

workers will find employment, some who come to the area in search of a protected sector job will end up being unemployed.

In this case we must differentiate between the supply price of an additional potential worker (a migrant) and the economic opportunity cost of labor required to fill a job. The potential migrant evaluates her prospects in the region where there are protected sector jobs with the opportunities available around her. If she migrates, there is a probability of finding a protected sector job (P^P), and also a probability ($1 - P^P$) of being unemployed. Hence, from the perspective of a potential migrant, if the protected sector wage is W^P , the expected wage from migrating $E(W)$ is equal to the product of the protected sector wage (W^P) and the probability of being employed in the protected sector (P^P).

$$(13-24) \quad E(W) = P^P W^P$$

When there is no open sector, then it is the unemployment rate, ($1 - P^P$) which brings about the equilibrium between the supply price of a migrant and the protected sector wage. Suppose the supply price for a migrant to move to the region where there are protected sector jobs is W^m . As this supply price is less than the protected sector wage of W^P , there is incentive for more migrants to move to seek protected sector employment than there are jobs available. This migration process will continue until the probability of finding a protected sector job falls to the point where:

$$(13-25) \quad P^P = (W^m / W^P) \text{ and } W^m = E(W)$$

At this point the potential migrant's expected wage from moving to the protected sector is just equal to her supply price. It means also that when more protected sector jobs are created, the number of migrants to the region in pursuit of these jobs will always be greater than the number of jobs. Hence, when the full adjustment has taken place, the equilibrium unemployment rate will be maintained and the number in the pool of unemployed labor will be increased.

To estimate the EOCL for protected sector jobs, we need to account for the opportunity cost of all migrants, both employed and unemployed, who were induced to move in pursuit of these new jobs. If the equilibrium unemployment rate is ($1 - P^P$), then for every new protected sector job created there will have to be $1/P^P$ migrants. The economic opportunity cost of each of these migrants is equal to $W^P P^P$ when the labor market is in equilibrium. Hence, the economic opportunity cost of labor to fill a protected sector job is expressed as:

$$(13-26) \quad \text{EOCL}^P = W^P (P^P)(1/P^P) = W^P$$

In this case where it is the unemployment rate which is the equilibrating force between the protected sector and the rest of the economy, the EOCL^P is equal to the protected sector wage. There is no net economic externality from the creation of protected sector jobs. The additional unemployment created by those searching for a protected sector job inflicts an economic cost on society equal to the difference between the supply price of a migrant and the protected sector wage. As a consequence, when there is no open sector and no other distortions such as taxes, the economic opportunity cost of labor for protected sector jobs is the protected sector wage.

When there are taxes levied on the protected sector wage, and taxes are levied on the wages paid in the sending region, then the EOCL^P will need to be adjusted to reflect the net change in tax revenues. We denote the gross-of-tax wage rates in the protected sector and in alternative employment as W^P and W^a , respectively. Further, if we express the proportion of migrants from the sending region which would have been employed in that region as K_a , and t is the tax rate, then the EOCL^P can be expressed as:

$$(13-27) \quad \text{EOCL}^P = W^P(1 - t) + K_a W^a t(1/(1 - P^P))$$

In this situation the amount of taxes lost from reduced activities in the sending regions must account for the fact that not all the adjustment comes from reduced employment, and that for every new protected sector job there will be more than one migrant moving to the labor market where the protected sector jobs are located.

13.8. Conclusion

In this chapter the economic opportunity cost of labor has been estimated using the supply price approach under a wide variety of labor market conditions and types of jobs. This approach is shown to be equivalent to the value of the marginal product of labor foregone approach, when the latter can be estimated accurately. The primary reliance of the supply price approach on the wage rates demanded under the labor conditions of the project greatly facilitates the estimation of this economic parameter for use in the economic valuation of projects.

A methodology has been outlined in detail to account for several adjustments that may need to be made to this supply price to reflect special labor market characteristics and distortions. Most of these factors, such as income taxes and unemployment insurance compensation, are straightforward and easy to estimate. Other issues dealing with international migration, the quality of the jobs and the nature of the unemployment present require a more detailed examination of the labor market. Once these values have been determined, they are used to adjust the supply price to arrive at an estimate of the economic opportunity cost of labor for a specific skill on a particular project.

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