotion, or both of them.

Table 8 shows that, while the estimated probability of a promotion does not differ significantly in recession years, the probability of demotion is 0.8 percentage points – namely, 40% – higher in recession years than in non-recession years. This finding suggests that economic downturns may make workers' careers more unstable.

In a part of this project still under way, we will explore if promotions or demotions in the careers of finance workers are directly affected by the performance of their employers. We will focus on the segments of careers which involve employment at hedge funds, for which we have comparable return data as well as information about their termination. Hedge funds are particularly suited to analyze the issue at hand, as their typical performance is very volatile and they are often liquidated, especially upon unsatisfactory performance. So we will investigate whether, upon the liquidation of a hedge fund, the subsequent labor market options of its employees are negatively affected, and how persistent is this "scarring effect".

6 Conclusion

In this paper we analyze the careers of U.S. finance workers using a unique, hand-collected data about the careers of 481 individuals who became hedge fund managers in 2007-14. We analyze the speed with which they rise to top positions in asset management and the risk of setbacks in their careers, and find that workers who start their career from low-level jobs rise faster and more steadily to top positions than workers starting from medium-level jobs. Male workers have better initial jobs and rise faster to the top, while graduate education improves the initial job level but increases the time to achieve a top position.

Mobility across employers, which typically peaks between the third and ninth year of careers, is on average associated with slower careers**:** workers that switch employer more frequently have take more time to achieve the final job level in their career, suggesting that learning about workers' skills or match quality occurs is more effective within firms than in the marketplace.

Finally, we analyze the impact of macroeconomic conditions on finance workers' careers and find that recession years are associated with a higher probability of being demoted.

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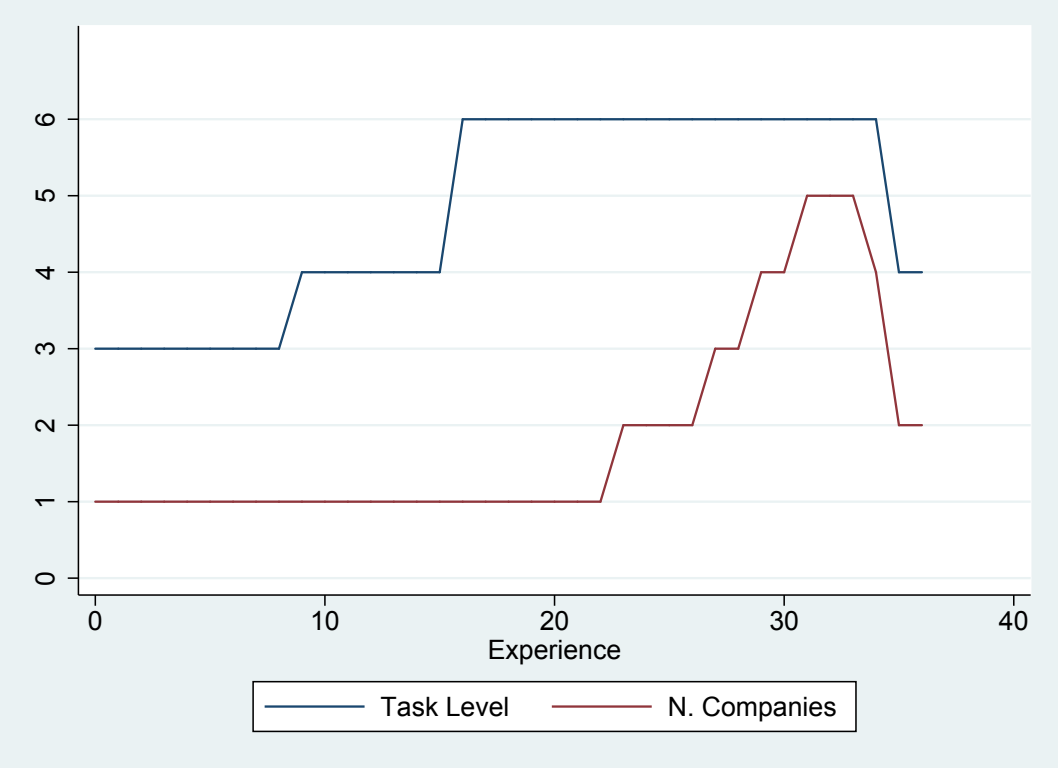
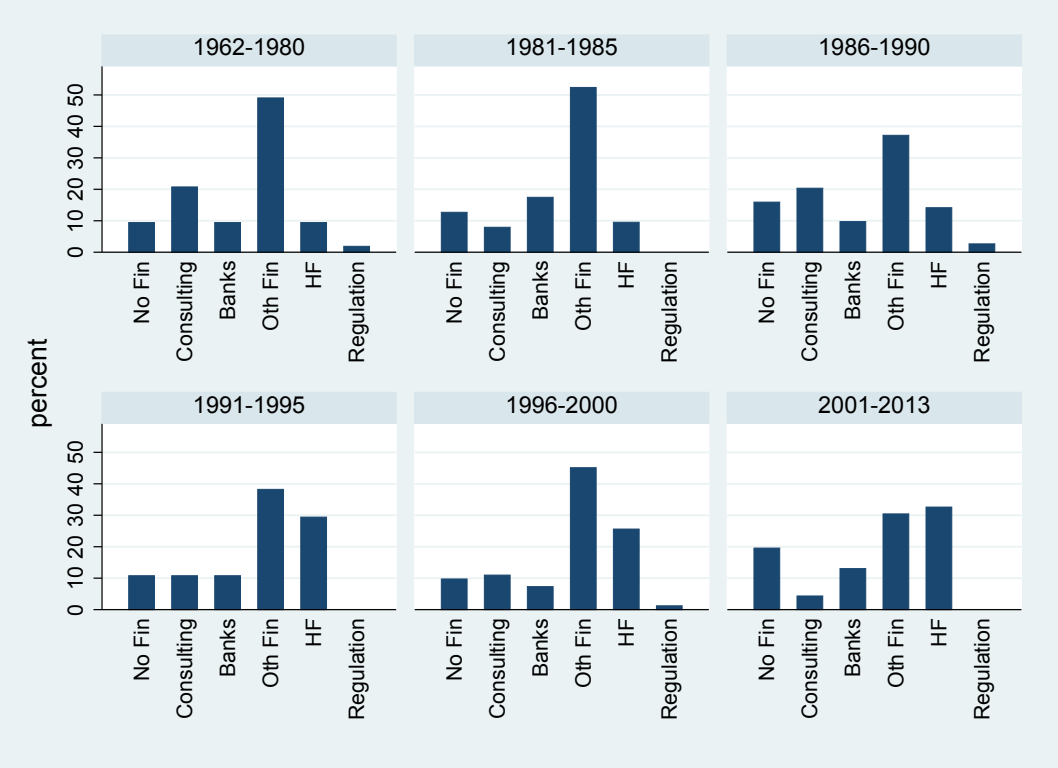
Figure 1: Example of career path



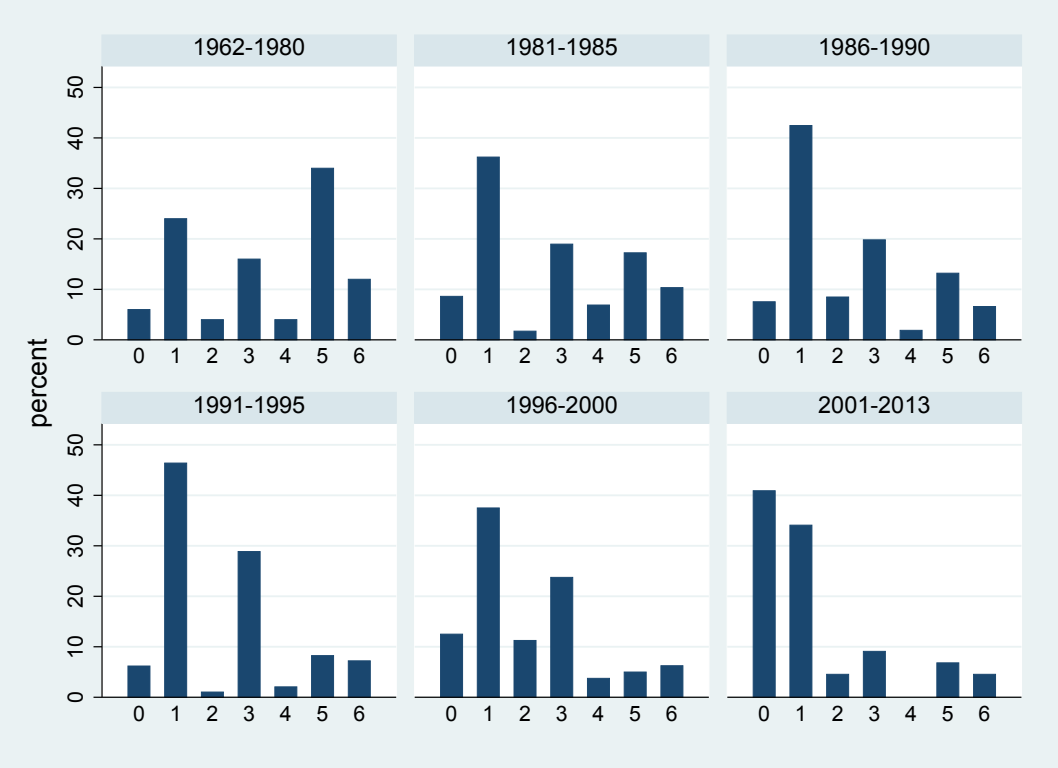
Notes: Career path for worker with longest career among those with median entry-level task. The task level ranges from 0 to 6, with higher values corresponding to higher decision power.

Figure 2: Distribution of workers across job levels in their first job, by cohort



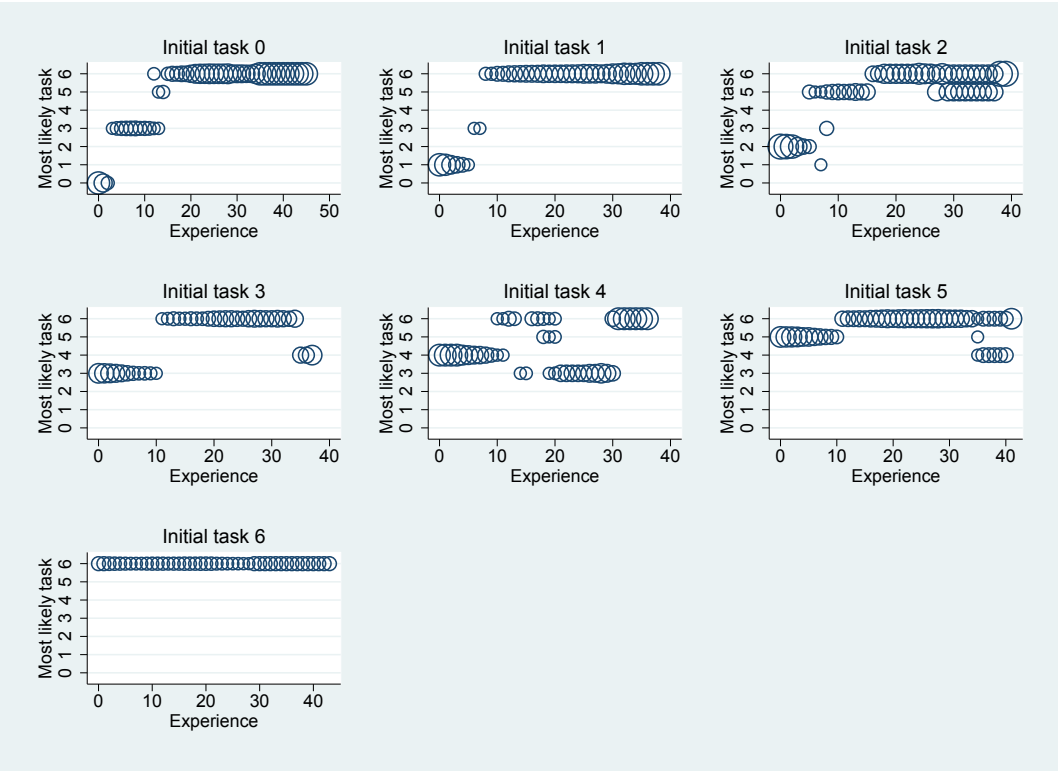
Notes: Each plot shows the distribution of workers across industries in their first job for a given cohort. The cohorts are: 1962-1980, 1981-1985, 1986-1990, 1991-1995, 1996-2001, 2001-2013. Individuals are assigned to cohorts based on the year they complete college. Each bar reports the percent of workers that start their career respectively in: non finance companies (No Fin), consulting, banking (Banks), other financial companies (Oth Fin), hedge funds (HF), or regulatory institutions such as central banks (Regulation).

Figure 3: Distribution of workers across industries in their first job, by cohort



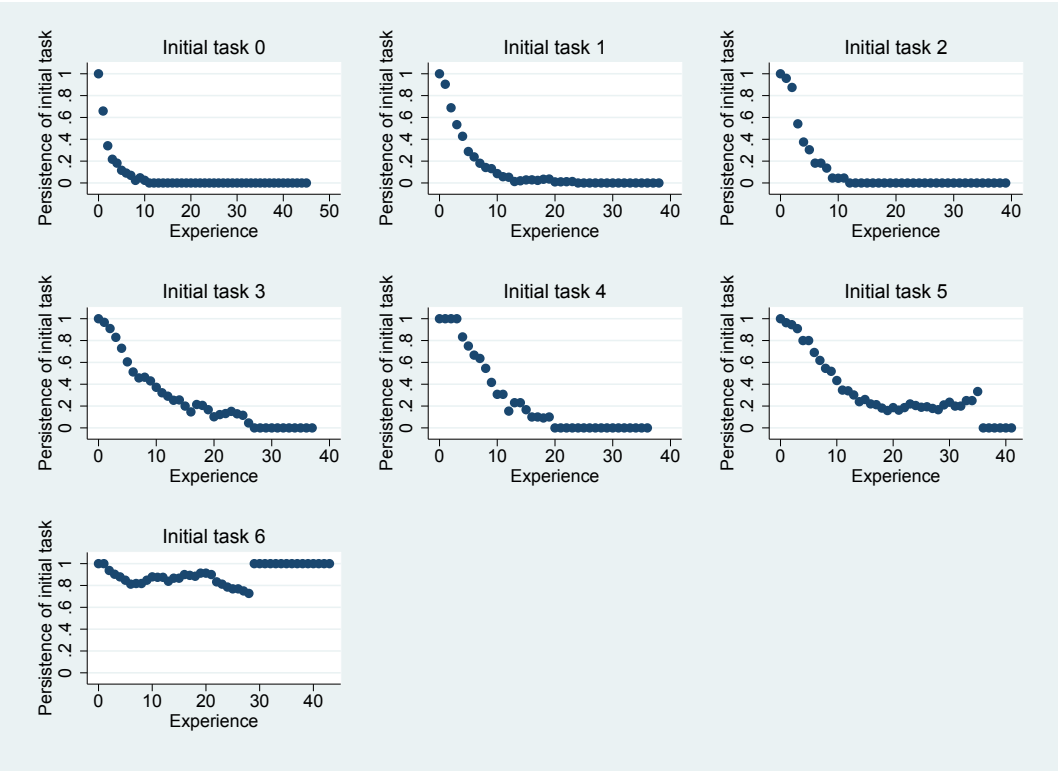
Notes: Each plot shows the distribution of workers across task levels in their first job for a given cohort. The cohorts are: 1962-1980, 1981-1985, 1986-1990, 1991-1995, 1996-2001, 2001-2013. Individuals are assigned to cohorts based on the year they complete college. Higher task levels correspond to higher decision power. The task levels definitions are in Table 1.

Figure 4: Most likely career path, by initial job level



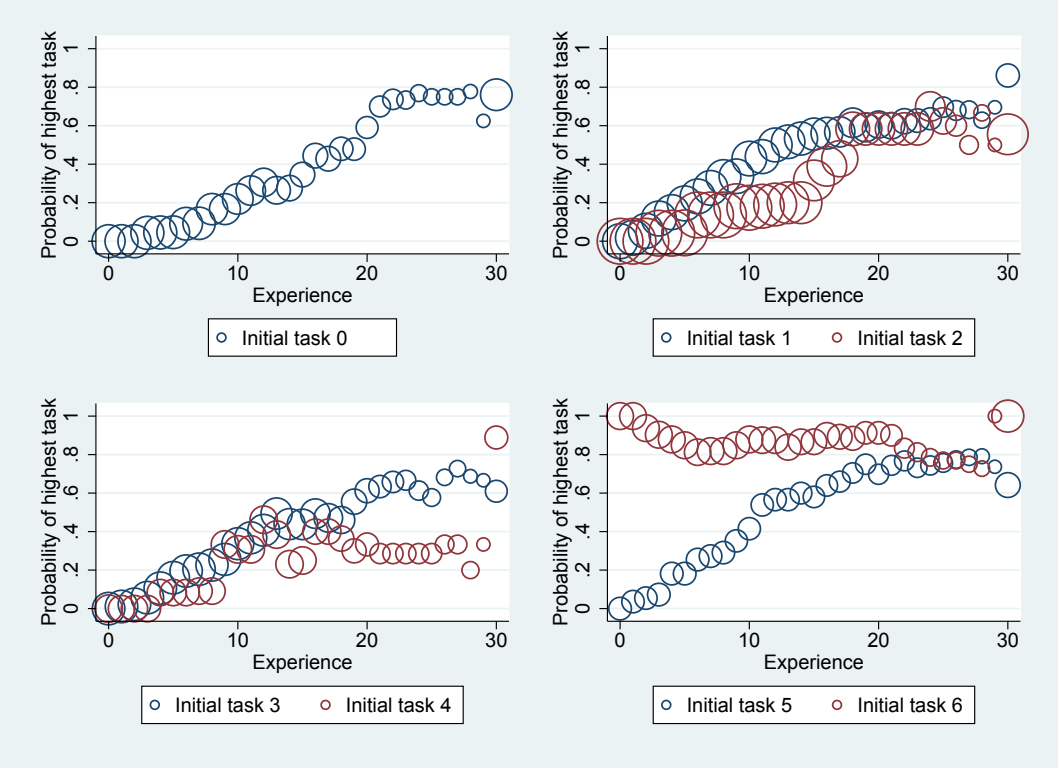
Notes: Each plot shows the most likely career path following a given initial job level. The job level represented at each experience level is the one with the highest relative frequency for that experience-by-initial task cell. Bigger circles represent higher relative frequencies.

Figure 5: Persistence of initial job level



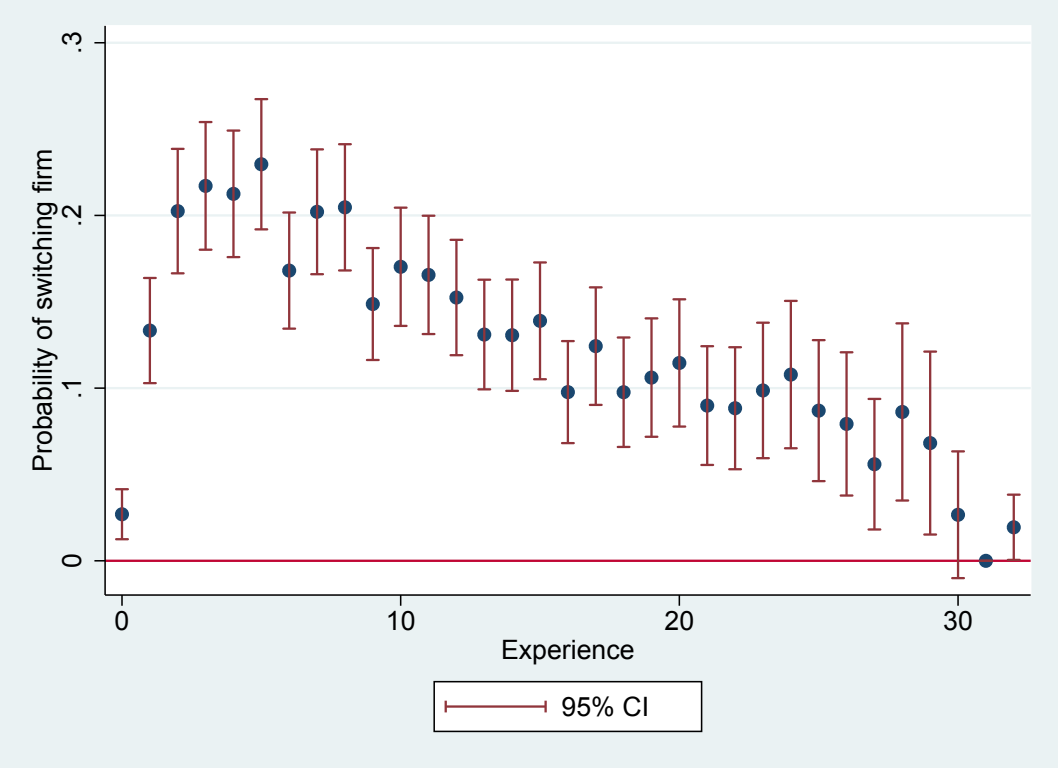
Notes: Each plot shows the persistence of the initial job level. For a worker starting her career in a level 1 job, each dot corresponds to the relative frequency of job level 1 at experience level t among workers starting at job level 1.

Figure 6: Probability of being a CEO, by initial job level and experience



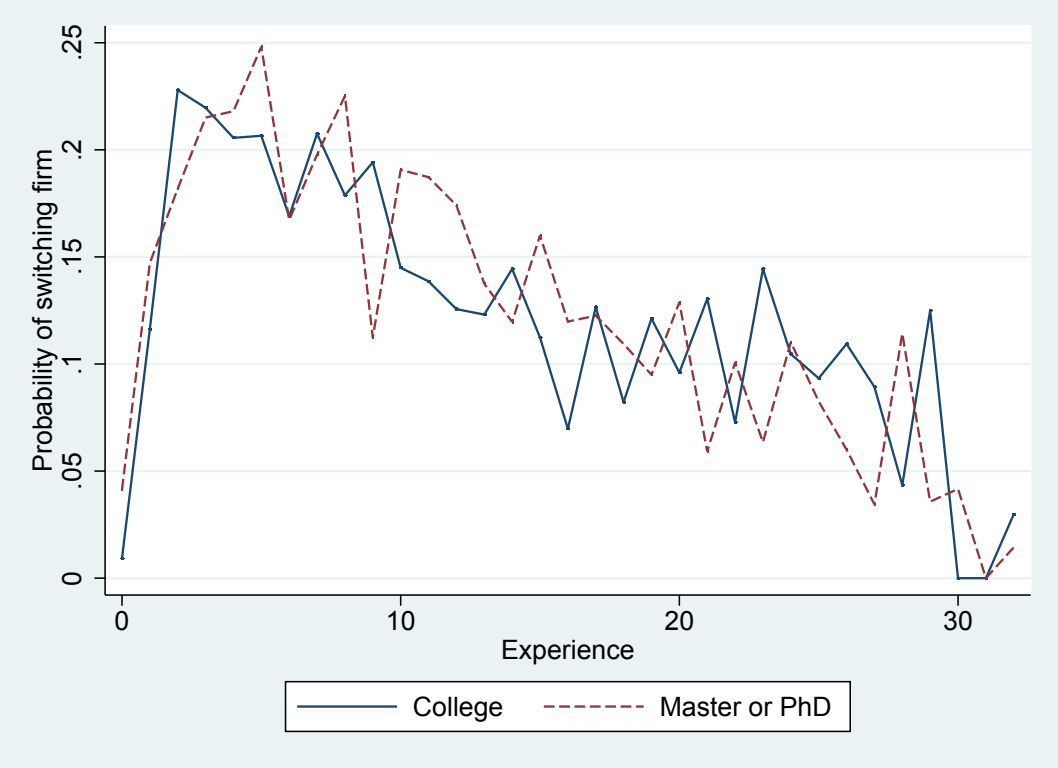
Notes: For a worker starting her career in a level i job, each circle corresponds to the relative frequency of job level 6 (the highest) at experience level t among workers starting at job level i. Bigger circles correspond to higher frequencies in the specific experience-by-initial task cell.

Figure 7: Mobility across firms over the career



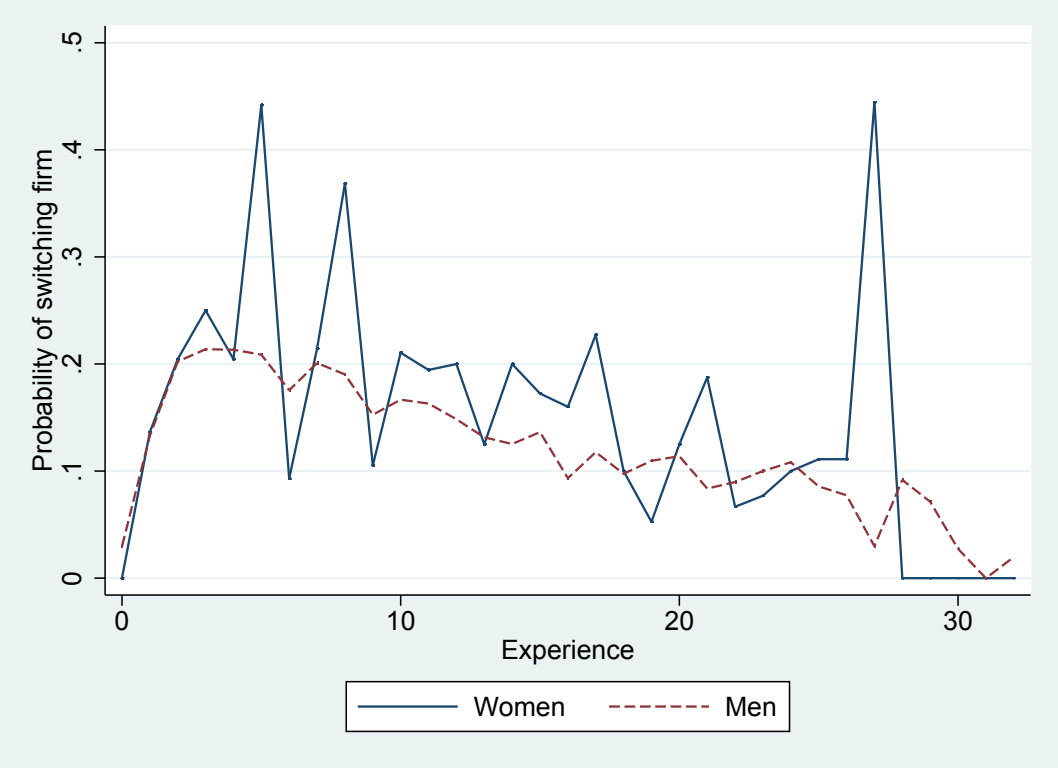
Notes: the figure plots the mean of the changing employer dummy and the first year of experience and the 95% confidence intervals. The estimates are obtained by regressing a dummy variable equal to one if a worker changes employer in year t onto a full set of dummies for years of experience.

Figure 8: Mobility across firms over the career, by education level



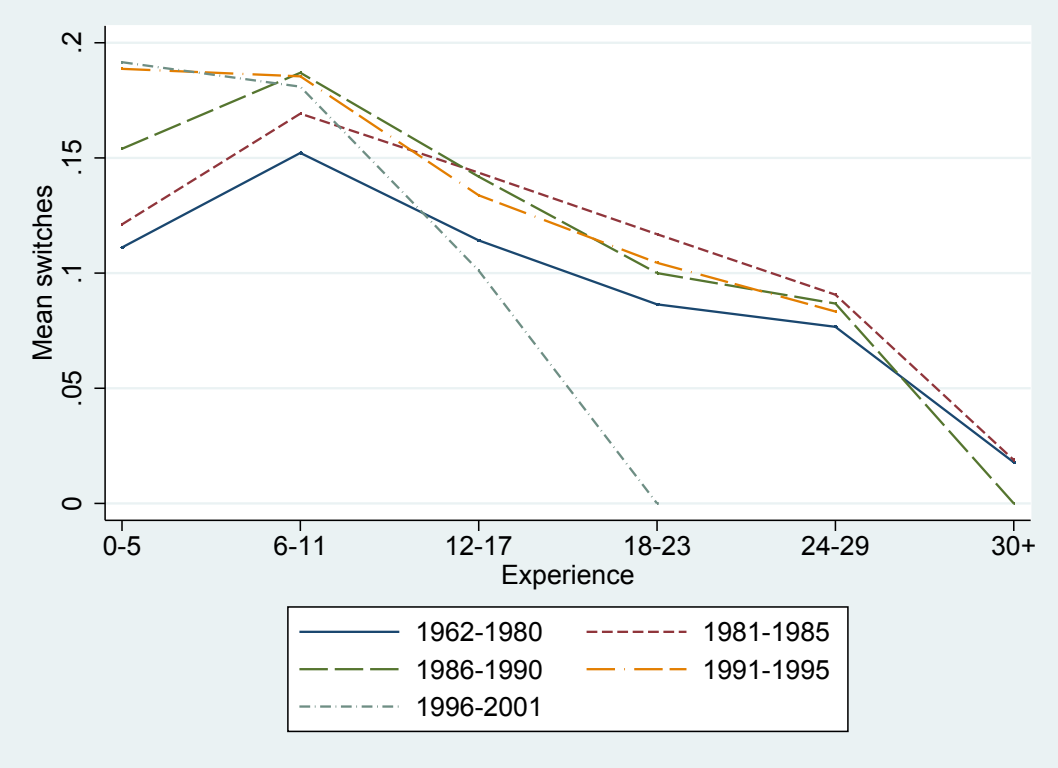
Notes: the figure plots the mean of a dummy that takes value equal to 1 when the individual changes employer for high school and college graduates and for master graduates and PhDs.

Figure 9: Mobility across employers over the career, by gender



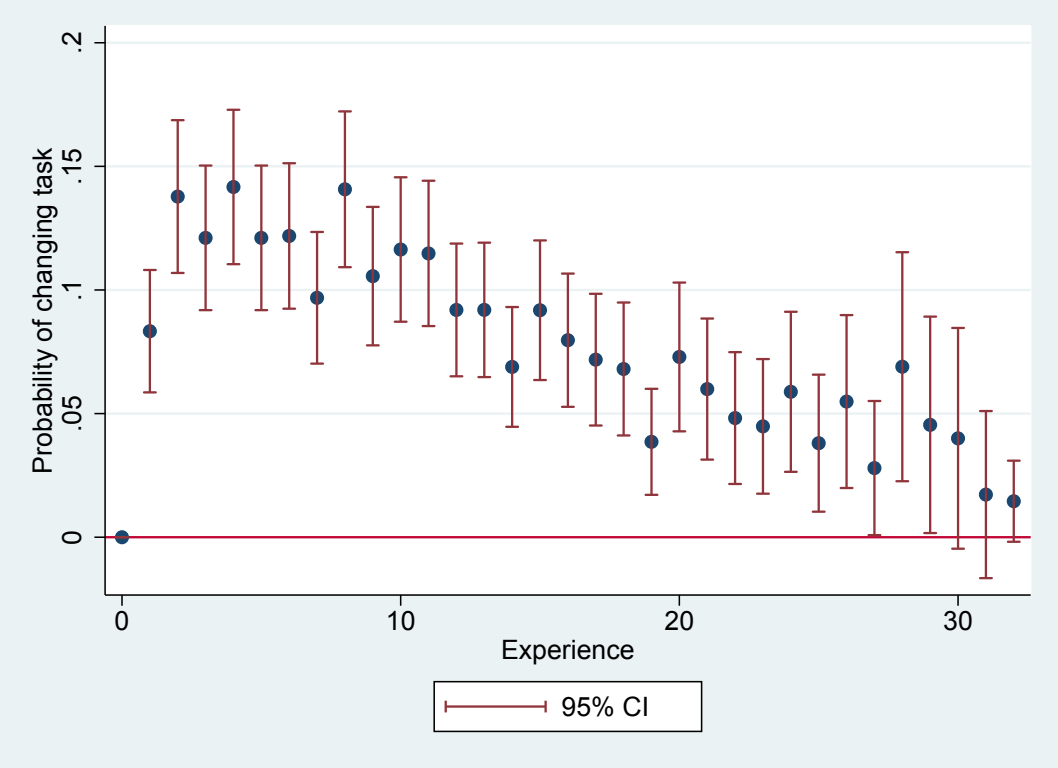
Notes: the figure plots the mean of the changing employer dummy and the first year of experience and the 95% confidence intervals. The estimates are obtained by regressing a dummy variable equal to one if a worker changes employer in year t onto a full set of dummies for years of experience.

Figure 10: Mobility across employers over the career, by cohort



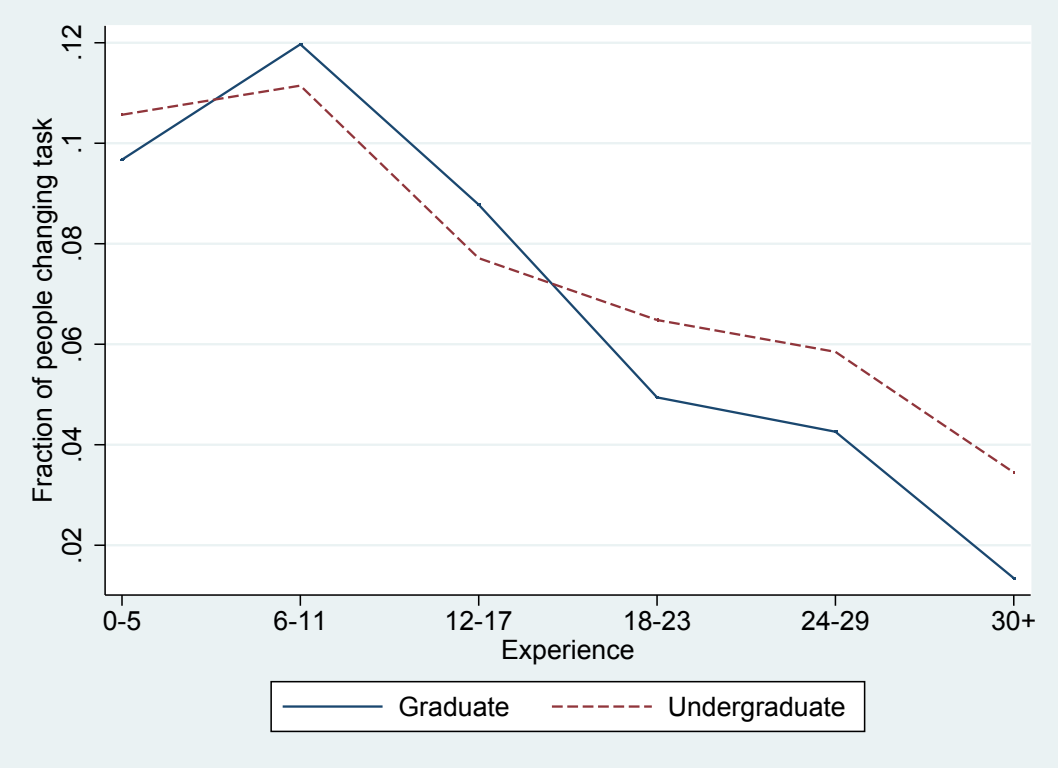
Notes: the figure plots the probability of changing employer at different experience levels, by cohort. The probability of changing employer is estimated as the average of a dummy variable equal to one if a worker changes employer in year t.

Figure 11: Mobility across tasks over the career



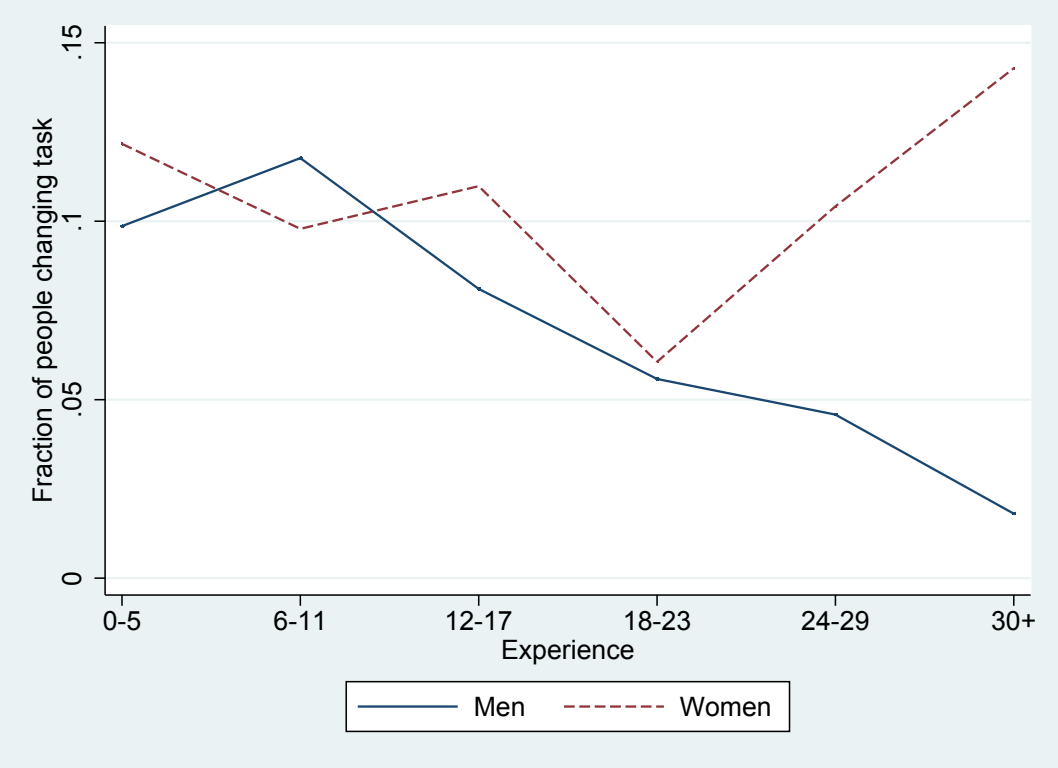
Notes: the figure plots the mean of the changing task dummy at different experience levels. The probability of changing task is estimated as the average of a dummy variable equal to one if a worker changes task in year t.

Figure 12: Mobility across tasks over the career, by education



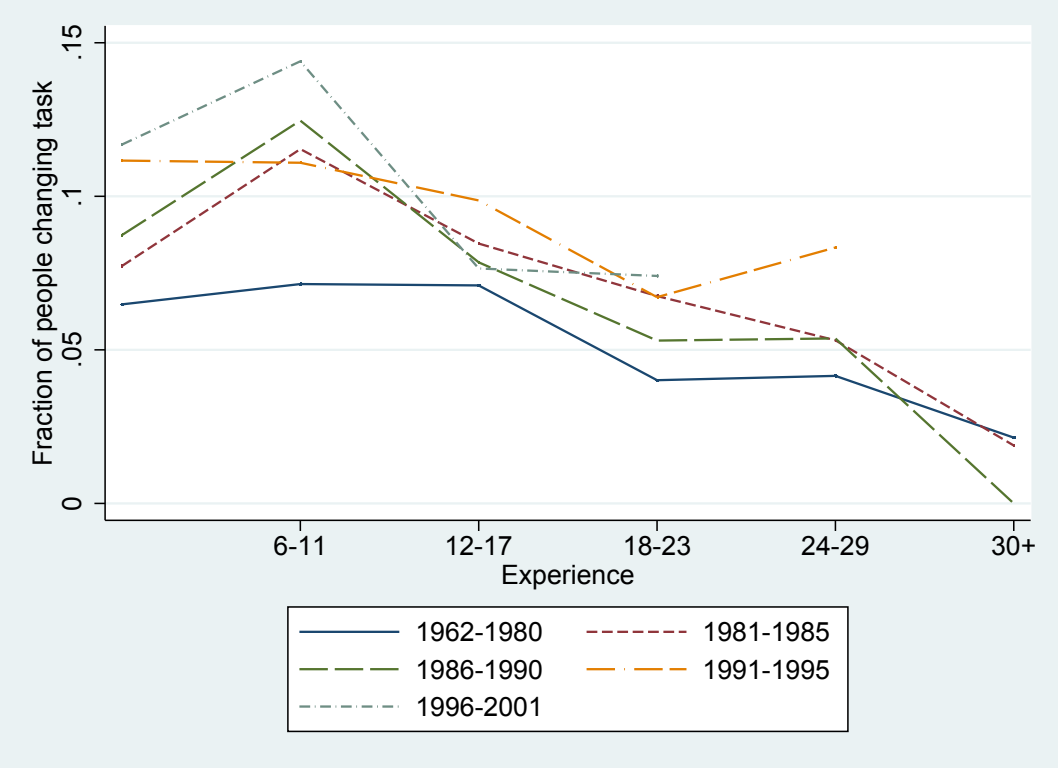
Notes: the figure plots the probability of changing task at different experience levels relative to the first 6 years of experience, for high school and college graduates and for master graduates and PhDs. The probability of changing task is estimated as the average of a dummy variable equal to one if a worker changes task in a given experience bin.

Figure 13: Mobility across tasks over the career, by gender



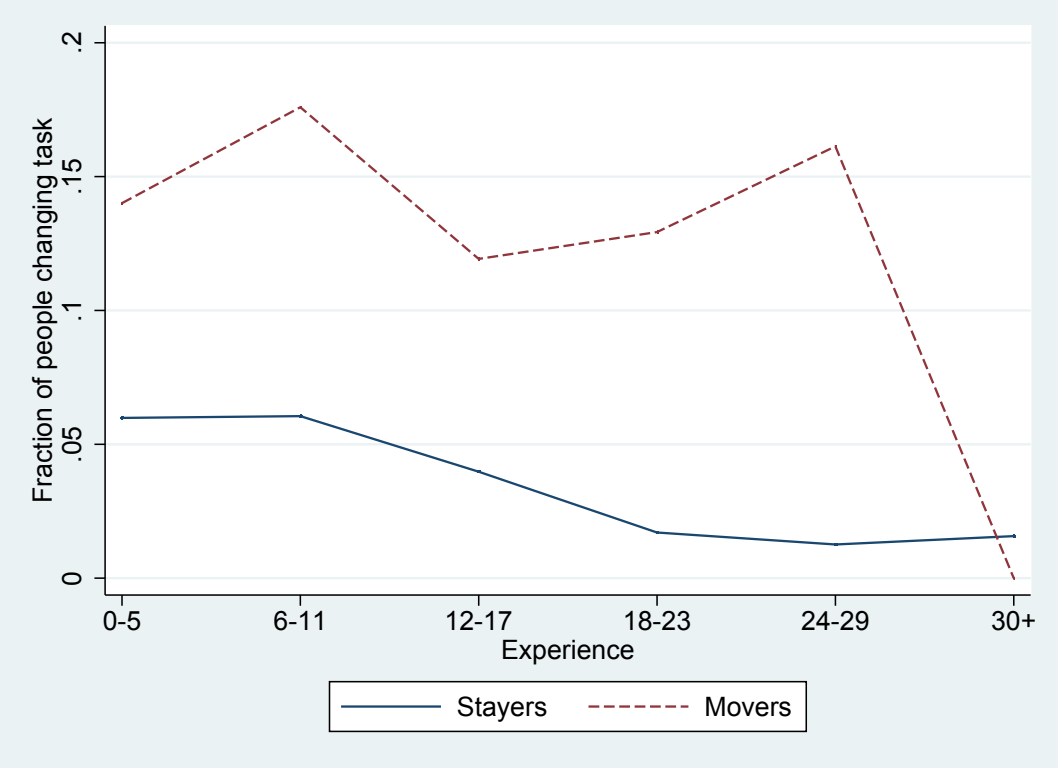
Notes: the figure plots the probability of changing task at different experience levels relative to the first 6 years of experience for men and women. The probability of changing task is estimated as the average of a dummy variable equal to one if a worker changes task in a given experience bin.

Figure 14: Mobility across tasks over the career, by cohort



Notes: the figure plots the probability of changing task at different experience levels relative to the first 6 years of experience for different cohorts. The probability of changing task is estimated as the average of a dummy variable equal to one if a worker changes task in a given experience bin.

Figure 15: Mobility across tasks over the career, by mobility across employers



Notes: the figure plots the probability of changing task at different experience levels relative to the first 6 years of experience for workers that never change their employer and the remaining workers. The probability of changing task is estimated as the average of a dummy variable equal to one if a worker changes task in a given experience bin.

Table 1. Job Levels

Code	*Job Type*	*Illustrative Job Descriptions*
−1	Non-finance employment	Academic researcher, attorney, captain, corporal, engineer, harvest worker, paratrooper, physician, professor, solicitor, teacher.
0	Low clerical	Assistant, junior analyst, staff accountant, intern, sales representative, marketing representative.
1	Qualified clerical	Analyst, assistant vicepresident, assistant portfolio manager, associate, broker, commodity broker, consultant, controller, funds management officer, investment officer, qualified accountant, specialist, structurer, trader, treasurer.
2	Advisory or strategy design	Associate investment manager, commodity trading advisor, investment advisor, investment relations coordinator, portfolio advisor, scientific advisor, senior accountant, senior analyst, senior staff, senior trader, strategist.
3	Low-level manager	Associate director, chief commodity strategist, chief portfolio strategist, corporate finance principal, deputy general director, divisional director, fund manager, general counsel, head of team, manager, executive, financial controller, money fund responsible, project manager.
4	Mid-level manager	Associate partner, board member, chairman of investment committee,director, head, chief compliance officer (CCO), chief marketing officer (CMO), chief technology officer (CTO), lead portfolio manager, non-executive director, senior head, senior manager.
5	High-level manager, except top	Chief financial officer (CFO), chief investment officer (CIO), chief operating officer (COO), chief risk officer (CRO), deputy chief executiveo fficer (deputy CEO), deputy manager director, equity partner, managing principal, partner, vicepresident.
6	Top manager	Chief executive officer (CEO), executive director, founder, managing director, managing member, managing partner.

Table 2. Descriptive statistics of workers' characteristics

	Obs	Mean	Median	SD
Education Level				
High school	481	0.01	0	0.11
College	481	0.43	0	0.50
Master	481	0.51	1	0.50
JD or PhD	481	0.04	0	0.20
Subject of highest degree				
Econ or Finance	481	0.69	1	0.46
Science or Engineering	481	0.10	0	0.31
Unknown or Other	481	0.21	0	0.41
Ranking of highest degree institution				
Ranked top 15	481	0.16	0	0.37
Ranked 16-40	481	0.16	0	0.37
Ranked < 40	481	0.65	1	0.48
First job industry				
Non Finance	459	0.13	0	0.34
Consulting	459	0.13	0	0.34
Banking	459	0.11	0	0.31
Other Finance	459	0.42	0	0.49
Hedge Funds	459	0.20	0	0.40
Regulation	459	0.01	0	0.10
Task in first job				
Low $<=2$	481	0.55	1	0.50
Medium 3-5	481	0.22	0	0.41
High 5-6	481	0.19	0	0.39
Cohort				
1962-1980	481	0.11	0	0.32
1981-1985	481	0.14	0	0.34
1986-1990	481	0.25	0	0.43
1991-1995	481	0.22	0	0.41
1996-2000	481	0.18	0	0.38
2001-2013	481	0.10	0	0.30
Recession	481	0.14	0	0.35
Boom	481	0.57	1	0.50
Bust	481	0.11	0	0.31
Male	481	0.91	1	0.29

Table 3. Descriptive statistics of careers' characteristics

	Obs	Mean	Median	SD
Career steps per year	481	0.12	0	0.13
CEO	481	0.69	1	0.46
Years to final task	311	9.90	11	6.10
Years to top	399	8.02	7	6.22
Years to CEO	334	10.97	10	6.92
Instability of careers	480	0.24	0	0.20
Mobility across jobs				
Change task dummy	11039	0.09	0	0.28
Promotion dummy	11039	0.06	0	0.24
Demotion dummy	11039	0.02	0	0.15
Mobility across firms				
Switch employer dummy	11039	0.14	0	0.35
Mobility across jobs conditional on switching firm				
Change task dummy	1550	0.55	1	0.50
Promotion dummy	1550	0.40	0	0.49
Demotion dummy	1550	0.16	0	0.36
Mobility across jobs conditional on not switching firm				
Change task dummy	9489	0.01	0	0.11
Promotion dummy	9489	0.01	0	0.09
Demotion dummy	9489	0.00	0	0.05

Table 4. Task level at first job and workers' characteristics

	(1)	(2)	(3)	(4)
Male	0.670*	0.696*	0.685*	0.518
	(0.306)	(0.312)	(0.304)	(0.285)
Master	0.394*	0.391*	0.384*	0.201
	(0.179)	(0.180)	(0.180)	(0.179)
Econ or Finance	-0.063	-0.070	-0.059	0.040
	(0.222)	(0.222)	(0.224)	(0.211)
Science or Eng	-0.332	-0.326	-0.309	-0.207
	(0.320)	(0.322)	(0.325)	(0.306)
Certificates	-0.241*	-0.238*	-0.239*	-0.209
	(0.120)	(0.119)	(0.119)	(0.112)
Ranked 16-40	-0.060	-0.067	-0.072	-0.119
	(0.241)	(0.240)	(0.240)	(0.236)
Ranked top 15	0.232	0.230	0.210	0.082
	(0.264)	(0.266)	(0.267)	(0.259)
Recession	-0.175			
	(0.265)			
Boom		-0.036		
		(0.192)		
Bust		0.021		
		(0.330)		
Stock Market Crisis			-0.089	
			(0.208)	
1962-1980				0.614
				(0.387)
1986-1990				-0.355
				(0.317)
1991-1995				-0.375
				(0.318)
1996-2000				-0.538
				(0.320)
2001-2013				-1.257***
				(0.367)
Observations	435	435	435	435

Robust standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5. Mobility across employers and career path

	Years to final task		Years to CEO		Instability	
	(1)	(2)	(3)	(4)	(5)	(6)
Stayer25	-3.690***	-3.667***	-3.060***	-2.047***	-0.078***	-0.106***
	(0.758)	(0.770)	(0.778)	(0.763)	(0.016)	(0.016)
Male	-1.430	-1.417	-2.296	-2.520	-0.018	0.009
	(1.257)	(1.265)	(1.775)	(1.707)	(0.028)	(0.029)
Master	1.044	1.056	1.919**	0.860	0.010	0.025
	(0.701)	(0.718)	(0.779)	(0.736)	(0.018)	(0.018)
Econ or Finance	0.010	0.047	-2.294**	-0.971	0.047**	0.030
	(0.854)	(0.871)	(1.059)	(0.989)	(0.021)	(0.020)
Science or Eng	-0.914	-0.801	-0.806	0.381	0.056	0.047
	(1.430)	(1.456)	(1.638)	(1.521)	(0.035)	(0.033)
Certificates	-0.426	-0.454	-0.351	-0.274	-0.002	-0.003
	(0.349)	(0.364)	(0.456)	(0.381)	(0.008)	(0.008)
Ranked 16-40	-0.750	-0.875	0.551	0.244	-0.015	-0.009
	(0.879)	(0.880)	(1.048)	(0.921)	(0.026)	(0.025)
Ranked top 15	-0.429	-0.555	0.157	-0.352	-0.029	-0.014
	(0.922)	(0.952)	(0.908)	(0.918)	(0.023)	(0.023)
Recession	-0.586	-0.812	2.316*	1.542	-0.040*	-0.033
	(0.864)	(0.947)	(1.242)	(1.224)	(0.021)	(0.021)
Low <=2	2.524***	2.566***	1.698*	2.796***	0.157***	0.125***
	(0.832)	(0.851)	(0.916)	(0.863)	(0.020)	(0.021)
Medium 3-4	3.156***	3.118***	2.872***	3.628***	0.094***	0.073***
	(0.971)	(1.002)	(1.034)	(0.947)	(0.022)	(0.022)
Cohort FE	No	Yes	No	Yes	No	Yes
Observations	296	296	318	318	457	457

Robust standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 6. Mobility across employers and career path for individuals starting at low task levels

	Years to final task		Years to CEO		Instability	
	(1)	(2)	(3)	(4)	(5)	(6)
Stayer25	-3.727***	-3.703***	-3.110***	-2.512**	-0.056**	-0.091***
	(1.178)	(1.211)	(1.126)	(1.087)	(0.025)	(0.024)
Male	-0.143	0.261	-2.841	-3.516	0.007	0.050
	(1.958)	(2.054)	(3.067)	(2.753)	(0.036)	(0.037)
Master	0.171	0.368	1.538	0.769	0.007	0.024
	(0.935)	(0.986)	(1.161)	(1.101)	(0.027)	(0.026)
Econ or Finance	0.294	0.263	-1.039	-0.238	0.047	0.033
	(1.293)	(1.345)	(1.508)	(1.450)	(0.034)	(0.033)
Science or Eng	-0.728	-0.717	-0.139	0.605	0.033	0.022
	(2.153)	(2.216)	(2.487)	(2.362)	(0.051)	(0.047)
Certificates	0.041	0.160	-0.134	-0.172	-0.005	-0.006
	(0.439)	(0.482)	(0.647)	(0.496)	(0.010)	(0.010)
Ranked 16-40	-2.196*	-2.179*	1.929	1.178	-0.025	-0.014
	(1.201)	(1.209)	(1.291)	(1.214)	(0.038)	(0.035)
Ranked top 15	-1.270	-1.200	0.989	0.530	-0.047	-0.026
	(1.297)	(1.346)	(1.294)	(1.305)	(0.033)	(0.032)
Recession	-0.714	-0.810	1.985	2.473	-0.059**	-0.056*
	(1.211)	(1.333)	(1.558)	(1.549)	(0.029)	(0.030)
Cohort FE	No	Yes	No	Yes	No	Yes
Observations	148	148	154	154	242	242

Robust standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 7. Mobility across employers and career path for individuals starting at medium task levels

	Years to final task		Years to CEO		Instability	
	(1)	(2)	(3)	(4)	(5)	(6)
Stayer25	-1.986	-1.941	-0.894	0.477	-0.090**	-0.121***
	(1.810)	(1.849)	(1.627)	(1.433)	(0.035)	(0.040)
Male	-8.962***	-9.238***	-6.665**	-5.054	-0.018	-0.025
	(2.834)	(3.219)	(3.258)	(3.595)	(0.048)	(0.045)
Master	2.908	3.625*	1.105	1.095	0.068*	0.083**
	(1.745)	(2.029)	(1.567)	(1.532)	(0.036)	(0.039)
Econ or Finance	0.009	-0.306	-0.155	0.813	0.064	0.048
	(1.802)	(1.962)	(1.876)	(1.527)	(0.040)	(0.037)
Science or Eng	-0.116	-0.040	0.980	1.870	0.125*	0.121*
	(2.699)	(2.829)	(2.417)	(2.124)	(0.075)	(0.069)
Certificates	-1.935	-1.896	1.293	1.901*	0.007	-0.000
	(2.000)	(2.071)	(1.131)	(1.077)	(0.035)	(0.031)
Ranked 16-40	0.889	0.232	-1.897	-1.194	0.042	0.012
	(2.324)	(2.623)	(1.650)	(1.571)	(0.065)	(0.062)
Ranked top 15	-3.913	-4.050*	-4.910*	-4.324*	-0.036	-0.050
	(2.629)	(2.397)	(2.474)	(2.548)	(0.057)	(0.049)
Recession	-1.825	-1.848	1.880	0.281	-0.058	-0.030
	(1.335)	(1.704)	(2.603)	(2.341)	(0.047)	(0.043)
Cohort FE	No	Yes	No	Yes	No	Yes
Observations	65	65	68	68	104	104

Robust standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8. The impact of recession on the probability of being promoted or demoted

	Promotion dummy		Demotion dummy	
	(1)	(2)	(3)	(4)
Recession	0.003	0.003	0.008*	0.008*
	(0.006)	(0.007)	(0.005)	(0.005)
Experience FE	Yes	Yes	Yes	Yes
Individuals FE	No	Yes	No	Yes
Mean dependent variable	0.063		0.02	
Observations	11050	11050	11050	11050

Standard errors clustered at worker level in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$