**Assignment No 3:**

# Labor Supply Curve Estimation

## 1. Assignment Description

Labor supply in The Green State is region specific. That is, in each region the number of workers from each type that can be recruited depends on the level of salary offered to these employees and to the number of open positions. The higher the hourly rate offered and the more open positions the larger the number of employees that can be recruited. This is valid with two exceptions. First, the population of each region is limited. The number of workers that can be recruited is related to population size. Second, according to economic theory, if salary is too high, workers prefer to work less in order to enjoy their free time.

The purpose of this assignment is to estimate the supply curve for a given worker type in a given region (Reminder; in The Green State there are four regions with five workers types).

## 2. Background Theory

Figure 1 shows a typical supply curve. However, mathematically this type of curve can't be turned into a mathematical function. Thus, it is requested to estimate the inverse of this curve which is equation 1.

# Labor Supply Curve Estimation

**Figure 1: Supply Curve**

(1) $\qquad H = \alpha + \beta_1 W + \beta_2 W^2$

Where W = Wage and H=Hours.

Once the parameters of equation one are estimated it is possible to draw the supply curve as the inverse curve of equation (1).

## 3. Data Source

- Build a single firm with an average technology (technology does not affect the analysis in this case).
- Set an hourly rate for a selected employee type for the minimum hourly rate allowed in the selected region to the maximum allowed by the simulator.
- For each hourly rate level, run a simulation.
- Records the actual number of employees recruited for each rate level.

## 4. Analysis Required

a. Run linear regression using the functional forms as described is section 2.
b. Discuss the quality of the regression results by comparing the $R^2$, F values and the P values of the repressors' coefficients.
c. What is the maximum hourly rate that should be paid in the selected region for the selected employee type.
d. At what hourly rate do employees start to prefer not to increate there working hours?
e. Build a regression that includes the influence of the total number of open positions over the supply curve. Discuss the results of this regression and how this value influences the firm?