Problem Set 2
Pilgrim’s Pride: The story PBS doesn’t want you to know.

Overview
In this exciting problem set, you will get to learn the real history of the Sesame Street gang … and analyze production choices made by these and other European colonists in North America. Around 1630, the Muppets were not allowed by PBS to worship, sing, count, or name colors freely. Further, they worked long, hard, and dangerous hours for very little wages from PBS. Their prospects of getting ahead on Sesame Street, spiritually & materially, were very limited indeed. Muppet labor was abundant on Sesame Street, and therefore commanded very low wages. Land, meanwhile was very scarce.

♫ Lousy days ♫
♫ Working for so little pay ♫
They treat me like a piece of meat.
♫ Can you tell me, how to get ♫
The heck away from Sesame Street?

The Muppets fled Sesame Street in their covered wagons for the distant, colonial lands. They colonized various lands up to 1,000 kilometers distant from Sesame Street. Note: The entire area was land. There were no oceans in between Sesame Street and the colonies.

All seemed well (they didn’t listen to Cookie). The Muppets simply needed to figure out what to produce in their new world. Despite their differences, Sesame Street was the major trading partner for the Muppet colonies. Sesame Street was the market for goods exported by the Muppet colonies. It was also a source of goods not produced in the Muppet colonies.

Directions
1) Get the (MS Excel for Windows) spreadsheet and open it up.
   Go to http://faculty.tcu.edu/jlovett.
   Go to “U.S. Economic History to 1866”.
   Go to “Chapter Reviews & Handouts”.
   Scroll down to “Problem Set 2” and click on “Spreadsheet”.
   Save the spreadsheet … and don’t forget where you saved it.
   Open up the spreadsheet.
2) Get familiar with the spreadsheet.¹

Click on the worksheet labeled “Export”. This is the sheet in which you will model goods the Muppets should, and should not, export.

You can only change variables in the **orange shaded** cells. The variables, along with their allowable ranges, are:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Allowable Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>$P_{MKT}$</td>
<td>the price in the final market The home market (Sesame Street) is at distance zero.</td>
<td>$0 &lt; P_{MKT} \leq 22$</td>
</tr>
<tr>
<td>Prod Cost₀</td>
<td>Production cost per unit (kg) in Sesame Street</td>
<td>$0 &lt; \text{Prod Cost₀} \leq 22$</td>
</tr>
<tr>
<td>Prod Costₜ</td>
<td>The limit production costs per unit (kg) approach as one gets farther and farther from Sesame Street; i.e. the production costs infinitely far from Sesame Street.</td>
<td>$0 &lt; \text{Prod Costₜ} \leq 22$</td>
</tr>
<tr>
<td>Decay</td>
<td>the distance, in kilometers, it takes production costs to close the gap between whatever production costs are, and Prod Costₜ, by half. Low values for Decay mean the gap is closed rapidly. High values mean it takes a longer distance for production costs to change significantly.</td>
<td>$0 &lt; \text{Decay}$</td>
</tr>
<tr>
<td>Ship</td>
<td>Shipping cost kilogram per kilometer Ex. 1 kg. Shipped 200 kilometers costs $0.10 \times 200 = $20.00</td>
<td>You can't change this. It's fixed at $0.10</td>
</tr>
</tbody>
</table>

The graphs measure distance from Sesame Street. Productions costs per unit (kg) go from Prod Cost₀ to Prod Costₜ as one moves further and further from Sesame Street. The Decay variable measures how fast the production costs change as one moves away from a distance of zero (i.e. Sesame Street).

Play with the variables to see how changes in the variables change the export product graphs.

Click on the worksheet labeled “**Local Consumption**”. This is the sheet in which you will model goods the Muppets should, and should not export. Again, you can only change variables in the orange shaded cells. Play with the variables to see how changes in the variables change the export product graphs.

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¹ “Hi there. Come here often? What’s a nice looking spreadsheet like you doing in a class like this? Did anyone ever tell you that you have beautiful data? Mind if I share your pivot table?”

Okay, maybe you shouldn’t get that familiar with the spreadsheet.
3) • Click on the worksheet labeled “Exports”. Play with the variables to get a graph such that:
   
   a) the good is not produced in the “Old World” (i.e. in or near Sesame Street, i.e. no production within about 250 km (± 25 km) of Sesame Street and
   
   b) the good is produced in the colonies and exported to Sesame Street … except for very distant colonial lands. Make sure that export production stops at about 750 km (± 25 km).
   
   • Print the worksheet. You should have two pages like to that shown below (except your curves will be different). Your graphs should show it is: a) not profitable to produce in/near Sesame Street, profitable to produce in the colonies, and turns not profitable again sometime before 1,000 kilometers.
   
   • On a separate sheet of paper, type “Question 3”. Explain why the variables had to be the way they were to produce the desired results (the Muppet colonies export the product to Sesame Street). For example; why did $P_{MKT}$ have to be low or high? Explain why $\text{Prod Cost}_\infty$ had to be less than, equal to, or greater than $\text{Prod Cost}_0$. Why did you chose the value for $\text{Decay}$ that you did? This should be typed/printed, not handwritten.
4) • Click on the worksheet labeled “Exports”. Play with the variables to get a graph such that:
   a) the good is produced in the “Old World” (near Sesame Street) but not in Sesame Street itself

   and

   b) the good is not produced in the colonies, say more than about 300 km (± 25 km) from Sesame Street, and exported to Sesame Street

   and

   c) $\text{Prod Cost}_0 > \text{Prod Cost}_\infty$ (i.e. the colonies have the production cost advantage).

• Print the worksheet. You should have two pages like to that shown below (except your curves will be different). Your graphs should show it is: a) profitable to produce in/near Sesame Street, but not profitable to produce in the colonies.

• On a separate sheet of paper, type “Question 4”. Explain why the variables had to be the way they were to produce the desired results (Sesame Street produces the product for its consumption and Muppet colonies do not export the product to Sesame Street). For example, why did $P_{\text{MKT}}$ have to be low or high. Explain whether $\text{Prod Cost}_\infty$ had to a lot smaller than $\text{Prod Cost}_0$, or just a little bit greater. Explain why. Why did you chose the value for Decay that you did? This should be typed/printed, not handwritten.
5) • Click on the worksheet labeled “Local Consumption”. Play with the variables to get a graph such that:

a) the Muppet colonies within about 500 km (± 25 km) of Sesame Street would rather import the good from Sesame Street than produce it locally.

and

b) the Muppet colonies farther than about 500 km (± 25 km) from Sesame Street would rather produce the good locally than import it from Sesame Street.

and

c) Prod Cost\(_0\) < Prod Cost\(_\infty\) (i.e. the home country has the production cost advantage).

• Print the worksheet. You should have one page like to that shown below (except your curves will be different). Your graphs should show it: a) is not profitable to produce in/near Sesame Street, and b) is profitable to produce in the colonies.

On a separate sheet of paper, type “Question 5”. Explain why the variables had to be the way they were to produce the desired results (Colonies close in buy it from Sesame Street. Distant colonies produce it themselves). For example, why did \(P_{\text{MKT}}\) had to be low or high. Explain why Prod Cost\(_\infty\) had to be less than, equal to, or greater than Prod Cost\(_0\). Why did you chose the value for Decay that you did? This should be typed/printed, not handwritten.

Woo hoo! Turn this in and you are done!