Assessing Post-Harvest Labor Shortages, Wages, and Welfare

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and prunus (peach) industries and economic welfare?

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  □ 5.4% fruit demand increase shock, -7% unskilled labor shock
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- Result

  - Firms are better off with low fixed wage
  - Prunus more severely affected by shocks

☐ Pre-harvest labor shortages (Richard and Patterson, 1998)

Introduction

- Pre-harvest labor shortages (Richard and Patterson, 1998)
- Post-harvest labor force
    - Sorting
    - Packing
    - Moving
    - Distributing
    - Marketing

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- [ ] Partitioning labor force into skilled and unskilled, analyzing post-harvest labor market
- [ ] Provide how much a wage increase is needed to meet the equilibrium wage in the post-harvest labor market

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  ☐ Pome and prunus draw from same labor markets
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    - Insert the calculated wages into each commodity market
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- Compare post shock CE to fixed wage scenario

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- ☐ Partition into pre- and post-harvest occupations
- ☐ Further refine the employment and wage data by occupation

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- ☐ Source: Onetonline.org

- Partition post-harvest occupations by skill
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- Five categories based on skilled needed
    - Level 1-2: unskilled
    - Level 3-5: skilled

- ☐ Pome and prunus industries
- ☐ Price and output data for apples and peaches (USDA)
- ☐ Total fresh fruit production delivered to consumers, less than the harvest quantity
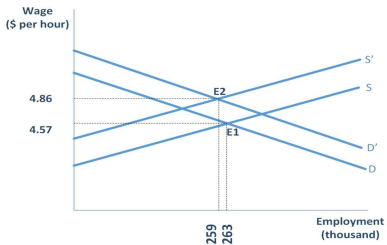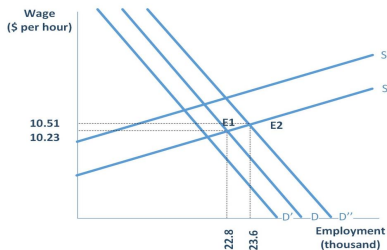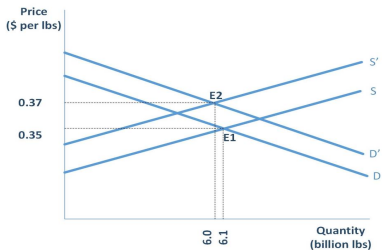
Parameters

| Parameter	Description	Value
η_{pome}	Price elasticity of the industry demand for pome	-0.83[a]
η_{prunus}	Price elasticity of the industry demand for prunus	-3.54[b]
$\eta_{pome,prunus}$	Cross Price elasticity of the demand for pome to prunus	0.05[c]
$\eta_{prunus,pome}$	Cross Price elasticity of the demand for prunus to pome	0.46[c]
e_s	Supply elasticity for skilled labor input	0.73[d]
e_u	Supply elasticity for unskilled labor input	3.37[e]
σ	Elasticity of substitution between skilled labor input and unskilled labor input	1.10[f]

Sources: [a] Lin et al (2009), [b] Gunter et al (1992), [c] Price (1979), [d] Duffield(1990), [e] Perloff (1991), [f] Card and Lemieux (2001)

☐ Gallardo et al (2014)

    ☐ Shock the demand curve for the final output by 5.4% for both the pome and prunus industry

        ☐ Population growth

        ☐ Increase demand and price

    ☐ Shock the supply of unskilled labor in 7%

        ☐ Projected immigration law

        ☐ Decrease supply of unskilled labor and increase wage

Commodity Market Graph: Pome Market
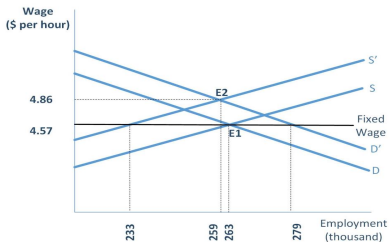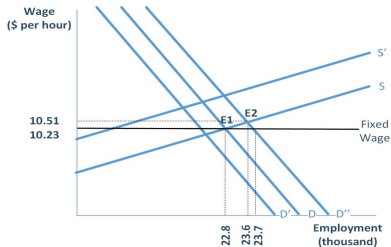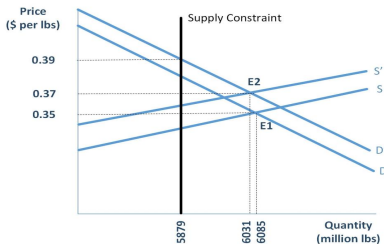
Commodity Market Table

	Pome			Prunus		
Surplus	Before Shock	After shock	After shock (fixed wage)	Before Shock	After Shock	After Shock (fixed wage)
Commodity Market (million $)						
Consumers	1369.1	1344.9	1278.7	80.9	77.1	61.9
Firms	593.3	582.0	646.7	29.9	28.2	42.5
Total	1962.4	1926.9	1925.4	110.8	105.3	104.4
Skilled Labor Market(thousand$ per hour)						
Skilled	88.3	94.8	88.3	133.7	140.2	133.7
Firms	831.6	892.7	898.1	831.6	870.8	876.7
Total	919.9	987.5	986.4	965.3	1011.0	1010.4
Unskilled Labor Market(thousand$ per hour)						
Unskilled	384.2	372.6	301.4	104.2	86.3	44.5
Firms	505.5	490.2	552.8	132.8	138.3	162.4
Total	889.7	862.8	854.2	237.0	224.6	206.9
Total Firms (million $)						
Total Firms	594.6	583.4	648.2	30.9	29.2	43.5

Conclusion

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- ☐ Deadweight loss
- ☐ Firms increase surplus and are better off

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