

Chapter 4 (pp 170-202)

February 15, 2017

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- Estimados Profesores de la Licenciatura en Economía:
- Por este medio se les hace una cordial invitación para asistir junto con su grupo, en la medida de sus posibilidades, a la Conferencia "Servicios de Información del **Banco de México**" a cargo de los expositores **María Guadalupe Castro Suárez** e **Isaac Vivas Escobedo**, representantes de dicha institución. El evento se llevará a cabo el próximo **miércoles 22 de Febrero a las 13:00 hrs. en el Auditorio B-1 de la DCEA.**
- Se agradecerá el que hagan extensiva la invitación a sus alumnos, con el fin de que aprovechen esta excelente oportunidad.
- Atentamente

Questions for the Bank of Mexico representatives

- Does the Bank of Mexico adjust interest rates when the Federal Reserve in the United States changes its policy rate?
- Why is the Mexican peso declining so much against the dollar?
- What is the Bank of Mexico's inflation target?
- Do you know of a data source for domestic investment? All we can find is net foreign direct investment.
- Mexico is unusual because consumption in the GDP accounts is more volatile than GDP itself. This is not the case for the United States or Europe. Do you know why this is the case? Is it related to problems measuring business investment spending?

Chapter 4. Trade in Labor and Goods

- Show how to use the simple model of Chapter 2 to show the gains from trade.
 - Step 1. Derive autarky cases for decentralized model
 - Step 2. Introduce trade with aggregate constraints on labor and consumption.
 - Step 3. Derive the equilibrium wage rate and use it so solve for all equilibrium values.
- Explain how this model can be used to study the economic effects of trade policies.

Homework for Feb 15

- Read chapter 4 (pages 143-174)
- Replicate figures 4.1, 4.2, 4.3 and 4.5

Note: You will be required to derive the equations that are needed to replicate each of the figures. On exams I may ask you to draw figures, but they will be qualitative, not exact mathematical solutions.

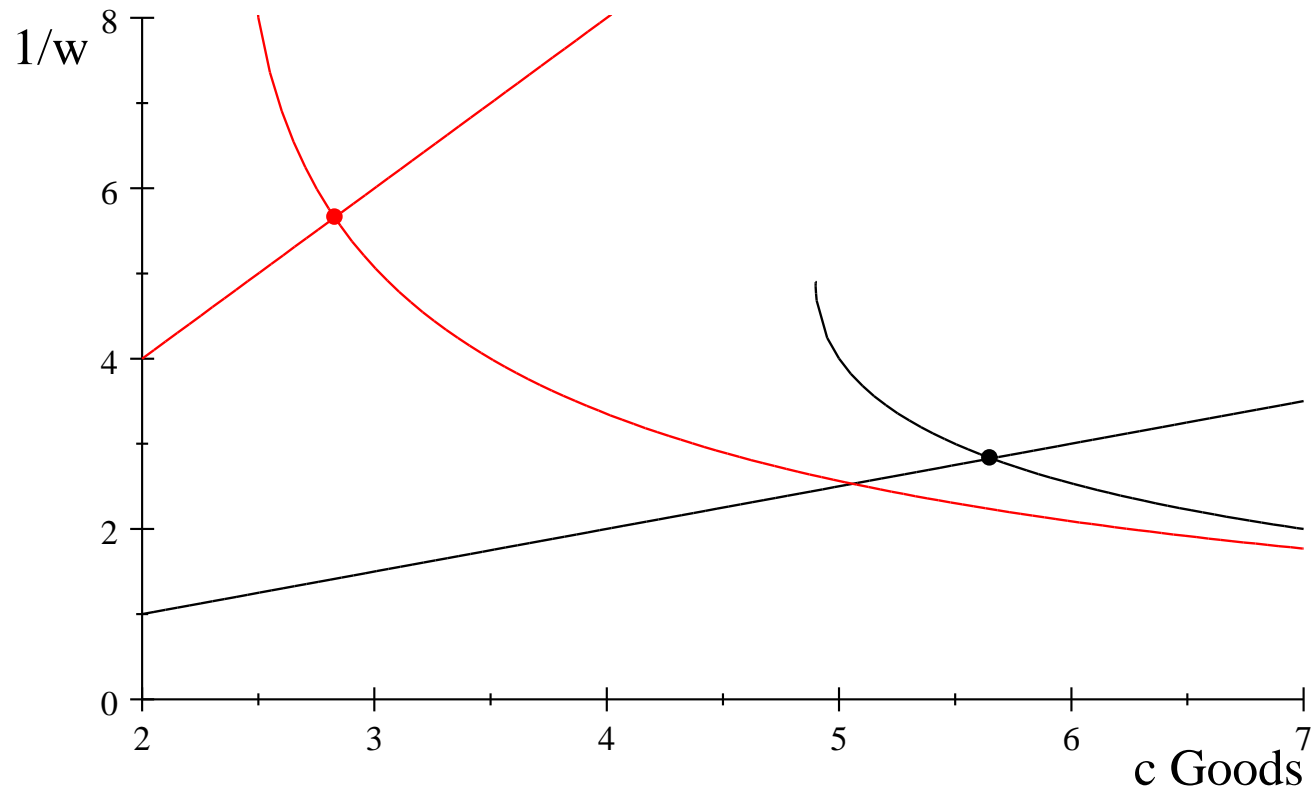
Quiz 8

- How is the basic model with microeconomic foundations modified to study international trade?
- What is autarky? For a household? For a nation?
- What are the constraints that are changed in order to solve a 2-agent model with trade?
- In theory, who should benefit more following a bilateral trade agreement between the United States and Mexico? Why?
- Why do you think Donald Trump is friendly to Canada on NAFTA but not to Mexico?

Set up the 2-agent model of trade

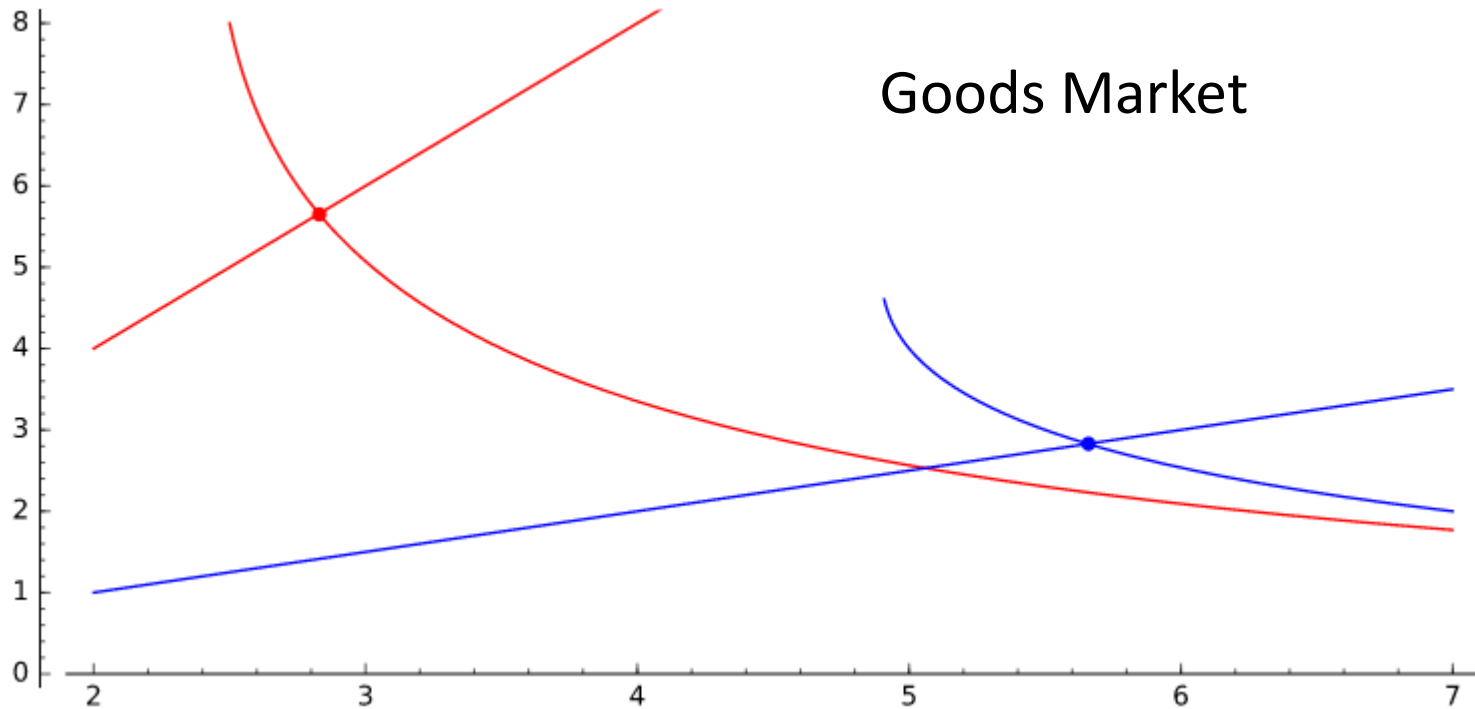
- Write out the equations for the two agents {A, B}
- As in examples 2.3-2.6: $T = 24$; $\alpha = 1$; $\gamma = 0:5$;
- $A_G=1$ for Agent A and $A_G=2$ for Agent B
- Write out the MRX_{c_x} for each agent
 - What is the labor supply for each agent?
 - What is consumption for each agent?
- Write out the utility function and the profit maximization equation for the decentralized agents. Compute the wage for each agent.
- See Homework for February 20

Figure 2.12. Productivity Increase in the Goods Market in Example 2.6



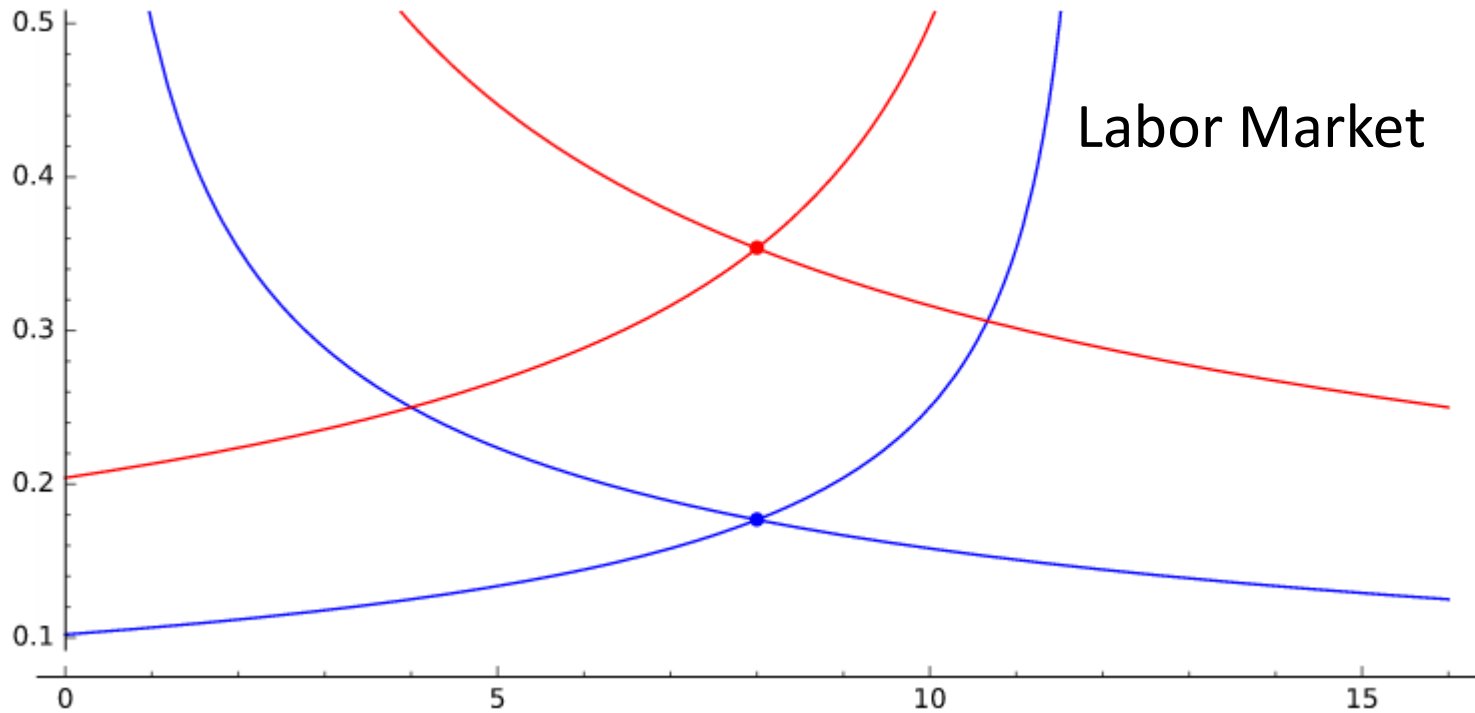
Note that this is the same as Figure 4.1, where we assume that there are two agents with different technology for producing goods.

Figure 2.12 (Same equations as Figure 4.1) Different productivity levels for Agents A and B



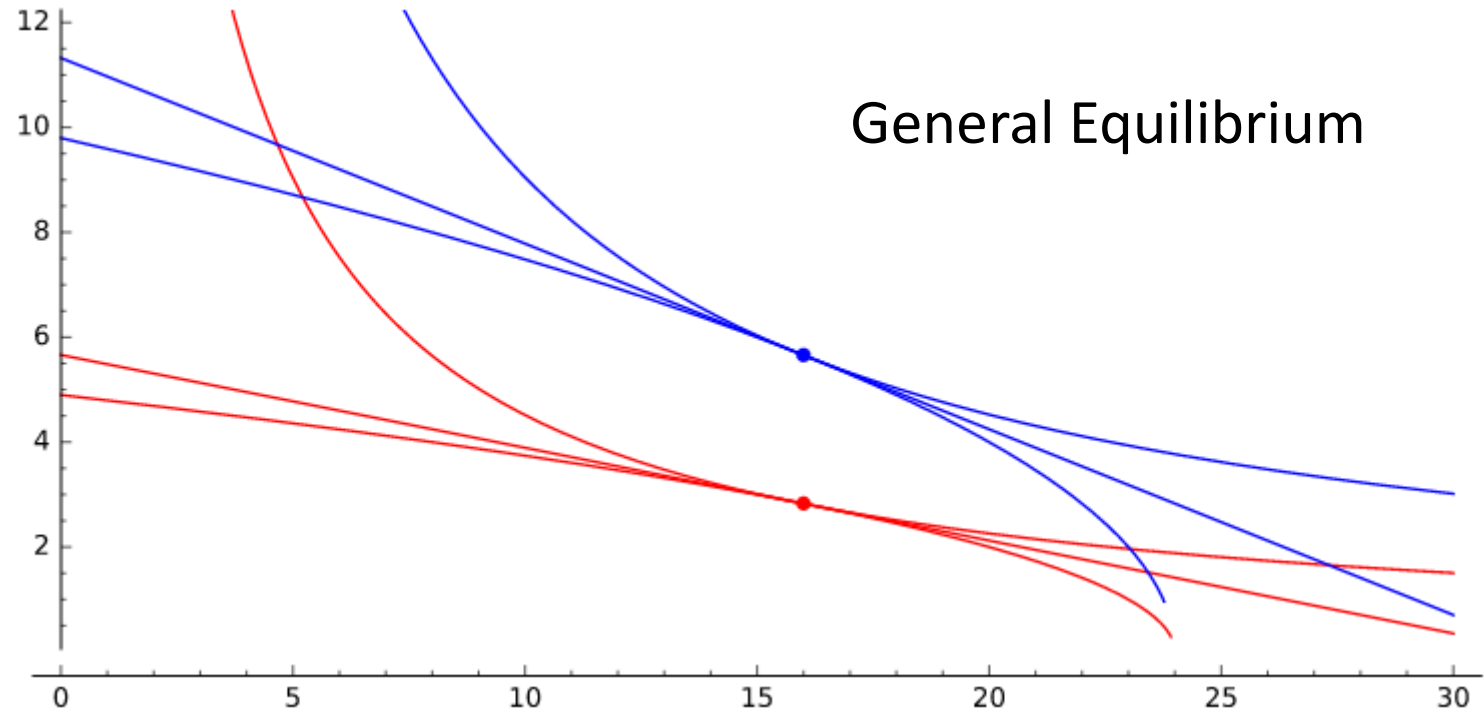
```
plot(2*c, 2, 7, ymin=0, ymax=8, color='red') + plot(4*c-4*(c^2-6)^.5, 2.5, 7,
ymin=0, ymax=8, color='red')+point((2.83,5.65), size=30, color='red')+plot(c/2, 2,
7, ymin=0, ymax=8) + plot(c-(c^2-24)^.5, 2.5, 7, ymin=0,
ymax=8)+point((5.66,2.83), size=30)
```

Figure 2.13 (same equations as Figure 4.2)



```
plot(1/2*(1/l^.5), 0, 16, ymin=0.1, ymax=0.5) + plot(1/(96-8*l)^.5, 0, 16,
ymin=0.1, ymax=0.5)+point((8,.177), size=30)+ plot((1/l^.5), 0, 16, ymin=0.1,
ymax=0.5, color='red') + plot(1/(24-2*l)^.5, 0, 16, ymin=0.1, ymax=0.5,
color='red')+point((8,.354), size=30, color='red')
```

Figure 2.14 (Same equations as Figure 4.5)



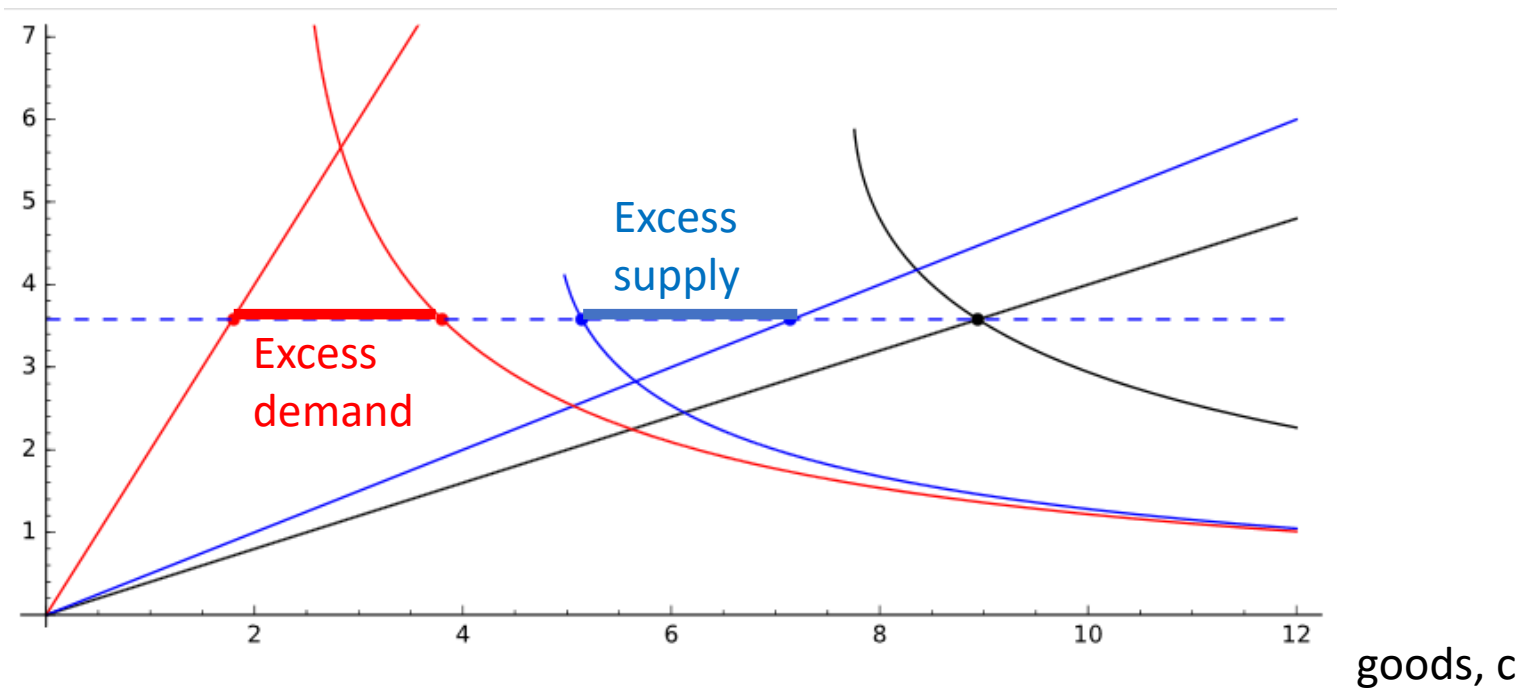
```
plot((1/x)*e^3.81, 0, 30, ymax=6, color='red') + plot((24-x)^.5, 0, 30, color='red')
+ plot(-.177*x+2.83+0.177*16, 0, 30, color='red') + point((16,2.83), size=30,
color='red')+plot((1/x)*e^4.505, 0, 30, ymax=12) + plot(2*(24-x)^.5, 0, 30) +
plot(-.354*x+5.66+0.354*16, 0, 30) + point((16,5.66), size=30)
```

Quiz 8

- How is the basic model with microeconomic foundations modified to study international trade?
- What is autarky? For a household? For a nation?
- **What are the constraints that are changed in order to solve a 2-agent model with trade?**
- In theory, who should benefit more following a bilateral trade agreement between the United States and Mexico? Why?
- Why do you think Donald Trump is friendly to Canada on NAFTA but not to Mexico?

Figure 4.3 Goods Market with Trade (AD/AS)

$1/w$

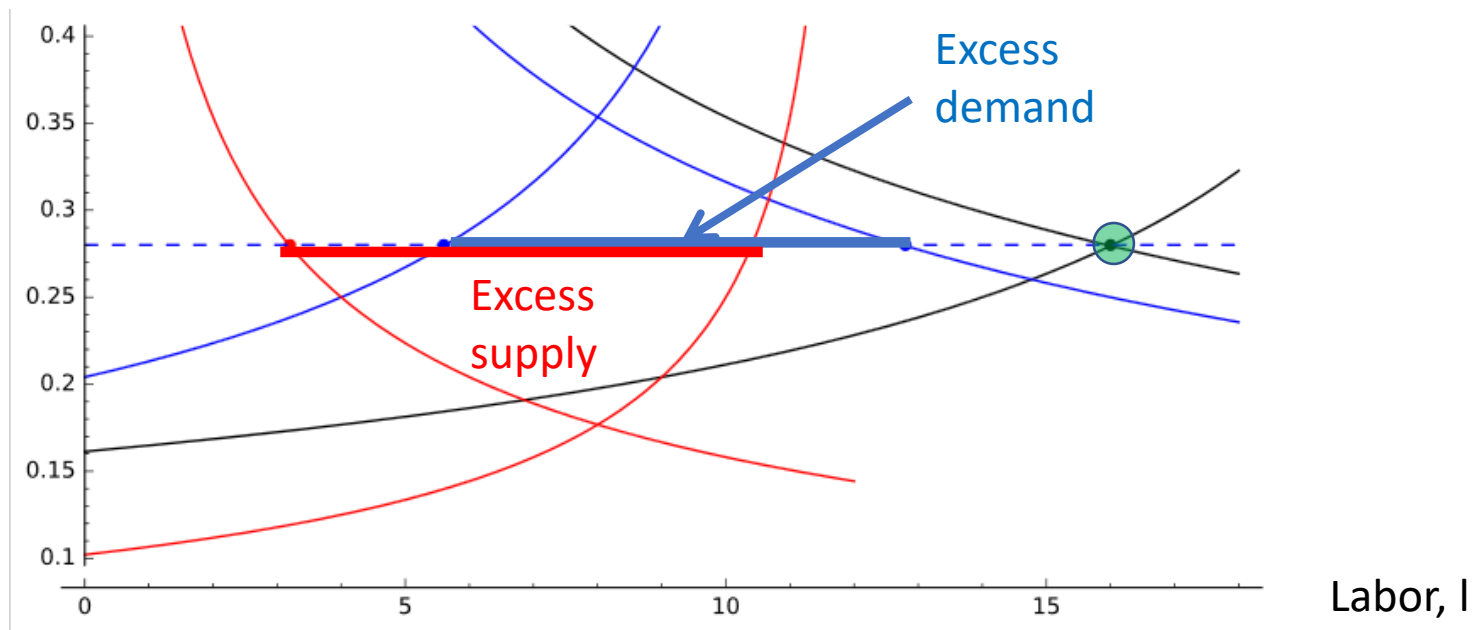


```

plot((4/5)*(c-(c^2-60)^.5), 0, 12, color='black')+ plot(c/2.5, 0, 12,
color='black')+point(( 8.94,3.578), size=30, color='black')+plot((c-(c^2-24)^.5),
0, 12)+ plot(2*c, 0, 12, ymax=7, color='red')+point(( 5.14,3.578), size=30)+
plot(c/2, 0, 12, ymax=7)+ plot((4*c-4*(c^2-6)^.5), 0, 12, color='red' )
+plot(3.578, 0, 12, linestyle='--' )+point(( 7.14,3.578), size=30)+point((
3.80,3.578), size=30, color='red')+point(( 1.80,3.578), size=30, color='red')
    
```

Figure 4.4 Labor Market with Trade

wage, w



```

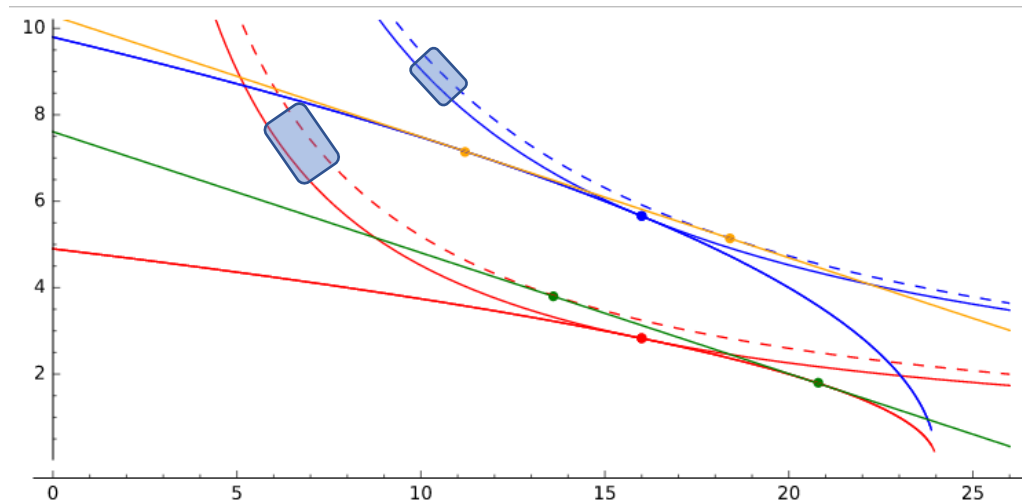
plot((5/(8*(24-l)))^0.5, 0, 18, ymax=0.4, color='black')+ plot((5/(4*l))^0.5, 0, 18,
ymax=0.4, color='black')+ point((16,0.280), size=30, color='black')+
plot(1/(2*(12-l))^0.5, 0, 18)+ plot(1/l^0.5, 0, 18, ymax=0.4)+ point((12.8,0.28),
size=30) + plot(1/(2*(l^0.5)), 0, 12, ymax=0.4, color='red')+ plot(1/(96-8*l)^0.5, 0,
18, ymax=0.4, color='red' ) + plot(0.28, 0, 18, linestyle='--' )+ point((5.6, 0.28),
size=30)+point((3.2,0.28), size=30, color='green')+point((10.4,0.28), size=30,
color='red')
    
```

Quiz 8

- How is the basic model with microeconomic foundations modified to study international trade?
- What is autarky? For a household? For a nation?
- What are the constraints that are changed in order to solve a 2-agent model with trade?
- In theory, who should benefit more following a bilateral trade agreement between the United States and Mexico? Why?
- Why do you think Donald Trump is friendly to Canada on NAFTA but not to Mexico?

Figure 4.5 Equilibrium with Trade

Goods, c



Leisure, x

```

plot((1/x)*e^3.81, 0, 26, ymax=10, color='red') + plot((24-x)^.5, 0, 26,
color='red') + point((16,2.83), size=30, color='red')+plot((1/x)*e^4.505, 0, 26,
ymax=10) + plot(2*(24-x)^.5, 0, 26)+ point((16,5.66), size=30)+
plot((1/x)*e^3.95, 0, 26, ymax=10, color='red', linestyle='--') + plot((24-x)^.5, 0,
26, color='red') + point((16,2.83), size=30, color='red')+plot((1/x)*e^4.55, 0, 26,
ymax=10, linestyle='--') + plot(2*(24-x)^.5, 0, 26)+ point((16,5.66), size=30)+
plot(-0.28*x+.28*13.6+3.8, 0, 26, color='green' ) + plot(-.28*x+.28*18.4+5.14,
0, 26, color='orange' ) + point((18.4,5.14), size=30, color = 'orange') +
point((11.2,7.14), size=30, color = 'orange') + point((13.6,3.8), size=30, color =
'green') + point((20.8,1.80), size=30, color = 'green')
    
```


Figure 4.5 Equilibrium with Trade

Goods, c

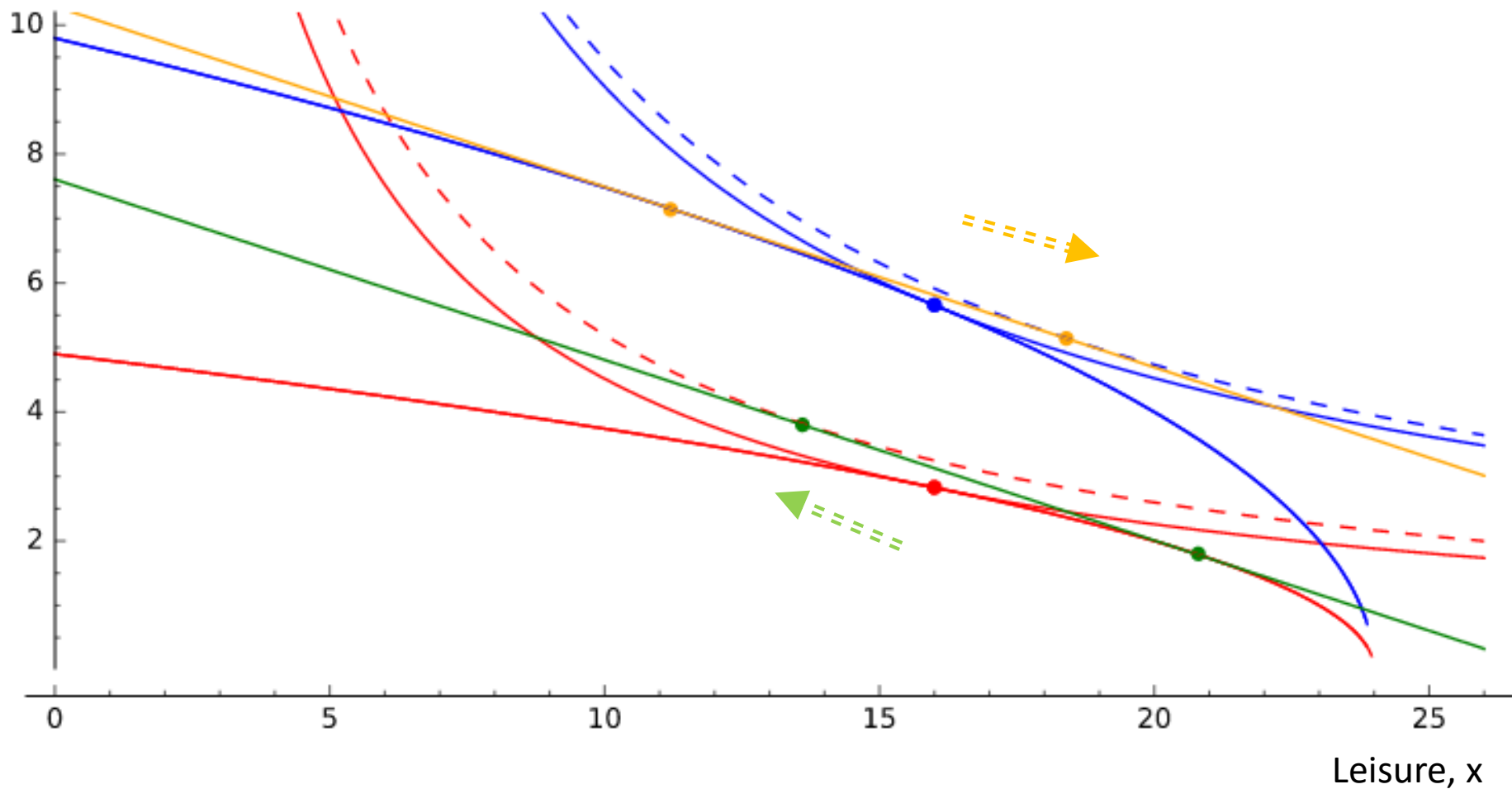


Figure 4.5. General Equilibrium Goods and Labor Markets Under Free Trade in Example 4.3.

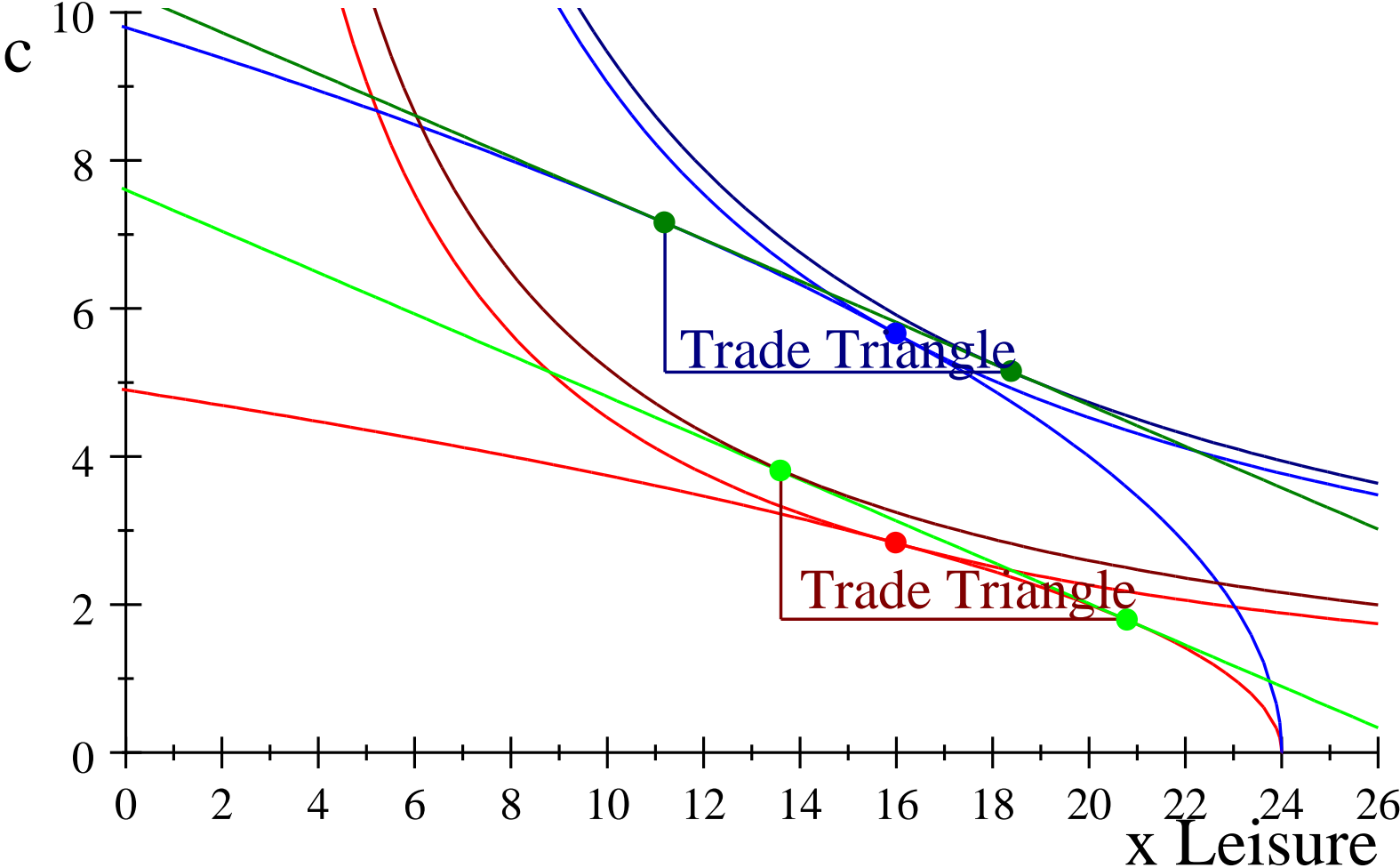
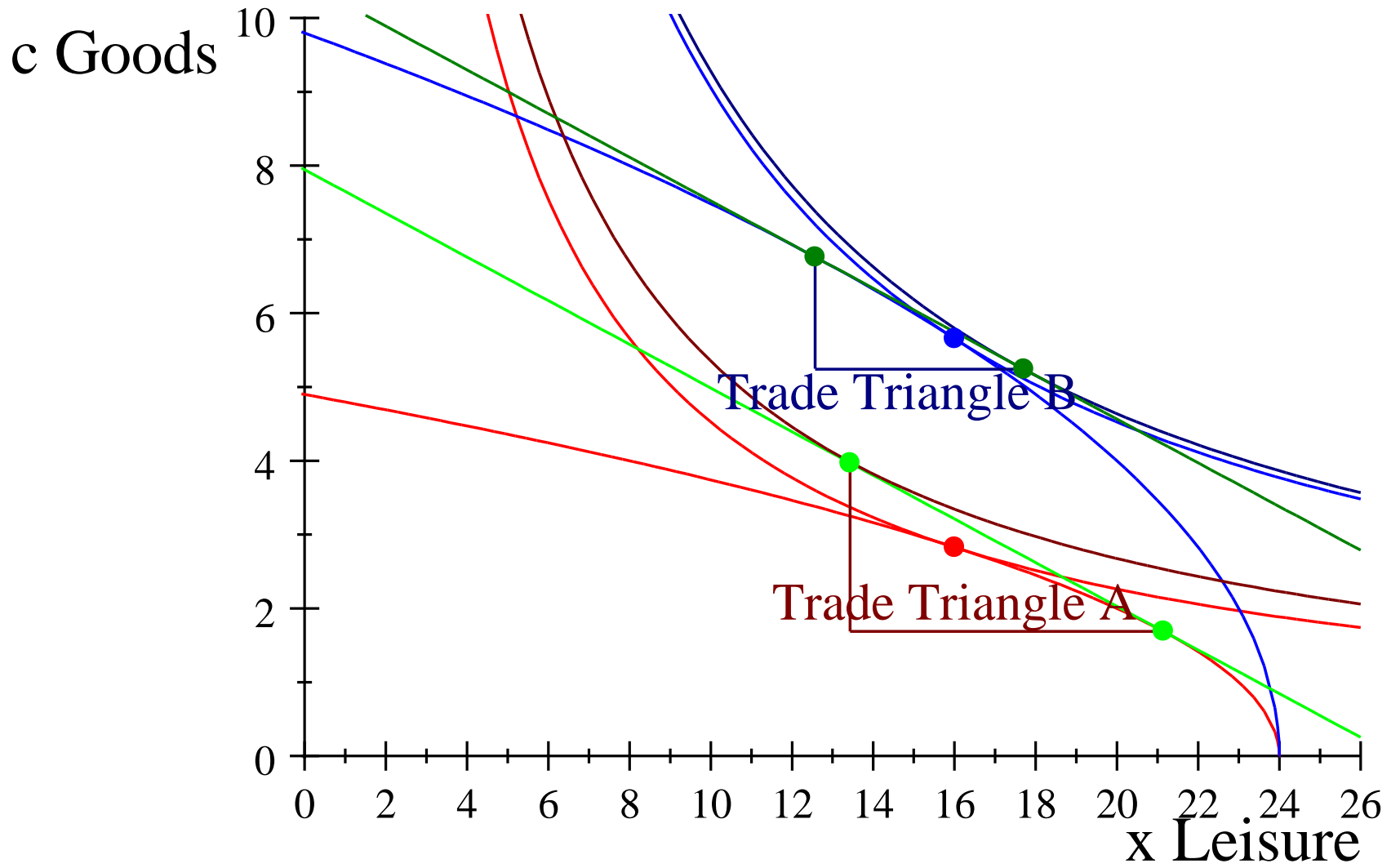


Figure 4.6. Multiple Agents Under Free Trade in Example 4.4.



Immigration Restrictions

- Can the simple model two-agent model of Chapter 4 explain why some people want to have immigration restrictions?
- How has the internet affected immigration flows?
- Between 2000 and 2010, half of all population growth in the United States came from immigration of people across all income classes, but mainly from younger cohorts. What are some effects on the welfare of U.S. residents?

Economic Development Issues (See Hayek, *Capitalism and the Historians*, 1954)

- During the early stages of the industrial revolution in the UK, there was a substantial migration from the countryside to the cities both large and small. Why did people migrate to the cities?
- During this time there was a population explosion. The population of the countryside did not decline, except in relative terms. What caused the surge in population growth?
- Were people who moved to the cities worse off than those who stayed in the countryside?

Homework for Feb 20

- Set up and solve the 2-Agent Model of trade
 - Two agents {A, B} as in example 2.3-2.6: $T = 24$; $\alpha = 1$; $\gamma = 0:5$;
 - $A_G=1$ for Agent A and $A_G=2$ for Agent B
 - Write out the MRX_{c_x} for each agent
 - What is the labor supply for each agent?
 - What is consumption for each agent?
 - Write out the utility function and the profit maximization equation for the decentralized agents. Compute the wage and consumption demand for each agent.
- Read chapter 5 (pages 208-234)