Chapter 11. Econometrics

1. One would certainly expect $\alpha_1 > 0$, implying that individuals put forth greater effort since their pay is directly related to their productivity. The sign of $\alpha_2$, however, is less clear. If fairness considerations tend to dominate, then individuals who work at firms that pay higher wages to fellow workers may put forth less effort to ‘even the score.’ Thus, holding constant one’s own wage, $w$, higher colleague salaries, $w$, may reduce productivity, implying $\alpha_2 < 0$. On the other hand, if individuals view the higher pay to co-workers as justified — perhaps as the result of some type of promotion tournament — then, holding constant their own wage, $w$, they may put forth even greater effort in order to attempt to be promoted in the future as well.

2. While the econometric results are consistent with your theory, the results do not offer conclusive evidence that your hypothesis is indeed correct. Specifically, there are other hypotheses that would also explain the empirical results obtained. For example, if larger firms are more likely to offer on-the-job training programs, then such training would constitute an omitted variable that could explain the results. In other words, the ‘true’ model might be

$$w_i = \alpha_{00} + \alpha_{01} F \text{ SIZE}_i + \alpha_{02} OJ T_i + \upsilon_i$$

where $OJ T$ is a measure of the amount of on-the-job training received by individual $i$. If $\alpha_{02} > 0$ and $OJ T$ and $F \text{ SIZE}$ are positively correlated, then even if $\alpha_{01} = 0$, one would still obtain $\alpha_1 > 0$ as $\alpha_1$ picks up the effect of $OJ T$ since it is not held constant in the original model. Similarly, larger firms may pay higher wages that has nothing to do with monitoring, but simply reflects a compensating differential for unpleasant work conditions. In this case, the ‘true’ model might be:

$$w_i = \alpha_{000} + \alpha_{001} F \text{ SIZE}_i + \alpha_{002} J \text{ SAT}_i + \eta_i$$

where $J \text{ SAT}$ is a measure of individual $i$’s job satisfaction. If $\alpha_{002} < 0$ (due to the compensating differential) and $J \text{ SAT}$ and $F \text{ SIZE}$ are negatively correlated, then even if $\alpha_{001} = 0$, one would still obtain $\alpha_1 > 0$ as $\alpha_1$ picks up the effect of $J \text{ SAT}$ since it is not held constant in the original model. Finally, larger firms may pay higher wages to reduce employee turnover if job vacancies are increasing with the size of the firm. In this case, the ‘true’ model would be:

$$w_i = \alpha_{0000} + \alpha_{0001} F \text{ SIZE}_i + \alpha_{0002} V \text{ AC}_i + \mu_i$$

where $V \text{ AC}$ is a measure of individual $i$’s firm’s cost (per day, for example) while a job is vacant. If $\alpha_{0002} > 0$ and $V \text{ AC}$ and $F \text{ SIZE}$ are positively correlated, then even if $\alpha_{0001} = 0$, one would still obtain $\alpha_1 > 0$ as $\alpha_1$ picks up the effect of $V \text{ AC}$ since it is not held constant in the original model.