

## The Compensation Expectations Equilibrium<sup>1</sup> Instructional Primer<sup>2</sup>

*This primer on the Compensation Expectations Equilibrium is highly theoretical and is still in the formative stages. It is being developed by Richard Haskell in the University of Utah's Department of Economics and has not yet been vetted by peer review or the scholarly publication process.*

Modern Labor Theory is subject to the constraints of the society from which it has arisen. Though we may want to discuss this in terms of a choice theoretic environment, the institutions influencing that environment have already informed our set of choices to those consistent with the economic, social, political, physical and spiritual constructs of that society. Clearly, we can say that it has been the choices of those who came before us who structured those institutions and influenced our history, as though it is rendered endogenously. However, for those who are subject to current labor markets these present as exogenous influences over which we have seemingly little current or future control. As such we may be dealing with an issue of causation, but in a long process of endogeneity presenting exogenously on current economic agents.

### **COMPENSATION EXPECTATIONS EQUILIBRIUM**

From this perspective, we may consider labor market theories as explanatory mechanisms in wage differentials, but is this truly sufficient? Might we recognize that the compensation one obtains from trading leisure for labor, and labor for compensation goes far beyond wage? In truth, workers enter into these exchanges for increased utility and satisfaction: a function of wage, express benefits, derived benefits, and personal satisfaction. If we consider this compensation from labor ( $C^L$ ) received against a standard of expected compensation ( $C^E$ ) we can express it as a value as we calculate  $\frac{C^L}{C^E}$ . In a perfectly

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<sup>1</sup> This primer is intended to present an abbreviated discussion of the included economic concepts and is not intended to be a full or complete representation of them or the underlying economic foundations from which they are built.

<sup>2</sup> This primer was developed by Rick Haskell (rick.haskell@utah.edu), Ph.D. Student, Department of Economics, College of Social and Behavioral Sciences, The University of Utah, Salt Lake City, Utah (2013).

competitive and freely mobile labor market we would also expect that  $\frac{C^L}{C^E} = 1$ , were this not to be the case economic agents would not choose to transact. In an imperfect labor market we might expect to

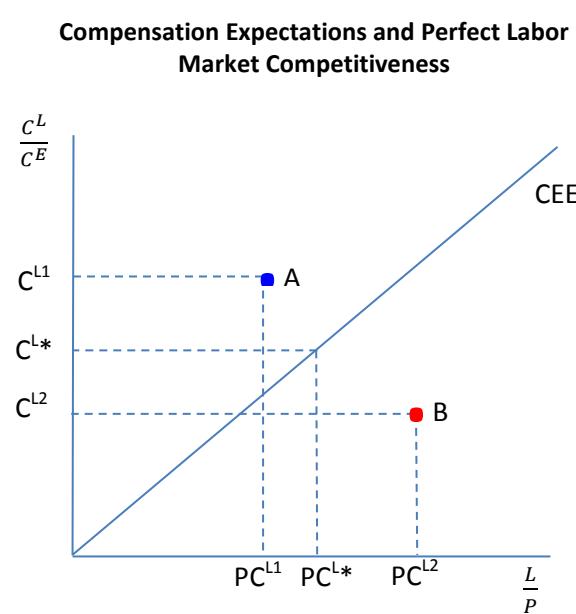


Figure 1.1 Individual exchanges above and below CEE

see  $\frac{C^L}{C^E} \geq 0$  leaving open the possibility that it is greater than or less than 1, depending on the prevailing power relationship.

We can further consider that all labor market participants are subject to this same relationship and that in a perfectly competitive labor market all participants receive the same compensation in respect to their expected compensation. This allows us to accept compensating Wage

Differentials and Skills Differentiation as simply

being changes in compensation in the form of wage ( $C^W$ ), benefits ( $C^B$ ) and satisfaction ( $C^S$ ) without experiencing any particular change in  $C^L$ , such that  $\Delta C^W + \Delta C^B + \Delta C^S = 0 = \Delta C^L$ . For example, an increase in  $C^W$  may be the result of a decrease in  $C^S$  or  $C^B$

, as in the case of compensating wage

differentials, without seeing any changes in  $C^L$ .

Or we might find that compensation changes

due to changes in human capital (skills

differentiation) simultaneously increases  $C^L$  and

$C^E$  such that  $\Delta \frac{C^L}{C^E} = 0$ .

### Compensation Expectations and Perfect Labor Market Competitiveness

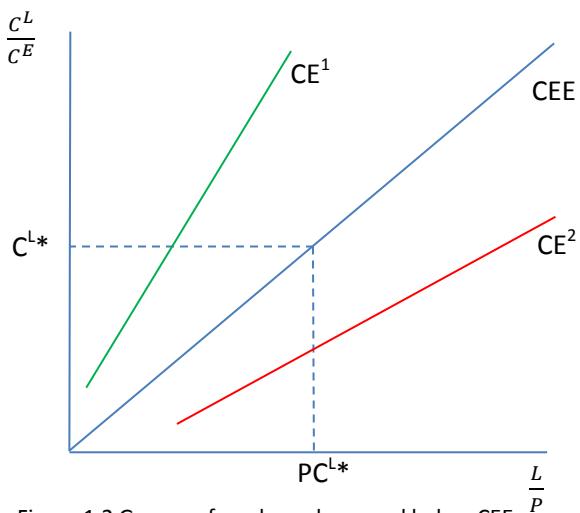


Figure 1.2 Groups of workers above and below CEE

Such a relationship may be visualized by graphing  $C^L$  in respect to  $C^E$  as a ratio on the Y axis and a measure of competition on the X axis. In that we're dealing with labor markets, the completion metric might best be conceptualized as some power relation with a ratio of  $\frac{\text{labor}}{\text{producer}}$  or  $\frac{L}{P}$ . Additionally a  $45^0$

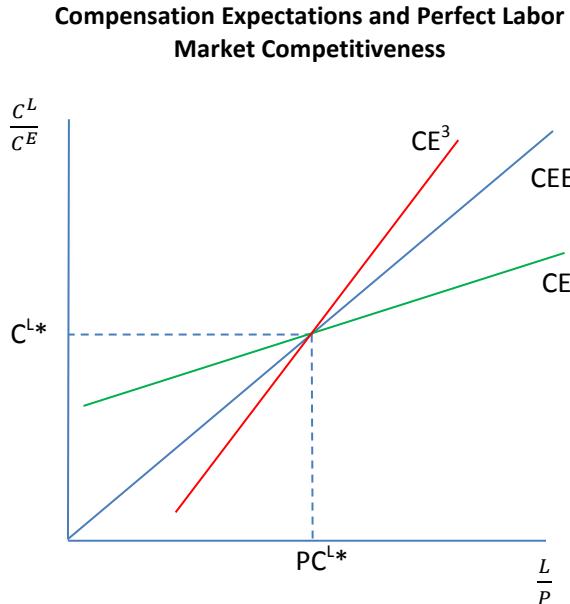


Figure 1.3 Transecting CEE from above and below

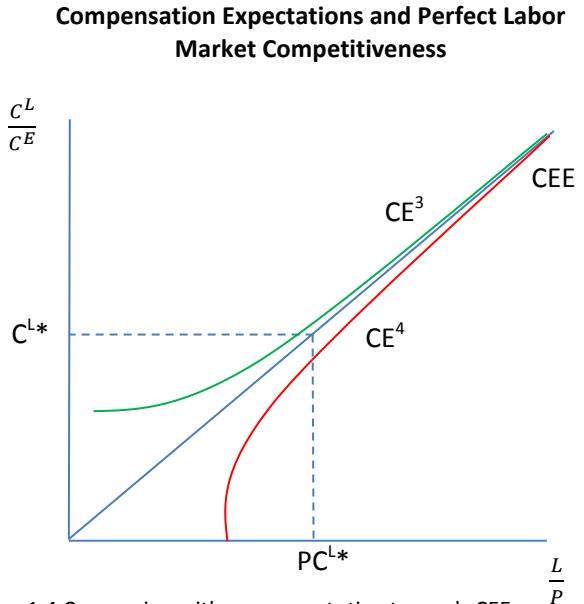


Figure 1.4 Converging with or asymptotizing towards CEE

line (slope =1) starting at 0,0 such that any transaction on this line represents equality between  $\frac{C^L}{C^E}$  and  $\frac{L}{P}$  or  $\frac{C^L}{C^E} = \frac{L}{P}$ ; we'll call this condition the *Compensation Expectations Equilibrium* (CEE). This form of equilibration may be illustrative of numerous economic conditions, but we'll restrict ourselves to the labor market for the time being.

Accepting this relationship then allows us to consider possible interpretations of exchanges that lie outside of the CEE (Figure 1.1), each of which would present some form of market imperfection. If we look at individual transactions that lie above the CEE, we might say that  $C^L$  is greater than  $C^E$  given a particular level of  $\frac{\text{labor}}{\text{producer}}$  (point A), or that  $\frac{\text{labor}}{\text{producer}}$  is lower than expected given a particular level of

$\frac{C^L}{C^E}$  (point B). In either case we see that some form of friction has arisen in the labor market leading to an outcome representative of greater labor power in the case of  $\frac{C^L}{C^E}$  above CEE and greater producer power in the case of  $\frac{C^L}{C^E}$  below CEE.

We might also consider a curve lying above, below, and/or transecting CEE and what these have to say about relative differences in labor and firm power (Figure 1.2). A line such as CE<sup>1</sup>, lying strictly above CEE may represent transactions of unionized workers with strong bargaining positions of any group of workers for which there is low wage elasticity of demand in a particular region or possibly workers subject to an affirmative action like program in various markets. Curve CE<sup>2</sup> might represent non-union workers, workers facing monopsonistic labor markets, any group of workers for which there is a high wage elasticity of demand, or those workers in a discriminated class. Curves CE<sup>3</sup> and CE<sup>4</sup> (Figure 1.3) that transect CEE from above or below, respectively, may be representative of groups of workers or a particular region for which labor power is high (low) up to a particular level of market competition, after which there the relative labor/producer power relationship reverses. Curves CE<sup>5</sup> and CE<sup>6</sup> (Figure 1.4) that approach CEE and then either merge with it or asymptote towards it from above or below, respectively, may be representative of groups of workers or a particular region for which labor power is high (low) up to a particular level of market competition, after which there is relative balance between labor and producer power.

## **WAGE AS A CONTRIBUTOR TO COMPENSATION**

### **Perfect Capital Mobility**

Perfect capital mobility is just one of the requisite elements of perfectly free markets. Rather than begin by considering the wage differentiation motivated by changes in, it may be more instructive to begin

from a position of perfect capital mobility and then relax the required assumptions allowing for perfectly flowing capital; not unlike our initial equilibrating conditions for the labor market as a whole. In respect to the mobility of capital, perfect capital mobility eliminates skills differentiation, geographic boundaries, cultural barriers, discrimination, compensating wage differentials, etc. in respect to both space and time. In effect, it would result in a similar state of labor homogeneity as that assumed in a freely equilibrating labor market. As we relax the necessary assumptions leading to perfect capital mobility we begin to see that frictions in the mobility of human capital, financial capital, and physical capital each result in differentiations in labor supply and demand, and as such have significant impacts on labor productivity and wages.

### **Free Market Competition and Labor Market Equilibrium**

Within this structure, we may begin our discussion with the most liberal set of assumptions available: those that allow for a perfectly competitive marketplace replete with a full range of choices for both the worker and firm. This perfect environment for free exchange allows us to consider firms and labor as though each is homogeneous and each reacts only to the laws of supply and demand. In such a state, increases in labor supply (holding demand constant) are met with decreasing wages for an increasing level of labor, and increases in demand (holding supply constant) are met with increasing wages for an

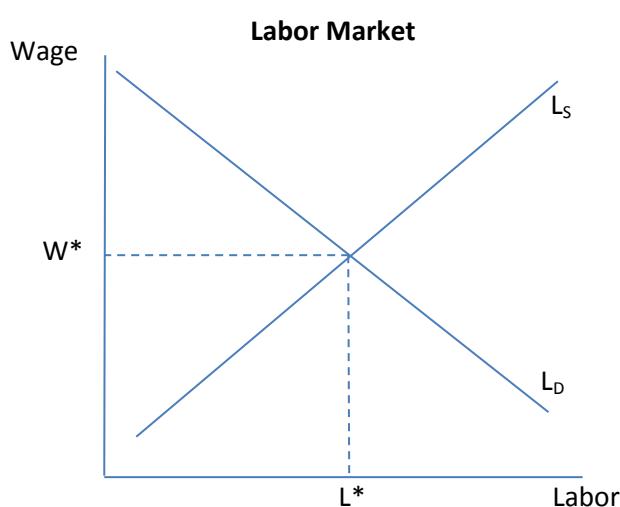


Figure 2.1 Labor Market Equilibrium

increasing supply of labor. As such, we accept that changes in  $L_D$  yield positively correlated changes in wage and labor, and changes in  $L_S$  yield negatively correlated change in wage and labor.

An appropriate initial condition from which to work in an effort to explain wage

differentials in the labor market is a state of equilibrium: that state where labor suppliers (households) and labor demanders freely reach an agreed upon exchange of labor and wage in a Pareto Efficient, and utility and profit maximizing transaction, completely free of exogenous influences and market imperfections.

Moving beyond this state of perfectly free, competitive and homogeneous labor markets, we can consider the effects of competition in respect to labor supply and demand and their effects of wage separately from labor market frictions and their respective effects on wages.

### Heterogeneity of Labor

A primary determinant of wage differentials comes from the heterogeneity of workers themselves, including differences in worker preferences and behavioral patterns. While one worker may prefer income from labor, another may place a greater value of leisure and time at home. The agent evidencing a preference for labor is more likely to accept a lower wage in exchange for forgone leisure and vice versa. Besides causing such a difference, resulting in the formation of the agents' reservation wages, the difference in preference may also result in differing levels of productivity and result in differing wage

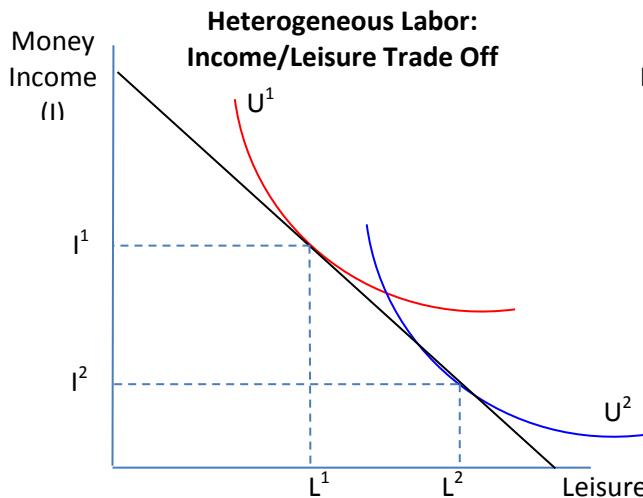


Figure 3.1 Income /Leisure Trade-Off:  
different workers with differing preferences

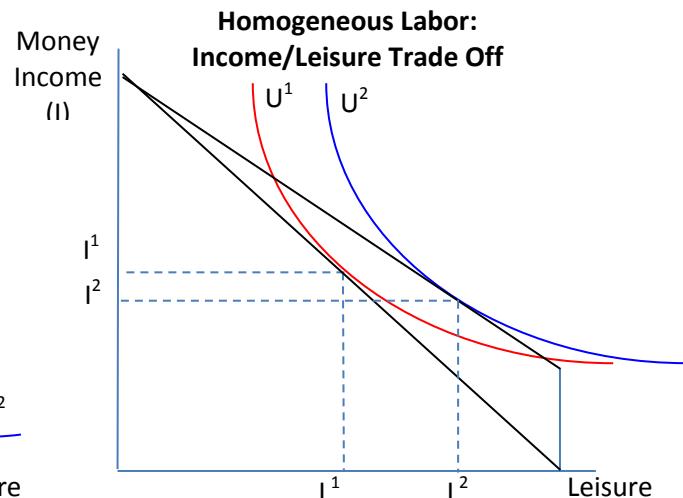


Figure 3.2 Income /Leisure Trade-Off: same (similar)  
workers with differing budgets/endowments

levels. Furthermore, the difference in preference may also present in differences in job selection.

### Compensating Wage Differentials

Compensating wage differentials are those differences in wages for a given job in an industry or a various jobs at a given firm, based upon the conditions under which labor is expected to perform. These conditions tend to shift the labor supply curve based on perceptions and preference of workers at that firm(s) versus a “model” firm for which conditions are normalized. This concept extends to any condition that has the potential to change worker satisfaction, and as such extends the connection between wages and utility. Worker preference is influential in this relation in that a worker with greater tolerance for less universally satisfying conditions may require a lower wage than one with a greater tolerance.

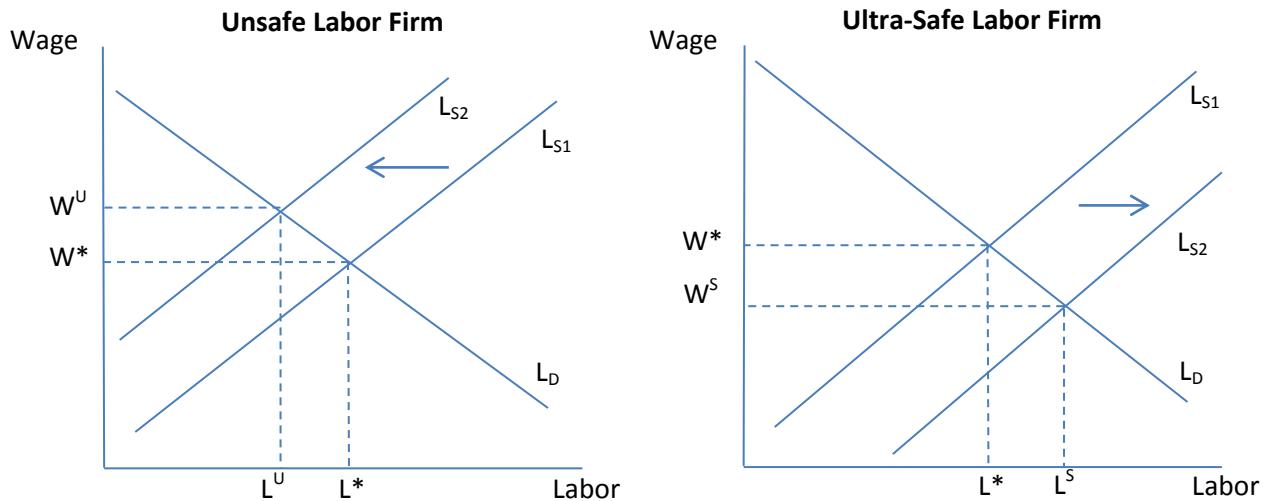


Figure 4.1 Compensating wage differentials between two firms, neither of which present at the market clearing wage

If we consider for a moment two firms, Unsafe and Ultra-safe (Figure 4.1) we see that the firm with an unsafe working environment capable of hiring workers prepared to accept such an environment is required to pay them a higher wage than might be required in a “normally safe” or ultra-safe working environment. This wage premium is the amount the worker requires for taking on the risk for which the

firm is prepared to manage. However, in this relationship, we see that the firm operating a work environment less safe than the environment offered by peer producers is able to not only pay a higher wage( $W^U$ ), but still requires the same number of workers ( $L^*$ ) in order to achieve the required level of output, pushing the wage higher still to  $W^{U1}$ . We see a similar, though opposite effect in the ultra-safe firm, pushing wages down well below  $W^*$  and  $W^{S1}$ . It is worth noting that there are some workers who present risk perverse utility preferences who may accept a lower wage for the less more injury prone working conditions, though this is counter-intuitive to most and not illustrated in the models presented.

### Jobs Matching of Workers and Jobs with Different Risk and Cost Levels

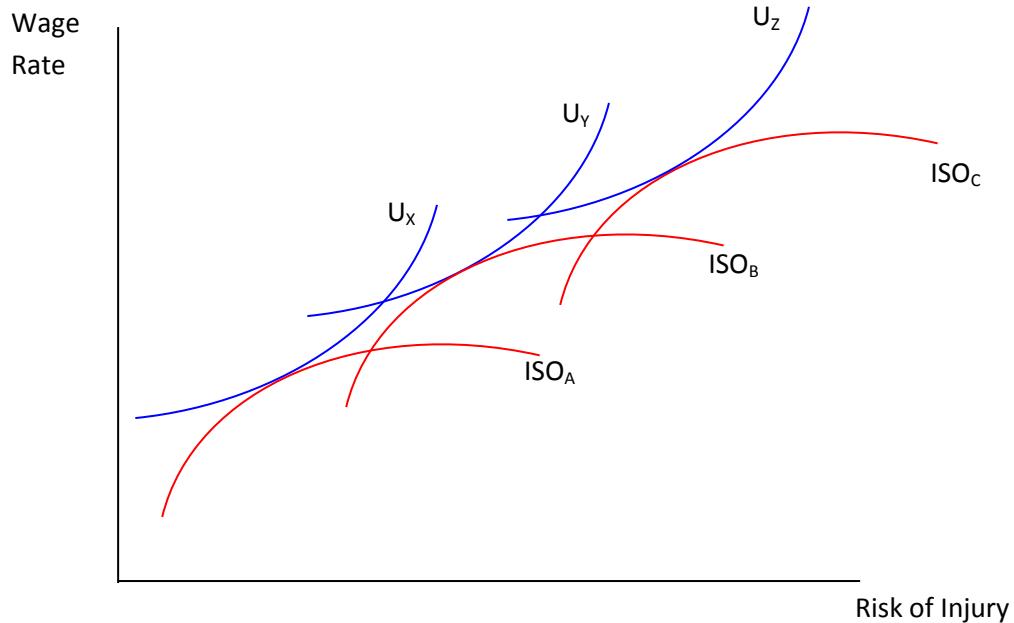


Figure 4.1 Jobs matching of workers and jobs with different risk and cost levels within a firm

We can further discuss this issue of work environment and compensating wage differentials in terms of costs and output decisions by discussing worker preferences through individual utility curves and iso-cost curves where the firm chooses a particular level of risk associated expense and thus a particular level of profit. We can use this relation to observe how a firm(s) might match workers with jobs as the compensation level of the job (suggesting a certain level of firm profit) is matched to a worker's utility

preference. In this case the firm saves the cost of operating a more safe work environment and the worker benefits from the wage premium resulting from the matching of a worker willing to accept a less safe environment.

### **Skills Differentiation**

In a labor market in which different tasks require differing skill sets, worker skill levels aid in the matching of workers and jobs at appropriate wage levels. In respect to the demand side of the labor market we may say jobs with greater skill requirements are less plentiful and more highly compensated than those requiring lesser skills. On the supply side we observe that workers having acquired or been endowed with greater skills are less plentiful than those with lesser skills and expect higher wage levels. In respect to labor supply, the increased wage expectation is a function of increased human capital investment. On the demand side of the labor market, the expected wage premium arises from a combination of initial endowments and human capital investments and their expected impact on worker productivity. We may say that changes in human capital are positively related to changes in productivity and that changes in productivity are expected to be positively correlated with changes in wage.

However, we observe that the slope of this relation is dependent on supply and demand conditions.

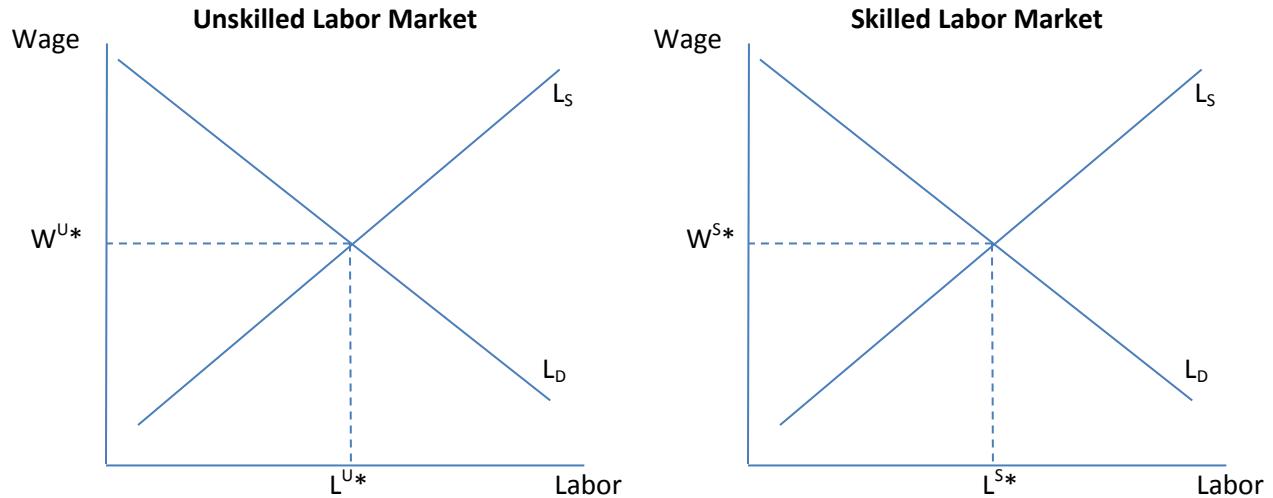


Figure 5.1 Labor market equilibrium for differing skills presenting two unique levels of  $W^*$  and  $L^*$

If we're prepared to accept unskilled workers are less productive than skilled workers, that the markets for each skill set equilibriates, and that the required pay for the less skilled worker is lower than the required pay for the higher skilled position, then we can say that  $L_S^* < L_U^*$  and  $W_S^* > W_U^*$ . These relations would also be representative of the human capital investment costs required to gain the required skills, which we would expect to be less for the unskilled worker than the skilled worker.

### Beyond Equilibrium: *Disequilibrium and Discrimination*

The *Compensation Expectations Equilibrium*, though capable of illustrating the labor market in perfect and imperfect states of competition, may not be adequate to discuss the labor market in disequilibrium. This arises when the elements of free competition are no longer operative and other motivations or influences have overridden them altogether. We see this most clearly as we observe discrimination in the labor market.

In discussing the wage differences between genders, races or social groups, the role of institutions is significant. Absent evidence supporting

different productivity levels, we accept that differences in wages may be the result of discrimination and as such are the result of a utility maximizing firms rather than one seeking profit maximization. The utility maximizer is prepared to suffer a lesser level of profit in exchange for a greater level of utility or satisfaction, presumably the result of acting on discriminating

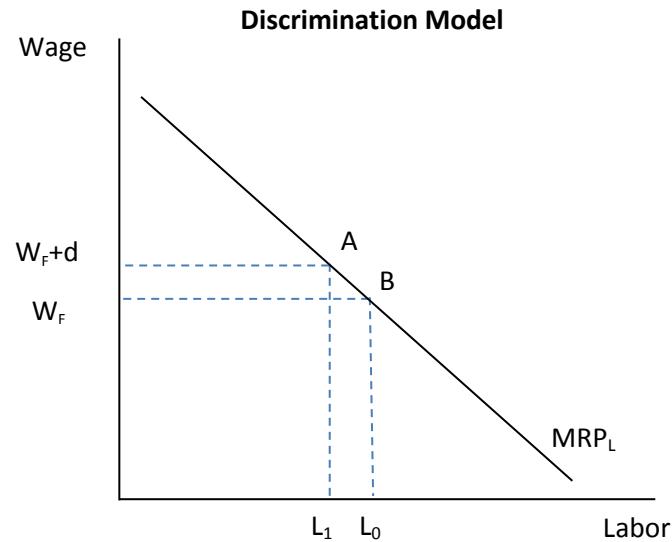


Figure 6.1 Labor market effects of discrimination

preferences in respect to a particular type of worker. This discriminatory preference motivates the firm to hire fewer of the discriminated workers ( $L_0$ ) than might be optimal ( $L_1$ ) and results in paying a wage such that  $MRP_L = W_F + d$  as is illustrated in the Discrimination Model (Figure 6.1). This model also assists us in quantifying the cost of discrimination ( $d$ ) for the utility maximizing employer. That the discriminating employer is paying a wage less than  $MRP_L$  also indicates that the firm is missing production opportunities due to the discriminating behavior and as such is losing out on profit maximizing revenues.

## CONCLUSION

Seeking to explain a *Compensation Expectations Equilibrium* and then illustrating wages differences through it rather than simply explaining wage differences directly may seem cumbersome, but it may also be more illustrative and allow us a more holistic approach to the labor market. This brief treatment is insufficient to discuss all of the relevant issues, but may be enough to allow us to consider the complex relationship between wages and workers in a richer context. Further, the illustrative power of a model such as the Compensation Expectations Equilibrium may be significant and the platform from which other price/competition systems may be explored.