1.   Introduction
  a.   *Elasticity is a concept with broad applications in economics.*
  b.   *It is the percentage change, usually in quantity, due to a percentage change in something else.*
  c.   *Percentages are used to avoid problems with units.*

2.   The Elasticity of Demand: (% Change in Quantity/% Change in the Price)
  a.   Elasticity is a measure of the responsiveness of quantity demanded or quantity supplied to one of its determinants.   P. 90.
  b.   The price elasticity of demand and its determinants
    i.   The ranges are:
      (1)   Elastic if the ratio is greater than one and
      (2)   Inelastic if the ratio is less than one.
    ii.   Price elasticity of demand is a measure of how much the quantity demanded of a good responds to a change in the price of that good, computed as the percentage change in quantity demanded divided by the percentage change in price.   P. 90.
    iii.   Availability of close substitutes
      (1)   This is the key to price elasticities with those with many substitutes have high elasticities and those with few substitutes having low elasticities.
    iv.   Necessities versus luxuries
      (1)   They are more strongly influenced by income with necessities have low income elasticities and luxuries have high income elasticities.
    v.   Definition of the market
      (1)   They become more elastic as the market is more narrowly defined.
        (a)   Wonder Bread has a higher elasticity than bread.
    vi.   Time horizon
      (1)   More substitutes become available or consumers become aware of them in the long run, thereby, increasing the elasticity.
      (2)   This is true for non-durable goods, but it tends to be the opposite for durable goods.
        (a)   They tend to be elastic in the short run and inelastic in the long run.
  c.   Computing the price elasticity of demand
    i.   Price elasticity = %ΔQ/ %ΔP.
    ii.   Because demand curves are always negatively sloped, price elasticities are usually reported as positive numbers based on their absolute values.
    iii.   The Midpoint Method: A Better Way to Calculate Percentage Changes and Elasticities
      (1)   With two points, using the average avoids getting a different value when you go up versus going down.

      (2)   Price elasticity of demand = $(Q_2 - Q_1)/(Q_2 + Q_1)/2 / (P_2 - P_1)/(P_2 + P_1)/2$

   iv.   *A numerical example:*

Price	Yards	Feet	Inches
$1	*1*	*3*	*36*
$.50	*2*	*6*	*72*

   v.   *In all cases, the elasticity will be 1.*
   vi.   The Variety of Demand Curves
      (1)   The flatter the demand curve that passes through a given point, the greater the price elasticity of demand.
      (2)   The steeper the demand curve that passes through a given point, the smaller the price elasticity of demand.
      (3)   **Figure 1: The Price Elasticity of Demand. P. 93.**
         (a)   Perfectly inelastic,
         (b)   Elasticity less than 1,
         (c)   Elasticity equal to 1,
         (d)   Elasticity greater than 1, and
         (e)   Perfectly elastic.
   vii.   **FYI: A Few Elasticities from the Real World, P. 94.**
      (1)   These are only estimates.
      (2)   Eggs = .1; Beef = 1.6
   viii.   Total revenue and the price elasticity of demand

	Effect on Total Revenue	
	Elastic Demand	*Inelastic Demand*
Price Increases	*Decreases*	*Increases*
Price Decreases	*Increases*	*Decreases*

   ix.   Total revenue is the amount paid by buyers and received by sellers of a good, computed as the price of the good times the quantity sold. P. 94
      (1)   **Figure 2: Total Revenue. P. 95.**
      (2)   **Figure 3: How Total Revenue Changes When Price Changes: Inelastic Demand. P. 96.**
      (3)   **Figure 3: How Total Revenue Changes When Price Changes: Elastic Demand. P. 96.**
   viii.   When demand is inelastic, price and total revenue move in the same

                          direction.

          ix.   When demand is elastic, price and total revenue move in opposite directions.

          x.   If demand is unit elastic (*which is unusual*), total revenue remains constant when the price changes.

    d.   Elasticity and Total Revenue along a Linear Demand Curve

          i.   A linear demand curve is elastic at the top and inelastic at the bottom, so a reduction in price initially increases TR and then eventually reduces it.

          ii.   *However, it would be very unusual for a demand curve to be linear over a broad range of prices.*

          iii.   **Figure 4: Elasticity of a Linear Demand Curve.   P. 97.**

    e.   Other Demand Elasticities

          i.   The income elasticity of demand is a measure of how much the quantity demanded of a goo d responds to a change in consumers' income, computed as the percentage change in quantity demanded divided by the percentage change in income.   P. 98

               (1)   Necessities have low and luxuries high income elasticities.

               (2)   Inferior goods have negative income elasticities.

               (3)   *The high income elasticities of automobiles illustrate the problems associated with inducing people to take public transportation.*

          ii.   The Cross Price Elasticity of Demand is a measure of how much the quantity demanded of one good responds to a change in the price of another good, computed as the percentage change in quantity demanded on the first good divided by the percentage change in the price of the second good. P. 98.

               (1)   The cross price elasticity of a substitute is positive.

               (2)   The cross price elasticity of a complement is negative.

3.   The Elasticity of Supply

    a.   The Price Elasticity of Supply and its Determinants

          i.   Price elasticity of supply is a measure of how much the quantity supplied of a good responds to a change in the price of that good, computed as the percentage change in quantity supplied divided by the percentage change in price.   P. 99

          ii.   Supply elasticities tend to be more elastic in the long run due to changes in supply by existing firms and the entry or exit of firms.

          iii.   However, natural resources are inelastic in the long run and more elastic in the short run.

    b.   Computing the Price Elasticity of Supply

    c.   The Variety of Supply Curves

          i.   **Figure 5: The Price Elasticity of Supply.   P. 101**

               (1)   Perfectly inelastic

(2)   Elasticity less than 1
(3)   Elasticity equal to 1.
(4)   Elasticity greater than 1.
(5)   Perfectly elastic.
    ii.   **Figure 6:   How the Price Elasticity of Supply Can Vary.   P. 100.**
4.   Three Applications of Supply, Demand, and Elasticity
    a.   *These are good examples of elasticity.*
    b.   Can Good News for Farming Be Bad News for Farmers?
        i.   An increase in supply (due to hybrids, for example) in an environment of inelastic demand causes total revenue to fall.
        ii.   **Figure 7: An Increase in Supply in the Market for Wheat.   P. 103.**
    c.   Why Did OPEC Fail to Keep the Price of Oil High?
        i.   A short term reduction in supply that increases the price causes additional entry shifting the supply curve and also causing supply and demand to become more elastic in the long run reducing the price.
        ii.   **Figure 8: A Reduction in Supply in the World Market for Oil.   P. 105.**
    d.   Does Drug Interdiction Increase or Decrease Drug Related Crime?
        i.   Because demand is inelastic, a reduction in supply increases total revenue increasing profits and potential street crime.
        ii.   An alternative policy would be to attempt to shift demand through education.
        iii.   While the short term effect of a price increase is small, some have argued that the long term effects are much larger.
        iv.   **Figure 10:   Policies to Reduce the Use of Illegal Drugs. P. 106.**

5.   Conclusion

6.   Summary