4301 A, 2019 Fall, HW 2, Due: 9/3

1. (5) What are the characteristics of certain sectors in the information technology, such as in Games, popular consumer software, phone apps? Based on the economies of scale, what tends to be the consequences?
2. (5) Please give a concrete example of diseconomies of scale.
3. (5) Please list a major benefits of economies of scale at macro level and a major drawbacks of economies of scale at the macro level?
4. (5) Please give an example of deterministic economic uniformity.
5. (40) If the demand for raw materials is 60 pallets/week. The cost is $100/pallet. The holding cost for the product is $1 per pallet per week. The ordering cost is $200 per order.
   1. What is the economic order quantity and its associated inventory related cost.
   2. If you round the order quantity to the nearest 100s, what is the order quantity and its associated cost?
   3. What is the inventory related cost per unit of demand at EOQ?
   4. If someone can double the demand, and all other parameters stay the same, what is the inventory related cost per unit of demand?
6. (40) A car assembly plant receive weekly deliveries of engines from a supplier in Europe. The order leadtime plus transient time is 1 week. The weekly demand distribution for one model can be approximated by . When short, the engine will be air lifted at an extra cost of $100 each engine. The cost of holding one engine for one week is $15.
   1. Please find the safety stock level and its associated number of overage, underage and total cost.
   2. A smart IE applied demand management via incentives, model consolidation, mass customization to reduce the weekly demand variations. The new demand follows . Please repeat last part.