# Wage and Employer Changes Over the Life Cycle

by Peter Rupert

When people change employers, they often take a pay cut. It should come as no surprise that most people would prefer not to reduce their wages when they change jobs, but sometimes they have no choice. If someone is fired and forced to seek a new employer, for example, a wage decline might reflect the worker's poor performance and dismissal from the previous job. To the extent that potential new jobs require references from previous jobs, wages in the new job may be lower.

But many of those switching to lower-paying jobs appear to accept the lower wage voluntarily. One reason a person might do so is that the new job offers the possibility of higher wages in the future compared to the old job. Wages at the old firm may be close to the highest wage payable there, and the only way to achieve continued wage growth is to switch employers. This explanation has been the dominant one in economics for some time, and it is still widely accepted (a recent study by Postel-Vinay and Robin is an example).

This *Economic Commentary* advances another explanation: Job choice is based not just on wages, but also on the non-wage characteristics (or "amenities") desired by the worker, such as the work environment or the job's cachet. A wage decline may represent the fact that the amenities of the new job are greater for the worker than those of the old job. In this view, a decline in wages and the choice of new job characteristics are part of an individual's optimal lifetime consumption profile. This means that the individual, armed with knowledge of wages and amenities at various jobs, begins his or her working life by mapping out a career path that will generate the highest level of satisfaction. Of course, everyone would prefer to have a job with both high wages and high amenities. But since that combination is not available at a every job, people do the next best thing—they choose high wage/low amenity jobs sometimes and low wage/high amenity jobs at others.

Another way of looking at the fact that jobs are evaluated in terms of both wages and amenities is to say that wages and amenities trade off in setting the value of the job to a worker, that is, wages are affected by job amenities. That wages are affected by job amenities is referred to in economics as *compensating differentials*. The name refers to the idea that if lower wages are observed for some job, there will be some non-wage characteristic, such as better working conditions, that compensates for the lower wage, thereby making the jobs equally attractive.

The realization that compensating differentials are a factor in job choices has important implications for assessing whether people's quality of life has improved over time. Wages are often used as a measure of an individual's standard of living. But now we see why this might be misleading. For even though people move from a higher-wage job to a lower-wage job, it does not mean they have been made worse off as a result. The fact that people make the change willingly implies that such moves make them better off.

A recent paper incorporates compensating differentials into a dynamic setting, in the sense that individuals may choose different jobs—with different wage and non-wage characteristics—over their lifetime (see Nosal and Rupert 2003). More specifically, in such a setting workers might move from high-paying to low-paying jobs to be able to consume a higher level of the non-wage component at some point in their lives.

**Economists have long observed that wages alone do not fully reflect a job's value—job "amenities" also play a role. Recent empirical studies have confirmed this observation to be the case. Researchers are also finding that workers frequently choose to take lower-paying jobs, which suggests that not only do workers care about the non-wage characteristics of a job, but also that they will change jobs throughout their lives to achieve the best mix of wages and amenities that is right (and obtainable) for them.**

## ■ Compensating Differentials

As you can see from the observations of the eighteenth-century writers quoted in the box on the next page, the idea that different job characteristics command different prices is not a new one. Jobs that are more risky will pay more, other things equal, than safer jobs. Jobs in a clean and pleasant environment will pay less than those in unpleasant surroundings.

These examples indicate that the myriad job characteristics will each have a price. They also indicate that the wage or the level of the characteristic will adjust so as to attract the needed workers to fill the jobs. You can see why this must be the case by supposing for a moment that it is not. Suppose that some job paid a very high wage and had a high level of a characteristic

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The crafts which require the most time in training or most ingenuity and industry must necessarily be the best paid. A skillful cabinet maker must receive a higher price for his work than an ordinary carpenter, and a good watchmaker more than a farrier. The arts and crafts which are accompanied by risks and dangers like those of founders, mariners, silver miners, etc. ought to be paid in proportion to the risks. When over and above the dangers skill is needed they ought to be paid still more, e.g. pilots, divers, engineers, etc. When capacity and trustworthiness are needed the labour is paid still more highly, as in the case of jewellers, bookkeepers, cashiers and others.

——Richard Cantillon
*Essay on the Nature of Commerce in General*
(published 1755, written around 1730)

First, the wages of labour vary with the ease or hardship, the cleanliness or dirtiness, the honourableness or dishonourableness of the employ ment. Thus in most places, take the year round, a journeyman tailor earns less than a journeyman weaver. His work is much easier. A journeyman weaver earns less than a journeyman smith. His work is not always easier, but it is much cleanlier. A journeyman blacksmith, though an artificer, seldom earns so much in twelve hours as a collier, who is only a labourer, does in eight. His work is not quite so dirty, is less dangerous, and is carried on in daylight, and above ground. Honour makes a great part of the reward of all honourable professions. In point of pecuniary gain, all things considered, they are generally under-recompensed, as I shall endeavour to show by and by. Disgrace has the contrary effect. The trade of a butcher is a brutal and an odious business; but it is in most places more profitable than the greater part of common trades. The most detestable of all employments, that of public executioner, is, in proportion to the quantity of work done, better paid than any common trade whatever.

——Adam Smith
*Wealth of Nations* (1776)

valued by workers. Basic supply and demand analysis tells us that the supply of workers for that job would be high and wages would fall until the value of the jobs were equal. Note also that the wage might remain fixed and the value of the characteristic decline, but either way, the value of that job to the worker would fall.

The theory of compensating differentials is supported by empirical evidence from the labor market. In a recent paper, Dey and Flinn show that jobs that include employer-provided health care pay less than those that do not. In other words, workers "pay" for the health insurance in the form of lower wages. Altonji and Paxson show that jobs in which workers face hours constraints pay higher wages. Said differently, jobs with more flexibility in work hours will pay lower wages.

## ■ Data on Wage and Employer Changes

The evidence that a substantial number of individuals move from higher-paying to lower-paying jobs and that many do so voluntarily may be surprising to some, but it is documented in the Nosal and Rupert study already mentioned. The researchers came to their conclusions after analyzing data from the Panel Study of Income Dynamics (PSID), a data set that began surveying individuals in 1968 and continues to track those same individuals (and their offspring) over time. Along with demographic information, the PSID also asks questions concerning wages and changes in employers. Between 1984 and 1992, questions were asked to capture detailed information about job changes that involved a move from one employer to another. First, respondents were asked whether they had changed employers during the year. If the answer was yes, several follow-up questions were asked. Respondents were asked the reason for the change, selecting an answer from among those provided. They were asked the month their previous job ended and the month their new job began. In addition, they were asked their wage rate when they left their old job and their starting wage at the new job.

The first thing the researchers learned from the PSID data was that a substantial number of all job changes from one employer to another involved a reduction in wages—specifically, 42.1 percent. Nearly half of the job switchers—49.5 percent—moved to a higher-paying job, while about 10 percent received the same wage (see table 1, which presents data for workers who changed employers for any reason).

Table 2 shows the data for people who say they quit their previous job. That is, we can reasonably infer that these individuals left their previous employer voluntarily, as opposed to those who may have left involuntarily, for example, if they were fired or laid off. Here again, a substantial number—42.5 percent—received lower wages with their new employer.

Table 2 also gives some other interesting statistics: the average age of movers as well as the length of time they spent without a job. The mean age of voluntary movers to lower wages is 32.7 years, to higher wages 32.0, and for those moving to the same wage, 33.4. Each of these is slightly lower than for all changers combined, revealing that those who moved involuntarily are older than those who did so voluntarily. In terms of time between jobs, those moving to jobs with lower wages spent roughly one-half of a month longer in between jobs. There are, of course, many possible explanations for both the age and time differences.

It may be the case that some of the observed wage changes are the result of misreporting or measurement error. It is certainly plausible that small wage gains might be reported as small wage declines, or vice versa. However, most of the wage declines reported in the survey seem too big to miss. Table 3 provides some magnitudes of the change in wages. As the table indicates, the 25th percentile corresponds to a wage decline of 7.5 percent, and the median decline is approximately 18 percent. These numbers mean that roughly three-quarters of the voluntary changers had wage declines near 10 percent, and half of them had wage declines of at least 18 percent. While plausible, it does not seem likely that the worker would not recognize such large declines.

## ■ Employer Changes and Job Amenities

Nosal and Rupert develop a model that can reproduce the observations presented in the preceding tables. Having such models helps researchers to understand the behavior of people

**TABLE 1 ALL JOB CHANGERS**

| | To lower wage | To same wage | To higher wage |
|---|---|---|---|
| Percent of job changers | 42.1 | 8.4 | 49.5 |
| Age | 33.6 | 34.5 | 32.6 |
| Months between jobs | 1.49 | 0 | 0.91 |

**TABLE 2 VOLUNTARY JOB CHANGERS**

| | To lower wage | To same wage | To higher wage |
|---|---|---|---|
| Percent of job changers | 42.4 | 4.8 | 52.8 |
| Age | 32.7 | 33.4 | 32.0 |
| Months between jobs | 1.32 | 0 | 0.92 |

**TABLE 3 WAGE CHANGE AFTER MOVE**

| | Quantiles | | | | |
|---|---|---|---|---|---|
| | 10% | 25% | 50% | 75% | 90% |
| Lower wage | –2.03 | –7.46 | –17.8 | –40.5 | –72.5 |
| Higher wage | 4.08 | 9.43 | 19.8 | 41.4 | 73.6 |

**SOURCE**: Ed Nosal, and Peter Rupert. 2003. "How Amenities Affect Job and Wage Choices over the Life Cycle," Federal Reserve Bank of Cleveland, Working Paper no. 03-02.

and markets, in this case, workers and labor markets, for many reasons. One of the most important reasons is that a model provides a verifiable check on the explanations asserted (the model, which sets the explanations down in mathematical terms, has to be able to generate outcomes that are in keeping with observed behavior). The key to this particular model is that job amenities are incorporated explicitly into a dynamic model of job choice. Job amenities are defined as various non-wage characteristics of a job, such as job stress, the general work environment, inflexible scheduling for hours or days of work, location of the employer, and so on. What is also important in getting the model to account for observed behavior is that it assumes that these amenities are fixed while an employee works for a particular employer. That is, to change the level of a job amenity, a worker must change employers.

This assumption may not be too far-fetched. One explanation as to why such amenities might be fixed for a particular employer is that it is more efficient to have one set of work rules. The task of managing a set of workers may be much more difficult if there are different rules for different workers. Additionally, there are many jobs for which it is necessary for the employees to work together as a team, for example on an assembly line. Obviously, the team will also be required to keep the same hourly work schedule.

A general idea of the way the model is constructed can be had by supposing there are just two jobs, Job 1 (with Employer 1) and Job 2 (with Employer 2). Job 1 pays a higher wage than Job 2 but has a lower level of some job amenity. That is, Job 1 pays a high wage, but also demands longer and more stressful hours. There is also a general consumption good that the individual values that does not depend on the particular job chosen.

Using this basic framework, Nosal and Rupert show that workers will always choose to change employers over their lifetime. Which job is initially chosen, the high wage/low amenity or low wage/high amenity, will depend on the particular characteristics of the model.

One feature of the model is responsible in particular for generating the employee's switch to a new employer. The model requires the amenity offered at the chosen job be consumed in its entirety while at the current job—it cannot be saved to consume at some later date. The fact that employees cannot consume the high level of the amenity while working for the high wage employer is what will generate the employer switch.

As an example, suppose the amenity is a flexible work schedule. Employer 1 provides high income but little free time. Early in an individual's career (before marriage and kids, for example), workers may choose to work for Employer 1. There will be some level of income though at which a worker would be willing to trade some of the income for a little more free time—especially when the worker marries and has children! However, the only way to do this in this model is to quit Employer 1 and take the lower paying job with more flexible hours at Employer 2.

This outcome is akin to a standard result in economics: under some fairly general conditions, individuals prefer to smooth their consumption over their lifetime. For example, if you knew that a year from now you were going to get a raise that would double your income, you would prefer to borrow some money today to be able to consume more today as well as more tomorrow. Even though you have to pay the debt back in the future—so you won't be able to consume quite as much in the future as you could if you had no debts—you maximize your lifetime level of satisfaction. Being able to borrow against future income means you can "have the best of both worlds," consuming more today and more tomorrow.

In the world with fixed amenity levels across jobs, individuals would also prefer to have the best of worlds—high wages and high amenities. But this combination can be achieved only by switching employers. That is, to consume that particular bundle of goods, an individual must work for some length of time for each employer.

## ■ It's Not Always about the Money

The success of the dynamic model of job choice with compensating differentials tells us that job amenities do figure prominently when people decide where they want to work. An important implication of this finding is that using

income alone to measure standards of living can be misleading. For example, if a person switches from a high paying, risky job to a lower paying but less risky job, the standard of living solely measured by income would fall. But the fact that the individual chose to move to the less risky job implies an improvement in overall well-being. Comparing standards of living across countries can also be misleading if job characteristics other than wages are left out of the calculation. The ratio of incomes between the United States and Chad, for example, is about 40 to 1, but the true difference in the standard of living between the two countries is likely to be greater.

While the idea of compensating differentials has been around a long time, incorporating it into formal models of job choice has yielded some new insights. Besides giving us a more accurate picture of workers' decisions and labor market behavior, it has provided hints of ways we might better represent the standard of living.

## Recommended Reading


Joseph G. Altonji, and Christina H. Paxson. 1988. "Labor Supply Preferences, Hours Constraints, and Hours-Wage Trade-Offs," *Journal of Labor Economics* 6, 254–76.

Helen Connolly, and Peter Gottschalk. 2002. "Job Search with Heterogeneous Wage Growth—Transitions to "Better" and "Worse" Jobs," Boston College Working Paper, no. 543.

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Fabien Postel-Vinay, and Jean-Marc Robin. 2002. "Wage Dispersion with Worker and Employer Heterogeneity," *Econometrica* 70, 2295–350.



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