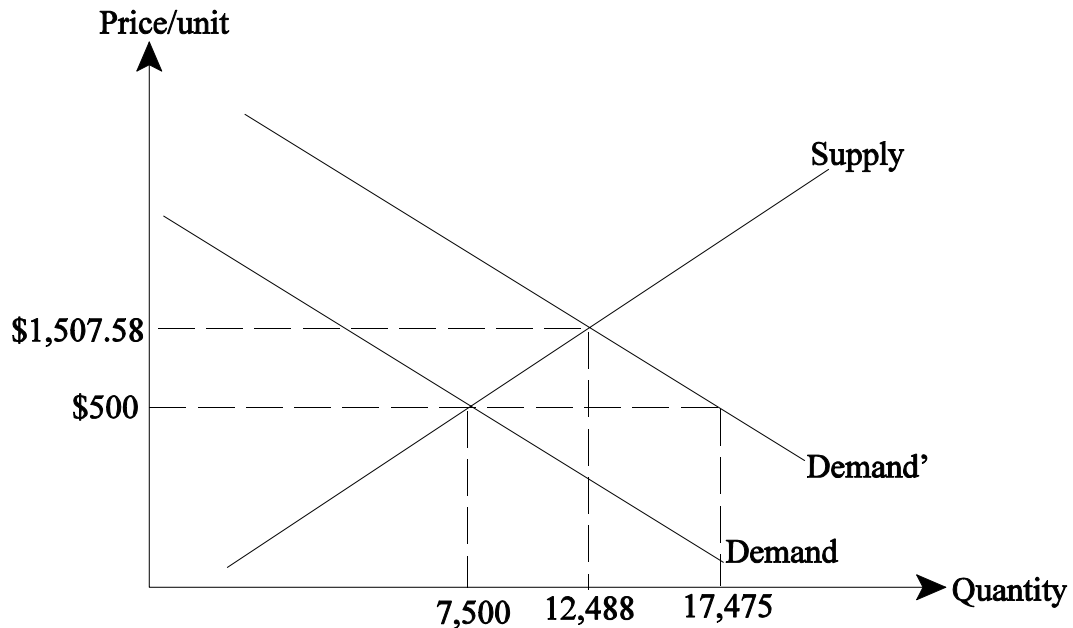


Problem Set #2-Key

Use the supply and demand equations for housing in Rohnert derived in questions 8 and 9 of homework #1 to answer the following questions. Use the post increase demand equation of question 7.

- (1) Suppose that a group of Sonoma State University students, upset about the increase in local rent, successfully lobby the Rohnert Park City Counsel to impose a ceiling on rent. The city counsel sets a maximum rent that landlords can charge at the original amount of \$500 per month.

Figure 1

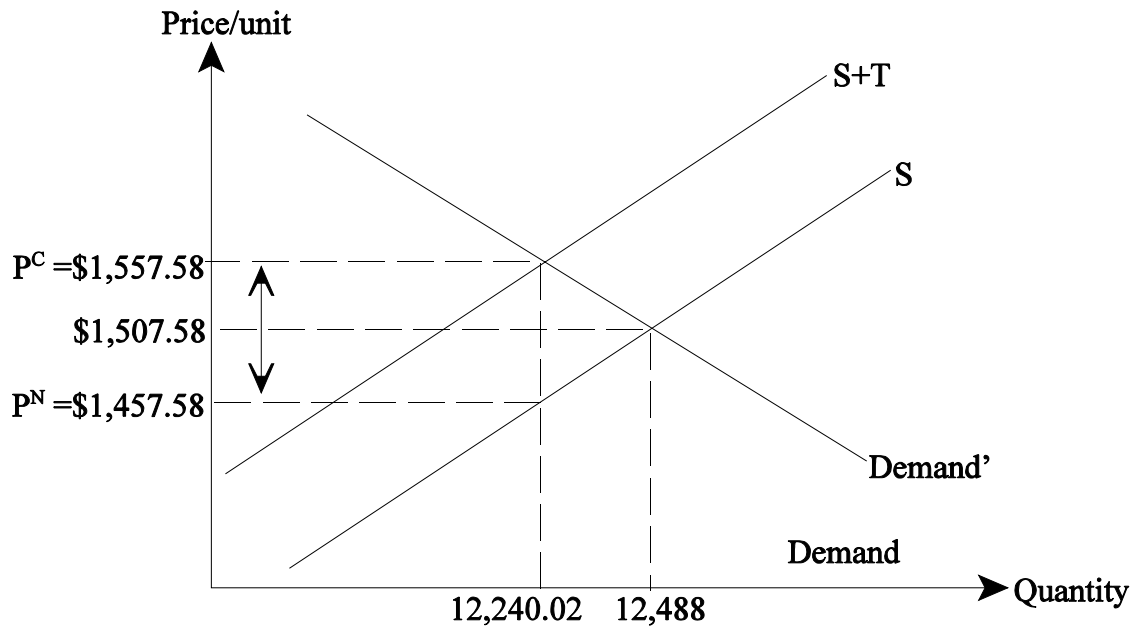


- (a) Explain the effects on the quantity supplied and demanded of rental housing after the imposition of rent control?
- (b) Calculate the new levels of housing supplied and demanded resulting from the rent ceiling. Show graphically.

Quantity demanded increases to $Q^D = 19,950 - 4.95(500) = 17,475$.
While quantity supplied falls to $Q^S = 5,025 + 4.95(500) = 7,500$,
which results in a shortage of $17,475 - 7500 = 9,975$.

- (c) Discuss who benefits and who loses under the rent control program.

Figure 2



- (2) Suppose that instead of a rent ceiling, the city of Rohnert Park decides to impose an excise tax of \$100 per unit of housing on landlords (i.e., suppliers of housing).

With the imposition of a tax consumers and producers now face different prices:

$$Q^{D'} = 19,950 - 4.95P^C$$

$$Q^S = 5,025 + 4.95P^N$$

where,

$$P^C = P^N + T$$

$$P^N = P^C - T$$

Set $Q^S = Q^D$, substitute for either P^C or P^N and solve for the other.

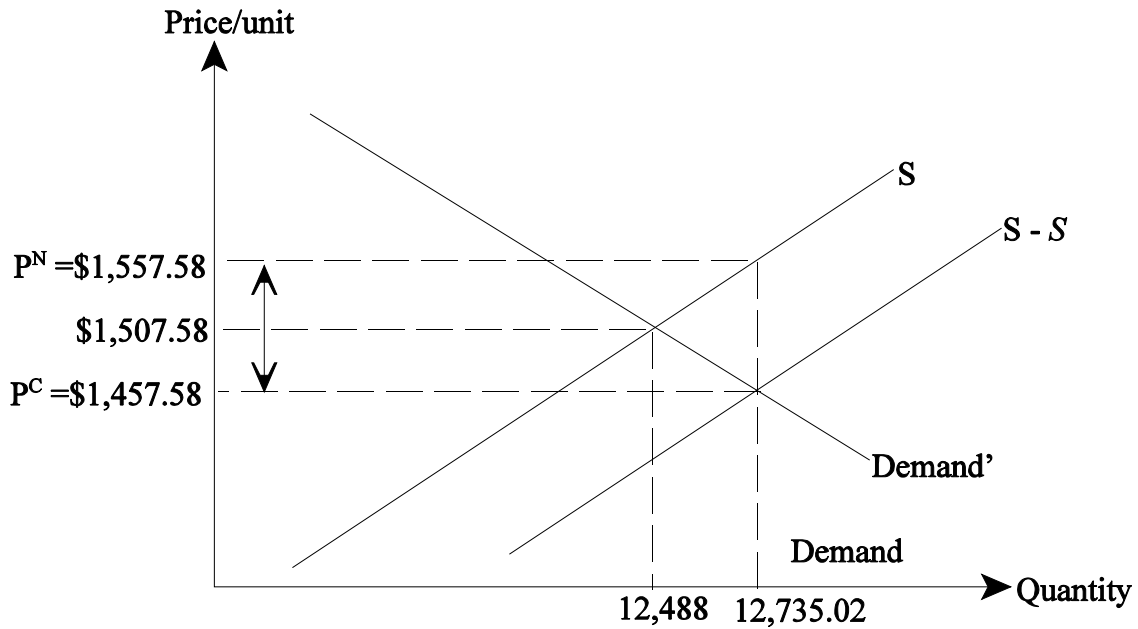
$$19,950 - 4.95(P^N + T) = 5,025 + 4.95P^N, \text{ which gives:}$$

$$P^N = 1507.58 - \frac{1}{2}T$$

$$P^C = 1507.58 + \frac{1}{2}T$$

- (a) What is the after tax rent paid by renters? Show graphically.
 $P^C = 1557.58$

Figure 3



- (b) What is the net rent retained by landlords? Show graphically.
 $P^N = 1457.58$
- (c) What is the new equilibrium quantity of housing? Show graphically.
 $Q_1 = 12,240.02$
- (d) Who bears the burden of the tax?
 The tax is equally shared.
- (e) What is the amount of tax revenue? Show graphically.
 $\text{Tax Revenue} = 100(12,240.02) = \$1,224,002$

(3) Suppose now a subsidy is proposed. That is, the city of Rohnert Park decides to pay landlords \$100 for every unit of housing provided.

With the imposition of a subsidy consumers and producers now face different prices:

$$Q^{D'} = 19,950 - 4.95P^C$$

$$Q^S = 5,025 + 4.95P^N$$

where,

$$P^C = P^N - S$$

$$P^N = P^C + S$$

Set $Q^S = Q^{D'}$, substitute for either P^C or P^N and solve for the other.

$$19,950 - 4.95(P^N - S) = 5,025 + 4.95P^N, \text{ which gives:}$$

$$P^N = 1507.58 + \frac{1}{2}S$$

$$P^C = 1507.58 - \frac{1}{2}S$$

- (a) What is the post subsidy rent paid by renters? Show graphically.

$$P^C = 1457.58$$

(b) What is the post subsidy rent retained by landlords? Show graphically.

$$P^N = 1557.58$$

(c) What is the new equilibrium quantity of housing? Show graphically.

$$Q_1 = 12,735.02$$

(d) What is the total amount of the housing subsidy paid to landlords? Show graphically.

(4) Based on your answers in 2- 4, which of the three programs used to improve housing conditions in Rohnert Park, which would you suggest Rohnert Park adopt? Explain why.