

## Model Calibration

Calibration of the EDMP model is an iterative process of adjusting the Hessian elements of activities through which the model is calibrated to match the equilibrium prices and quantities to the desired degree of accuracy. As illustrated in figure 6, initial values of intercepts of supply and demand processes are set as the product of the Hessian element *times* the target quantity of that activity *plus* the target price of the commodity for demand activities, and *plus* the residual net cash income of the activity for supply activities. The optimal solution for these initial intercept estimates will generally only approximately match the target prices and quantities. One or more intercepts are then perturbed by a positive or negative additive adjustment based on the deviation of the current optimal solution for that activity from its target price or quantity. If a higher price or quantity is needed, the adjustor should be positive for demand activities or negative for supply activities. A good first approximation for the adjustor is the product of the Hessian element times the deviation of the current activity level from its target level. The model is then re-solved with the adjusted intercept values, and the new optimal solution should show several activities converging toward the target values. This process is repeated iteratively for all activities until the desired level of accuracy for all prices and quantities is attained. Once the desired level of accuracy has been attained by adjusting intercepts, all Hessian elements are divided by the ratios of adjusted intercepts to initial intercepts, and the intercepts are returned to their initial values. The optimal solution to this final model will match the optimal solution of the next-to-final model. This last calibration step accomplishes two necessary conditions of a calibrated model: (1) it restores all demand elasticities to their original values (all linear demand functions with a common intercept have identical elasticities at a given price) and (2) it restores all intercept values to estimates based solely on model data (no artifacts of calibration are left in the intercept values).

Figure 6

### Calibration of EDMP models

