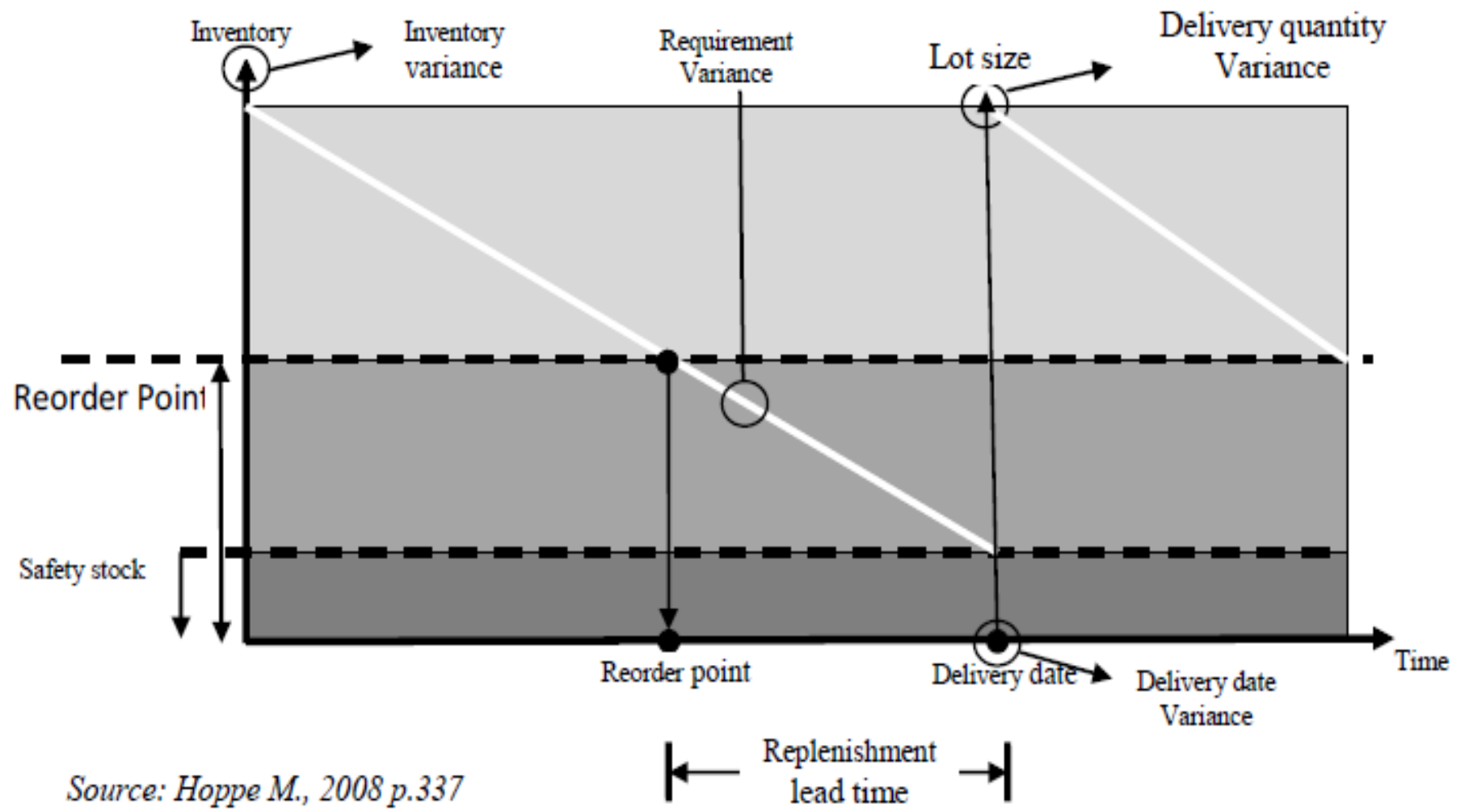


Safety Stock

- Safety stock is defined as inventory that is carried to prevent stock out and back order situations.
- Safety stock is also known as a “buffer”.

Safety stock protects against various deviations, such as:

- Delivery date variances (when the replenishment lead time varies)
- Requirement variances (when the forecast is inaccurate)
- Delivery quantity variances (when the vendor does not deliver enough materials or the quality of delivered materials is poor)
- Inventory variances (when inventory recognizes a deviation between the plan and actual inventory)

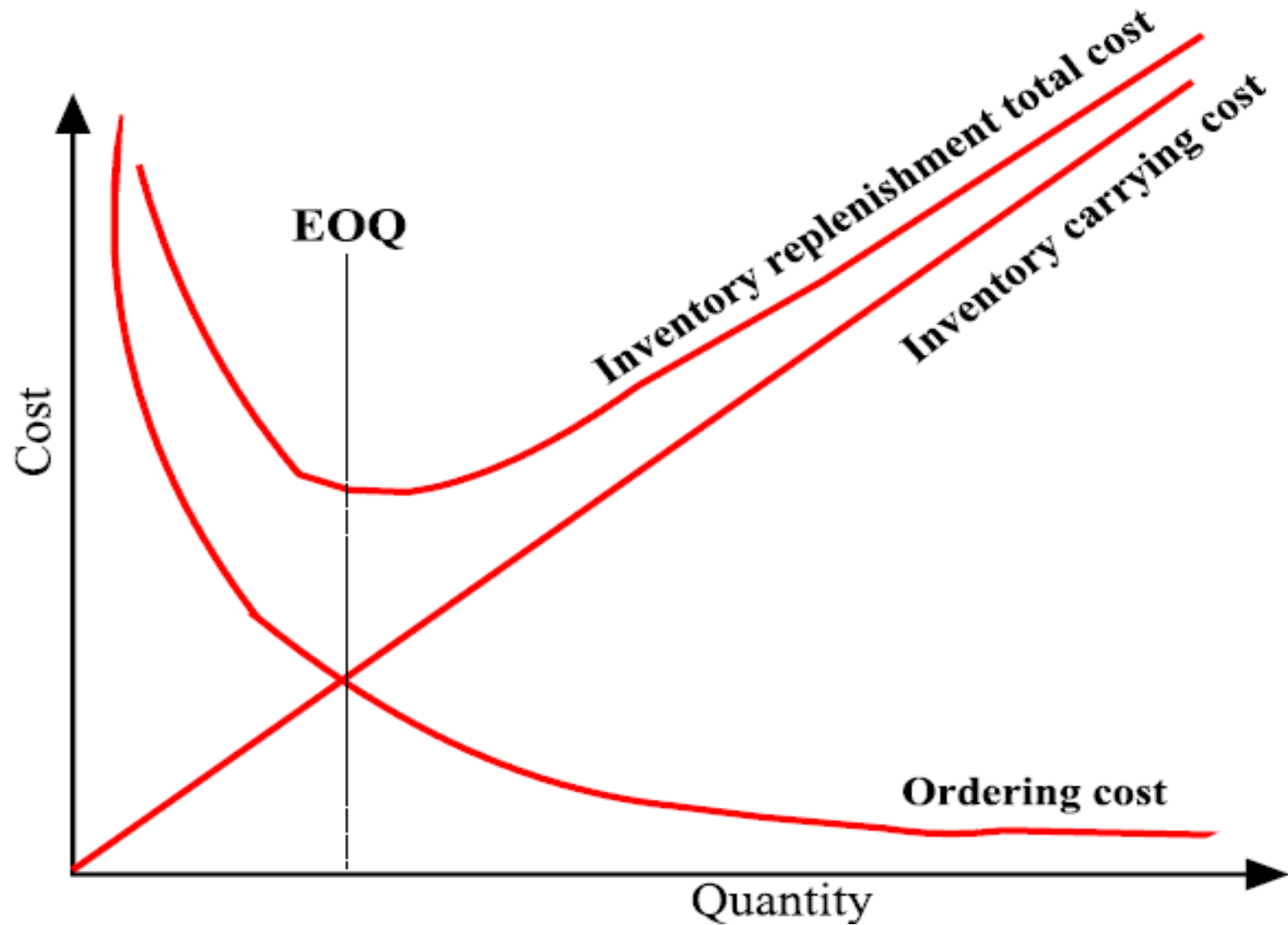


Source: Hoppe M., 2008 p.337

Economic Order Quantity (EOQ): Model description

- The EOQ model is a simple deterministic model that illustrates the trade-off between ordering and inventory costs.
- Consider a single warehouse facing constant demand for a single item. The warehouse orders from the supplier, who is assumed to have an unlimited quantity of the product.

Economic order quantity



Formula was created in 1913, named also Wilson formula by creator.

S= ordering cost (€ / order).

D= Yearly demand (units)

C= Inventory carrying per year, expressed as percentage or coefficient of average stock value (e.g. 25% or 0,25)

V= landed cost per unit (purchase price + freight & other charges for receiving shipment)

Q= quantity per order (units / order).

$$EOQ = \sqrt{\frac{2DS}{CV}}$$

Reorder Point

- Another important technique used along with the Economic Order Quantity is the Reorder Point (ROP)
- The ROP quantity reflects the level of inventory that triggers the placement of an order for additional units.

To determine the reorder point the following factors need to be at hand:

- Demand - Quantity of inventory used or sold each day
- Lead Time - Time (in days) it takes for an order to arrive when an order is placed
- Safety Stock - The quantity of inventory kept on hand incase there is a unpredictable event like delays in lead time or unexpected demand.

Reorder Point

- If the demand is constant and the lead time is known, then the reorder point is written as:

Reorder Point= Daily usage*Lead time (in days)

- When a safety stock is maintained, then the reorder point is written as:

Reorder Point= [Daily usage*Lead time (in days)]
+safety stock