

# Economic Foundations for Employment Case Analyses\*

by

Robert Male, Ph.D.  
Economic & Vocational Consultant  
P.O. Box 6750  
Kamuela, HI  
[www.robertmale.com](http://www.robertmale.com)

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David C. Toppino, M.A., M.A.P.E.  
(Deceased)

## Introduction

Forensic economists are often engaged to determine the pecuniary losses resulting from alleged harmful acts in the workplace. The economic consequences resulting from employment events such as discrimination, harassment, and wrongful termination can be substantial and long lasting. Accurate projection of pre-event and post event earnings streams must be based upon understanding the individual's pre-event and post event earning capacities, and also the way the person's earning capacity interrelates with the marketplace. Understanding economic models that describe the nature of the employer-employee and employee-market relationships, and their effect on market wages and employment duration can help the forensic economist accurately determine the monetary losses of the damaged party.

Elements of Human Capital Theory (Becker, 1993), Personnel Economics (Lazear, 1998), Managerial Economics (Miller, 1992), and Labor Economic Theory are discussed as relevant to the task of projecting earnings losses in cases of alleged illegal employment practices or actions. How human capital is accumulated, used and retained (or lost) in employment is described through connecting elements of economic theory to the employee-employer relationship and the employee-market relationship. The effect on employment and earnings of various types of employment capital is explained along with how this knowledge can be used to develop accurate economic damages projections in employment cases.

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\* This article was published in the *Journal of Legal Economics*, Volume 11, Number 3, Winter 2001-02. The *Journal of Legal Economics* is a publication of the American Academy of Economic and Financial Experts. Contact information changed Nov. 2009.

## Human Capital

Human Capital is distinguishable from traditional forms of economic capital. Becker (1993) states,

“Consequently, it is fully in keeping with the capital concept as traditionally defined to say that expenditures on education, training, medical care, etc., are investments in capital. However, these produce human, not physical or financial, capital because you cannot separate a person from his or her knowledge, skills, health, or values the way it is possible to move financial and physical assets while the owner stays put (p. 16).”

General human capital is also distinguishable from specific human capital. Specific human capital can be related to an industry as well as a specific employer. Becker (1993) also provides very useful definitions for general and specific human capital:

“Completely general training increases the marginal productivity of trainees by exactly the same amount in the firms providing the training as in other firms. Clearly, some kinds of training increase productivity by different amounts in the firms providing the training and in other firms. Training that increases productivity more in firms providing it will be called specific training. Completely specific training can be defined as training that has no effect on the productivity of trainees that would be useful in other firms. Much on-the-job training is neither completely specific nor completely general but increases productivity more in the firms providing it and falls within the definition of specific training. The rest increases productivity by at least as much in other firms and falls within the definition of general training (p. 40).”

## Employment Capital

For this discussion, it is helpful to extract and combine the views of Becker (1993) and Lazear (1998) into useful definitions for specific and general human capital as related to a basis for projecting an earnings rate or duration of unemployment.

Specific employment capital is defined:

The accumulated education, knowledge, skills and production capacity as corresponding to a particular occupation, industry, profession or employer. Specific employment capital includes the sub-sets employer specific capital and industry/occupation specific capital, both of which contribute to the worker’s earnings rate and employment duration. As a general tenet, the accumulation and application of specific employment capital results in

increased earnings rates. Correspondingly, loss of or the inability to apply accumulated specific employment capital results in lower earnings rates.

General employment capital is defined:

The accumulated education, knowledge, skills and production capacity that has (generally) similar or equal value across many occupations, industries, professions or employers. General employment capital is not as readily degraded as specific human capital by adverse employment events such as separation from long-term employment. In like fashion, general employment capital is applicable to many more jobs (provides greater labor market access), but at a lower, more baseline, earnings rate.

#### Marketplace Mobility and Earnings in the Early Years

New entrants to the labor force can generally look forward to about 40 years of work life. In a study that encompasses both a firm specific human capital theory of pay and work life incentive pay schemes, Topel and Ward (1992) found that during the first ten years in the labor market, a typical male worker will hold seven jobs or about two thirds of his work life total. Just as significantly, the first ten years of work will also account for about 66 percent of the lifetime wage growth for male high school graduates. Job turnover and wage growth rates both subside as one's career progresses. Thus, in the aggregate, during the entry period a critical mechanism is observed where one first attempts to establish an upwardly mobile career track, and later in mid-career a specific employer bond.

Historically, the median job duration for males increased substantially from 1951 to 1993. Duration increased from 7.6 years to 11.7 years for workers in the 45-54 age category, and from 9.3 to 14.0 for older workers in the 55-64 age bracket (see Table 1). These changes show the important role of both job mobility and job tenure among younger workers. Rapid gains in wages are often made during the early years of employment with a firm as related to the accumulation of firm and industry specific employment capital. Wage gains can also be anticipated from positive career transitions where a new employer values highly the industry specific employment capital of the worker and an enhanced job fit and employer match occurs (Topel & Ward, 1992). Conversely, the young worker that stays in a first blue collar job for an extended period (10 or

more years) while gaining considerable specific human capital may be in a very disadvantageous position if displacement occurs after making such an investment.

Table 1  
Job Duration for Males in the U.S., 1951 - 1993

Year	Age Category			
	25-34	35-44	45-54	55-64
1951 – Median Duration	2.8	4.5	7.6	9.3
1973 – Median Duration	3.1	6.5	11.3	14.4
1993 – Median Duration	3.5	6.9	11.7	14.0

Source: Filer, Hammermesh and Rees, 1996, *“The Economics of Work and Pay,”* p.333)

#### The General Nature of the Employment Relationship

The employment relationship for the majority of workers can be thought of as a contract between the employer and the employee. Frequently, there are understandings or implied promises that if employees work hard and perform well they will receive commensurate wage increases and/or be promoted to higher paying jobs as their careers progress. Unlike formal contracts, most of these employment understandings are incomplete and implicit, and thus too vague to be legally binding. Consequently, if employment contracts are not self-maintaining or self-enforcing, employees can almost always quit a job at-will, and employers often have great latitude in terminations.

The key to any self-enforcing agreement is that there are losses imposed on those who do not fulfill the implied promises of the contract due to what may be called opportunistic behavior. Employees, through shirking (under-performance) and employers, by failing to promote or retain “good” workers are both capable of opportunism through abrogation of the implicit terms in the employment agreement.

In general, it is during the early and late phase of an employment relationship that the employer is most prone to exhibit opportunistic behavior. It is during the lengthier middle phase of employment that the worker may have the advantage over the employer through shirking. During the mid phase, so long as the worker maintains productivity above the level of new hires, the costs of search, hiring and training replacements will often deter employers from making changes, especially when the replacement may be no more productive over time than the discharged worker.

### Models of Pay

Variable pay simply means tying a worker's earnings to some output-based performance measure, while a fixed pay scheme is independent of output. Optimal schemes must accomplish two things. First, they must induce an appropriate level of effort. Second, they must attract the right workers to come to the firm (Lazear, 1998). There are numerous forms of variable pay. Examples of this type of pay include a commission rate to sales personnel; a rental agreement to a taxicab driver or barber; a typist paid by the number of transcribed pages; a CEO whose earnings are mostly in the form of bonuses and options; and a medical billing specialist paid by the number of transacted claim forms.

The pay schemes mentioned are largely "output" or performance based as opposed to "input" based schemes where the worker is paid a salary or hourly wage and performance may be evaluated only periodically for marginal pay increases. In general, firms pay on input rather than output when the cost of measurement or monitoring is high, when the term of measurement is lengthy, and when greater levels of firm specific human capital are required for task completion.

Despite the preceding tenants of labor economic theory, Miller (1992) asserts that the problem with piece rates is that employees harbor major concerns that employers will adjust piece rates downward and lay off workers in response to increased pay. Employees may engage in strategic misrepresentation of effort cost functions and/or establish norms against rate busting (individual high productivity). Miller contends:

"Firms could earn more profits by paying smaller, safer salaries if not for the negative effects of guaranteed employment. Firms force employees to bear risk, even though both parties would be better off if employees could be paid smaller, more certain salaries. Firms have to use the inefficient punishment of risk bearing

in order to maintain employee incentive effects (to protect against moral hazard and shirking, p. 125).”

Becker (1993) concludes that employers tend to pay generally trained employees the same wage they could receive elsewhere and specifically trained employees a higher wage. This pay difference exists because employers are less concerned with turnover of generally trained employees (whose training costs are mostly self borne) while turnover of specifically trained employees is more costly since the employer contributes for their training.

Specific training produces incentives for both the employer and employee to maintain and fulfill the nature of their implicit contract. A worker with considerable investment in one employment relationship (prolonged job duration and mostly specific training) will have a difficult time matching or securing a similar pay rate in the market if displaced. Likewise, the employer should also find it costly to replace such employees if they should quit.

#### Employment Life Incentive Wage Schemes

Employment life incentive schemes have some similarities to piece rates or output-based payment systems since performance is observed, and then compensation is based on that performance. The major difference between such upward sloping experience earnings profiles and the piece rate schemes as motivators, is that the worker must continue to be employed in order to secure the prize for good performance. This mechanism purportedly motivates workers by paying them less than their market worth when they are new to the firm and correspondingly more than they may be worth (the value of their marginal product) when they are seasoned. Much of the effectiveness of this scheme depends upon whether the worker has acquired general or specific employment capital as they extend their tenure on the job. Workers are paid higher wages as a function of both firm specific employment capital that has accrued over time, and as a motivational reward for productivity during the early years (Lazear, 1998).

This scheme allows employers to extract a large penalty against workers who might otherwise be prone to malfeasance and shirking or moving to another employer where they might have to “start over”. Specifically, if they lose their jobs they forgo the higher than alternative market salaries that they may earn over time. In addition the worker may also end up in a very disadvantageous position, when after making a lengthy investment in a particular firm the

employer does not live up to the terms of their implicit contract. Older workers that have risen to a middle management position with a firm after 20 years of productive employment often find it next to impossible to secure a similar position if displaced. They must often take a step back down the employment ladder and attempt to work their way back up. Sometimes this scheme results in a problematic inefficiency such as when a person is promoted to a middle management level beyond his or her competency. This inefficiency occurs when, as a reward, a highly productive worker is promoted to a position where he or she is far less competent (middle management) rather than being paid efficiency wages via a piece rate system for his or her efficiency.

Tournament theory can be used to describe another form of compensation that serves as a motivational device. In essence, the higher the raise associated with a given promotion, the higher the level of effort that must be exerted to win that promotion. The comparatively high level of American CEO salaries is explained through this mechanism. A high level of compensation is not implemented solely to motivate the CEO. It is also just as importantly used to motivate others to seek advancement and even to attain that job. This concept also explains certain barriers to entry for outsiders to high-level management positions within firms. Specific (internal) labor markets often have specifically designed motivational wage structures. Consequently, the higher up the job, the more likely the incumbent comes from a previous position within the firm and has successfully navigated the internal competitions. Ports of entry studies (Rosenbaum, 1984) generally reflect that a disproportionate share of hiring for higher-level jobs takes place from lower-level jobs. This also again explains why many displaced workers (those having made identifiable specific investment in the terminated employment), and especially managers, often must accept lesser positions in alternative firms. They are often forced to work their way back up the career or corporate ladder. Reduced pay and responsibility may also be related to the labor market signaling effect sometimes associated with termination.

The forensic economist should examine these factors when evaluating the probable pecuniary impact of employment discharge. The younger the worker, the less the employment tenure, and the more common the job title may each signal a small and/or short pecuniary impact on a future income stream. The older the worker, the greater the employment tenure, and the higher up the career ladder each may signal greater and more protracted pecuniary effects.

## Worker Mobility and Signaling

There is a market signaling effect to being laid off or terminated. In their paper, “*Layoffs and Lemons*,” Gibbons and Katz (1991) indicate that the estimated mean percentage wage loss from displacement is 5.5 percentage points greater for white-collar workers displaced by layoffs than for white-collar workers displaced by plant closings. Additionally, workers laid off (and not recalled) have approximately 25% longer post-displacement unemployment spells than those displaced by plant closings.

This asymmetric-information model for layoffs incorporated a number of predictions. These included, “if a firm has discretion over whom to lay off, then the firm’s desire to retain a worker signals to the market that the worker is of high ability, so the market bids up the wage of retained workers. The market then infers that laid-off workers are of low ability and so offers them low wages in their next jobs (Gibbons and Katz, 1991, 352).” This signaling effect also explains the vocational axiom that it always seems easier to secure “better” employment offers “more quickly” while employed, compared to job search efforts when unemployed.

Returning to the self-enforcing employment life cycle payment schemes, the employer usually pays an implicit price when exercising the right to fire. The employer can no longer compel service, and the costs of the decision are mostly self-borne. This creates an implicit system of coinsurance between employer and employee against such employer abuse. Firms mostly bear the costs of voluntary turnover by workers who quit, and this should provide them a frequent reminder of the need to avoid self-inflicted losses (Epstein, 1984). Consequently, the right to fire is exercised judiciously because the threat of firing is in itself effective. In terms of wage determination, there is a natural bound. Specifically, the employee wage cannot be driven below the competitive alternative market wage, and the employer cannot be driven to a wage above the sum of the competitive wage (general employment capital) plus the amount for accumulated specific employment capital.

If workers are to be paid more than they could receive elsewhere, yet produce more profits for the employer than outsiders could, there must be a “surplus” generated by the employment relationship. The positive differences between the workers’ marginal revenue product with the current employer and the alternative wage must be shared. Here, the self-enforcing nature of at-

will employment is again evident. If one player (employee or employer) receives the entire surplus, the other party has nothing to lose by quitting or terminating the relationship.

Reputational constraints theoretically limit employer opportunism. For example, an employer that is well known for keeping its promises to reward older workers through premium pay schedules can attract workers of higher productivity at lower cost than can employers with poor reputations. If the firm cheats and loses its good reputation, it will have to pay more for the same quality of worker or pay the same wage with less productive workers. In either case, cheating causes the employer to lose its part of the surplus (Ehrenberg and Smith, 2000). Other researchers, especially from the legal domain, question whether reputational constraints are sufficient to quell employer opportunism (Barnhardt, 1998, and Sheehan, 1997).

From an economic perspective, opportunistic exceptions to the self-enforcing, implicit contract can result from imperfect bonding. Essentially, the at-will contract works best when performance on both sides proceeds in lockstep fashion, i.e., where the worker's past performance has been matched by appropriate payment increases, promotions and tenure from the employer. In such cases, it is in the interest of both parties to honor the implicit agreement (Epstein, 1984). Such agreements are known as incentive compatible. The sequencing of performance requiring one side to perform in full before the other side begins performance causes the bonding mechanism to break down. As with most general contracts, disputes arise when there are no longer unfulfilled promises of roughly equal value to stand as security for each other. Moreover, when bonding is inefficiently delayed the contract becomes increasingly less self-enforcing.

Examples of such bonding imperfections between employees and employers include large commissions following "big ticket" sales, traditional apprenticeship contracts, compensation for job related personal injuries, contracts for agricultural workers, unrequited promises of employment which prompt employees in reliance to leave other jobs, etc. Likewise, there are rational tendencies toward opportunism as the end-period approaches in the life cycle payment incentive structure. At this time, the contract at-will is no longer self-enforcing outside of the reputational costs to the employer. Thus, in a world without market or legal constraints, a firm might rationally fire a productive worker for no apparent cause.

General and specific employment capital realities create two forms of relationship problems. Younger workers frequently try numerous jobs before committing to a single career or employer. During the training period at a new firm, the worker may accept less than outside wages and thus co-invests in the cost of training. After training, the worker receives greater than outside wage gains as productivity increases. This is a function of accumulating both general and specific employment capital (training and work experience). If employment continues for a lengthy period, firms must sometimes pay employees more than they currently produce. At this point, late-career employees become vulnerable to opportunistic firing.

### Application of Theory

The authors propose that the pre and post (litigation causing) event specific employment capital and general employment capital of an individual can be determined, and the demonstrated capital retention or use decisions of the worker used to project reasonable post event earnings rates and unemployment duration. Specific employment capital is believed to correlate with the individual's pre-event earnings rate and years of related specific experience. Thus, an individual's pre-event specific employment capital can be assessed by comparing the demonstrated (pre-event) earnings rate and years of related experience to the mean or median (henceforth just mean) earnings rate by years of experience for that occupation and geographic location. It is possible to make this type of comparison using data sets that provide mean, or percentile, earnings rates by years of experience or skill level. This type of earnings data is reported nationally and for each state and many specific geographic or statistical areas through the combined efforts of the U.S. Department of Labor and the States' Employment Departments. The on-going "Occupational Employment Statistics (OES) Survey is the primary data source and the data can be accessed through the Bureau of Labor Statistics web site ([www.BLS.GOV](http://www.BLS.GOV)) or a state's employment data website (e.g. <http://olmis.emp.state.or.us>, for Oregon).

Correspondingly, there are state and national data sets that list and project the number of jobs that exist for national, state and specified geographic areas, including the number of job openings in a period of time, and in some cases even the number of new hires during a period of time. The primary sources for these data are the OES survey and the "JOLTS" Survey (Job Openings and Labor Turnover Survey – found at the BLS website). This data can, when used in conjunction

with demonstrated employment capital choices, substantially contribute to the assessment/projection of a reasonable duration of unemployment.

The more that a displaced workers insist on attempting to retain most or all of their specific employment capital, and a correspondingly higher than average re-employment wage, the higher the probability that the worker is likely to be unemployed for a lengthy period. If the worker seeks employment with greater emphasis on the retained general employment capital – a new job will probably be secured sooner, but at a correspondingly lesser wage (closer to, or below, the mean). In this manner, the choices that the involuntarily displaced worker has and makes regarding reliance upon retained specific vs. general capital influence both the post event duration of unemployment and the re-employment earnings rate. A systematic assessment of choices available to the worker as related to the pre-event specific and general employment capital and the labor market will help the forensic economist accurately project the most probable and reasonable mitigation earnings stream.

The number of job openings for a particular occupation is an indicator of how difficult it will be for the displaced worker to secure alternative post event employment. It is also indicative of the “market pressure” on wages for that job. In practice, the employment outlook will indicate whether the occupation is experiencing growth or decline, as well as the number of openings per period of time, and over time. The forensic economist would normally begin by assessing availability of jobs that maintain the person’s specific capital. If many such job openings exist then the period of unemployment may be short and the re-employment wage may be close to that of the pre-event position. If few job openings of this type exist, and as the forensic economist begins to include more jobs of lower specific value and higher general value, the re-employment wage will diminish as the re-employment prospects improve.

In addition to the number of openings, the retention of specific capital is also influenced by other factors such as the worker’s age and any adverse situation specific elements that on their own will diminish or destroy the worker’s specific or general capital. An example of an adverse element is termination where the employer will not provide any form of helpful recommendation and states that the worker would not considered for re-hire.

In general, absent a lengthy period of unemployment, the more a new employment situation values the person's retained specific employment capital, the less pronounced will be the initial earnings loss and the more quickly the earnings will return to the pre-event level. Conversely, the more that the post event choices move the worker away from a specific position and industry, the greater the probability of a large initial earnings loss, and the greater the potential for long term or permanent earnings reduction. The authors suggest that some form of "Decision Tree" modeling used in conjunction with the presented theory can facilitate accurate loss projections in cases of this type.

### Conclusion

When evaluating losses resulting from harmful employment related actions forensic economists can use concepts from Human Capital Theory, Personnel Economics, Managerial Economics, and Labor Economics beneficially. The better that forensic economists understand the nature of returns to employment capital from particular employment, the more accurate will be the projection of pre-event earnings over time. Likewise, the better that forensic economists understand the nature of the relationship between an individual's accumulated and retained employment capital and the market, the more accurate will be the projection of the mitigation earnings stream and duration of loss.

The flexibility of at-will employment relationships permits constant marginal adjustments that are necessary in any ongoing productive enterprise but may also allow harmful opportunism to occur. The key to any employment relationship is self-enforcement and reciprocity. The forensic economist should be cognizant of incentive pay schemes, the employment life cycle, individual plaintiff attachment to the labor force, symmetrical v. asymmetrical bonding, and the impact of age, employment tenure and general v. specific employment capital when evaluating pecuniary losses in employment law cases.

## References

- Barnhardt, Julia, 1998. "The Implied-in-fact Contract Exception to At-Will Employment: A Call for Reform." *UCLA Law Review*, Vol. 45: 817-847.
- Becker, Gary S., 1993. *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. 3<sup>rd</sup> Edition. Chicago, IL: University of Chicago Press.
- Ehrenberg, Ronald G. and Robert S. Smith, 2000. *Modern Labor Economics: Theory and Public Policy*. 7<sup>th</sup> edition. Reading, MA: Addison-Wesley Longman, Inc.
- Epstein, Richard A., 1984. "In Defense of Contract At Will." *University of Chicago Law Review*, Vol. 51(4): 947-987.
- Filer, Randall K., Daniel S. Hamermesh, and Albert E. Rees, 1996. *The Economics of Work and Pay*. 6<sup>th</sup> edition. NY: Harper Collins College Publishers.
- Gibbons, Robert and Lawrence F. Katz, 1991. "Layoffs and Lemons." *Journal of Labor Economics*, Vol. 9(4): 351-380.
- Lazear, Edward P., 1998. *Personnel Economics*. Cambridge: MIT Press.
- Miller, Gary J., 1992. *Managerial Dilemmas: The Political Economy of Hierarchy*. Cambridge: Cambridge University Press.
- Rosenbaum, James, 1984. *Career Mobility in a Corporate Hierarchy*. New York, NY: Academic Press.
- Sheehan, Kim, 1997. "Has Employment-at-will Outlived its Usefulness?" *California Western International Law Journal*. Vol. 28: 323-346.
- Topel, Robert H. and Michael P. Ward, 1992. "Job Mobility and the Careers of Young Men." *The Quarterly Journal of Economics* Vol.107: 441-479.