

Name: _____

Econ 337 Agricultural Marketing, Spring 2018

Homework Assignment 4; Due March 22, 2018 (Beginning of Class)

1. You are a cow-calf producer and are planning to cull 30 cows from your herd. You typically sell cull cows in December when your culling decisions are made. However, you notice that you typically market cull cows at a seasonally lower price point when marketing in December. You have decided this year to compare opportunities for marketing your cull cows in December or incurring additional costs to target a later marketing date when prices may be higher.
 - a. On December 20, 2017 cull cows are selling for \$63.53/cwt. Use the seasonal price index provided to forecast the cull cow price in April 2018. What is the April 2018 forecast in \$/cwt?

$$\text{Recall: } P_1 \times \frac{I_2}{I_1} = P_2 \quad \text{or} \quad P_{\text{Dec17}} \times \frac{I_{\text{Apr}}}{I_{\text{Dec}}} = P_{\text{Apr18}}$$

b. Before you make any decisions you want to know the required increase in value to justify waiting to sell and the expected increase in value for marketing your cull cows at a later date. The following is the scenario you want to consider.

- Market your cull cows on December 20, 2017 (early date) or on April 19, 2018 (later date).
- All 30 cull cows to be sold are home raised from within your herd. You will not be selling any purchased cows or calves.
- Cull cows marketed on December 20, 2017 would sell for \$63.53/cwt and you assume that cull cows marketed on April 19, 2018 would sell for the \$/cwt you calculated in part a.
- Cull cows marketed on December 20, 2017 would weigh 1,300 pounds each and you assume that cull cows marketed on April 19, 2018 would weigh 1,350 pounds each.
- No other assets will be sold on December 20, 2017 or April 19, 2018 along with the sale of your cull cows.
- You assume it will cost you \$1.65 for feed costs per day (\$/head), \$0.50 for other costs per day (\$/head), and \$0 for additional asset costs.
- You assume 5.0% for opportunity cost on capital invested and \$0 for other net earnings if cattle are sold.

Use the *Cow Sell Calculator* (<http://www.extension.iastate.edu/agdm/livestock/html/b2-35.html>) to calculate the required increase in value to justify waiting to sell and the expected increase in value at a later date. Record the input and calculated values in the template provided.

Net Revenue From Immediate Sale

A. Cow and Calf Sales - Early Date (m/d/yyyy)

- 1. Number of raised cows to sell (head)
- 2. Number of purchased cows to sell (head)
- 3. Number of calves to sell (head)

If selling pairs, separate total sales into cows (line 2) and calves (line 3).

B. Net Sales Value Per Head - Early Date

- 1. Net sales value for cows (\$ per head)
- 2. Net sales value for calves (\$ per head)

C. Net Revenue Per Head

- 1. Total net cow sales revenue - early date (\$) = A x B
- 2. Total net calf sales revenue - early date (\$) = A x B

D. Net Sales Value Of Other Assets That Can Be Sold (\$)

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E. Total Net Revenue From Immediate Sale

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Income And Expenses Associated With Later Sale

F. Later Sale Date (m/d/yyyy)

Days between sales dates: days

G. Cow And Calf Sales - Later Date

- 1. Number of raised cows to sell (head)
- 2. Number of purchased cows to sell (head)
- 3. Number of calves to sell (head)

H. Net Sales Value Per Head - Later Date

- 1. Net sales value for cows (\$ per head)
- 2. Net sales value for calves (\$ per head)

I. Net Revenue Per Head

- 1. Total net cow sales revenue - early date (\$) = G x H
- 2. Total net calf sales revenue - early date (\$) = G x H

J. Net Sales Value Of Other Assets That Can Be Sold (\$)

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K. Total Net Sales Revenue - Later Date (\$) = I + J

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L. Additional Costs For Enterprise Between Early Sales Date And Alternative Date

- 1. Number of head
- 2. Feed cost per day (\$/head)
- 3. Other costs per day (\$/head)
- 4. Additional asset costs (\$)

M. Total Additional Costs Between Dates (\$)

N. Opportunity Cost On Capital Invested: Annual Interest Rate (%)

O. Earnings On Net Sales Revenue (\$) = E x N x (F/365)

P. Other Net Earnings If Cattle Are Sold (\$)

Q. Sales Value Required To Generate The Same Revenue (\$)

= E + M + O + P

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R. Value Per Animal Or Other Assets To Generate The Same Revenue As A Sale At The Early Date

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S. Required Increase In Value to Justify Waiting To Sell (\$ per head) = R - B

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T. Expected Increase In Value At Later Date (\$ per head) = H - B

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- c. Based on your calculations in part b, should you market your cull cows in December or incur additional costs to target an April marketing date? In your discussion make sure to reference the calculated *required increase in value to justify waiting to sell* and the *expected increase in value at a later date* you calculated in part b.

2. You are a manager for a wean-to-finish operation and want to determine the expected marginal return from feeding pigs to different weights. You know this will depend on several production measures and gather the following data to help with the analysis.

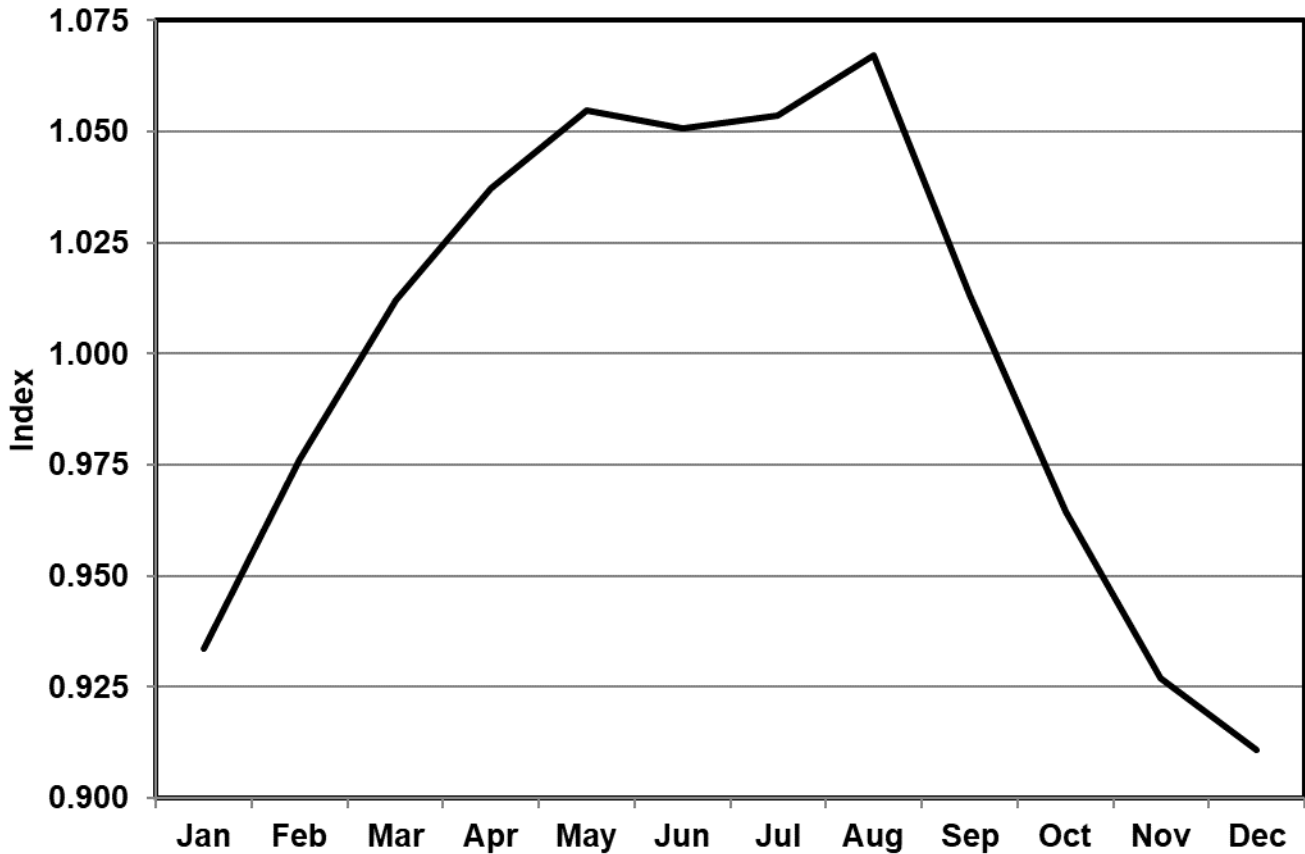
Cost of late finisher diet, \$/lb	\$0.1575
Finisher ADG, lb	1.85
Facility cost, \$/pig/day	\$0.10
Carcass price, \$/cwt	\$78
Finishing mortality, %	3.5%
Average days on feed	120
Yield, %	75.0%
Number of pigs	1,000

- a. The table below shows the shows the cumulative amount of feed at 5-pound increments of increasing live selling weight for finished hogs near market weight. Calculate the incremental amount of feed, incremental feed/gain, and marginal cost of gain for each 5-pound increase in live selling weight.

Carcass weight, lb	Live wt, lb	Cumulative feed, lb	Incremental feed, lb	Incremental Feed/Gain	Marginal cost of gain, \$/cwt gain
157.5	210	470.31			
161.3	215	486.34			
165.0	220	502.58			
168.8	225	519.02			
172.5	230	535.67			
176.3	235	552.52			
180.0	240	569.57			
183.8	245	586.83			
187.5	250	604.29			
191.3	255	621.95			
195.0	260	639.82			
198.8	265	657.89			
202.5	270	676.16			
206.3	275	694.64			
210.0	280	713.32			
213.8	285	732.21			
217.5	290	751.30			
221.3	295	770.59			
225.0	300	790.08			

- b. If the selling price for finished hogs is \$78 per hundredweight (cwt) carcass, what is the optimal live selling weight for your hogs? Explain how you determined this. Hint: Live Price = Carcass Price \times Yield
- c. If the price of feed is \$0.1575 per pound and the selling price for finished hogs increased to \$80 per hundredweight (cwt) carcass, would you expect the optimal live selling weight to increase, decrease, or stay the same? Explain why you expect this result.
- d. Using your calculations in part a, what is the optimal selling weight if the selling price for finished hogs is \$80 per hundredweight (cwt) carcass? Explain how you determined this.
- e. If the price of feed increased to \$0.18 per pound and the selling price for finished hogs is \$78 per hundredweight (cwt) carcass, would you expect the optimal live selling weight to increase, decrease, or stay the same? Explain why you expect this result.

Seasonal Price Index -- Cull Cows
Sioux Falls, SD, 2008-2017



Seasonal Price Index -- Cull Cows, Sioux Falls SD, 2008-2017

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2008	53.55	57.94	57.81	56.95	61.13	61.94	64.90	65.75	62.69	55.70	46.63	45.58	57.55
2009	49.25	48.13	48.13	53.19	55.00	51.50	51.69	49.56	49.10	47.08	45.00	47.67	49.61
2010	51.75	53.13	57.15	62.00	63.25	62.90	62.44	63.44	60.18	58.69	57.75	59.40	59.34
2011	66.94	75.69	77.35	78.75	79.25	77.65	75.58	72.45	68.03	65.75	65.83	68.21	72.62
2012	72.85	81.73	83.06	83.27	84.84	79.55	73.63	79.54	80.85	76.13	74.55	75.09	78.76
2013	76.24	78.55	77.97	77.07	76.44	77.16	78.85	82.58	81.92	78.38	79.25	79.44	78.65
2014	85.51	92.43	97.35	99.60	98.44	105.83	114.00	118.03	114.38	117.20	115.60	112.50	105.91
2015	104.72	102.47	108.63	108.43	110.44	108.69	109.58	108.93	98.33	87.75	82.53	70.55	100.09
2016	72.16	74.10	77.18	80.25	79.75	81.23	79.82	81.48	71.33	65.19	58.90	55.19	73.05
2017	61.32	61.71	67.88	71.60	75.63	74.81	72.94	71.64	66.50	65.21	63.18	63.53	68.00
Avg	69.43	72.59	75.25	77.11	78.42	78.13	78.34	79.34	75.33	71.71	68.92	67.72	74.36
Ratio	0.934	0.976	1.012	1.037	1.055	1.051	1.054	1.067	1.013	0.964	0.927	0.911	