Appendix (to be published on-line)

Note that for ease of explanation we frame the game as an ordering decision by the retailer who faces uncertain customer demand and orders from a supplier.

A.1 Written Instructions Given to Subjects for Treatment 1 (T = 8, B = 25, T = 8, B = 5)

In today's study, you will participate in two games where you will earn money based on your own decisions. If you follow the instructions carefully and make good decisions, you could earn a considerable amount of money. The unit of currency for this session is called a franc.

Description of the Game: You sell widgets. In this game you order widgets over multiple rounds from a supplier. You find out the customer demand after you place your order.

Your decision is to select the **Order-up-to quantity**. The system automatically places an order every period to bring the inventory to this Order-up-to quantity.

If you have unsold widgets at the end of a period, called **Overages**, those widgets will be carried over to the beginning of the next period, and the holding cost of each widget in inventory is **1 franc**.

If you do not have enough widgets to meet the customer demand, those widgets are your **Backlog**, which will also be carried over to the beginning of the next period, and the cost of each widget in backlog is also **1 franc**.

Example: Suppose Starting Inventory is 10 and you selected the Order-up-to quantity to be 50. The system automatically orders 40 units to bring the inventory to 50 (10 + 40 = 50). If the customer demand during this period is 30. Then

Ending Inventory = 50 – 30 = 20, and your overage cost is 20 x 1 = 20 francs.

If the customer demand this period turns out to be 80 then

Ending inventory = 50 – 80 = -30. The backlog of 30 costs 30 x 1 = 30 francs.

Customer Demand: Customer demand is an integer from **1** to **100**, with each integer from 1 to 100 being equally likely. Demand in one period has no effect on demand in any other period.

How you make money: Your decision is to select the Order-up-to quantity. This level will be used for **8** periods. You will make **50** decisions in each of the two games. Starting Inventory is set to 0 at the beginning of each block of 8 periods.

Each period you also receive a fixed revenue amount called **Endowment**.

At the end of the 8 periods your cumulative fill rate is calculated as follows:

Fill Rate = 1 - (Total Backlog / Total Customer Demand)

If your Fill Rate is at least 0.95, you will be paid a bonus.

In one of the two games you play today, the bonus will be **200** francs and the Endowment will be **30** francs. In the other game the bonus amount will be **40** francs and the Endowment will be **40** francs.

Your profit for each block of 8 periods is:

Profit = Total Endowment
- The Total Overage and Backlog Cost
+ Bonus if your fill rate is at least 0.95

Example: Suppose the bonus is 200, Endowment amount is 30, and customer demand in 8 of the periods is as follows: 10, 60, 40, 70, 90, 5, 30, 80. Suppose you set Order-up-to quantity to 50. Then the results of the game are:

Period	Endowment	Order-up-to Quantity	Customer Demand	Overage	Backlog	Overage/ Backlog Cost
Total	240		385	115	100	215
8	30	50	80	0	30	30
7	30	50	30	20	0	20
6	30	50	5	45	0	45
5	30	50	90	0	40	40
4	30	50	70	0	20	20
3	30	50	40	10	0	10
2	30	50	60	0	10	10
1	30	50	10	40	0	40

The Fill Rate = 1 - (100/385) = 0.74
Since your Fill Rate is below 0.95 you do not receive a bonus. Your total profit is:

240 – 215 = 25 francs

Now suppose you set Stocking Level to 90:

Period	Endowment	Order-up-to Quantity	Customer Demand	Overage	Backlog	Overage/ Backlog Cost
Total	240		385	335	0	335
8	30	90	80	10	0	10
7	30	90	30	60	0	60
6	30	90	5	85	0	85
5	30	90	90	0	0	0
4	30	90	70	20	0	20
3	30	90	40	50	0	50
2	30	90	60	30	0	30
1	30	90	10	80	0	80

The Fill Rate = 1 - (0/385) = 1.0
Since your Fill Rate is above 0.95 you receive a bonus of 200. Your total profit is:

240 – 335 + 200 = 105 francs

How you will be paid: You will participate in two separate games, each including 50 decisions. The games will differ in the bonus and Endowment amounts. Your total earnings from both games will be converted to U.S. dollars at the rate of 800 francs per dollar, added to your participation fee of $5 and paid to you in cash at the end of the session. To access the game, please type the URL: http://lema.smeal.psu.edu/auctiongame.