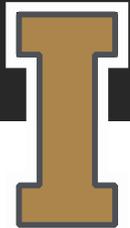


# POLICY ANALYSIS GROUP

## Grazing Rate Review and History

Dennis Becker, PhD  
Director, Associate Professor

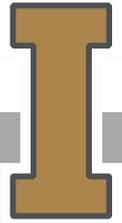
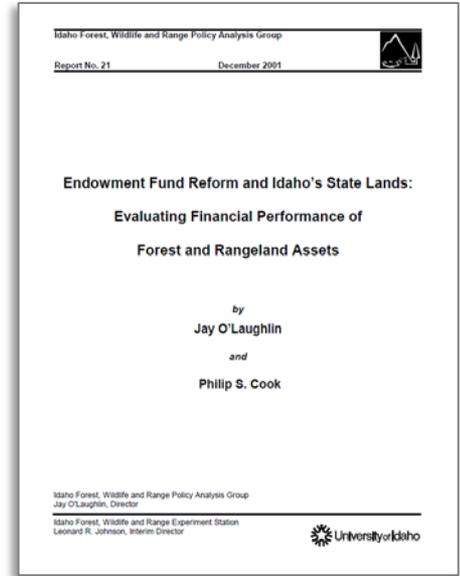


Profile

# Policy Analysis Group

Established by the Idaho Legislature in 1989 to provide timely, scientific and objective data and analysis on resource and land use questions of interest to the people of Idaho.

Provides policy education, research synthesis, primary data analysis, and related information services.

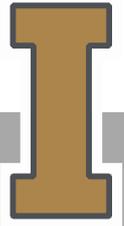
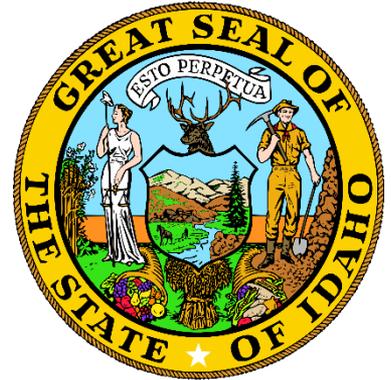


Question 1: Do rangelands provide adequate financial return?

# Asset Performance Evaluation

The trust land management goal, as defined in the Idaho Constitution, is to provide “maximum long term financial return” to public schools and other beneficiary institutions.

The monetary value of range is in the *land* and *forage* for grazing livestock.



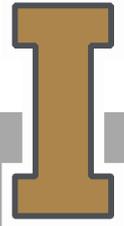
Question 1: Do rangelands provide adequate financial return?

# Asset Performance Evaluation

Performance is a function of the value of land assets and the performance target.

Approaches to appraising land assets:

- Comparable sales of forage and feed
- Production analysis using contributory values or operations budgets
- Income capitalization

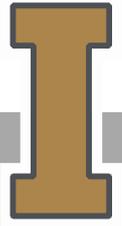


# Comparable Sales Method

Private grazing fee adjusted according to the value of services provided by the landlord to arrive at an equivalent public fee. This approach is the basis for the federal grazing fee formula.

## Critique

- Difficult to find private leases that are comparable to public lands.
- Government actions have potential to affect observed prices in private grazing rates, thus violating the principle of market independence.

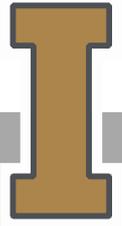


# Contributory Value Method

Sum of the value of inputs used to produce a commodity, which may include some or all of the infrastructure in the form of improvements. The value of this contribution is the rent due from the lessee to the state. Variations using “cattle price share” or “cost of replacement” are accepted methods.

## Critique

- ❑ Requires knowledge of farm and ranch budgets to determine operational costs.
- ❑ Grazing fees must change relative to the market price of livestock.

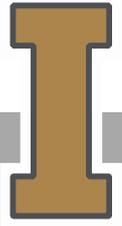


# Income Capitalization Method

Based on the capitalized value of the income rangelands generate. The value of rangeland is the present value of cash flows over a period of years discounted at a target interest rate. The annual equivalent of the capital value is the rental rate.

## Critique

- Preferred method for trust lands when the fee represents a fair market value.
- Requires estimation of land expectation value (LEV) using an adjusted fair market grazing fee (e.g., 30% adjustment) and appropriate target discount rate.

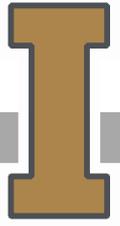


Question 2: What is an appropriate target discount rate?

## Income Capitalization Method

Land expectation value (LEV), which is a variation of NPV, uses “discounted cash flow” analysis to compare income performance against a benchmark. The target rate is a statement about how trust managers value the future in relation to the present.

- ❑ The higher the rate the less the future is valued compared to the present.
- ❑ High discount rates favor short term investments with shorter payback periods.

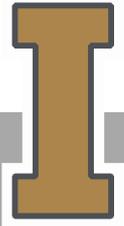
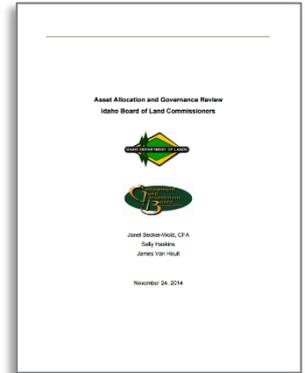


Question 3: What is an appropriate benchmark?

## Return on Assets (ROA)

Calculating maximum potential financial return allows beneficiaries to weight opportunities forgone (opportunity costs) against alternative investments to determine best use of public resources.

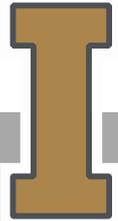
- ❑ Callan recommends an income based approach (e.g., LEV) with a real ROA threshold of 1.25% (nominal ROA of 3.5%)
- ❑ The State Trust Lands Asset Management Plan (2011) recommends a benchmark of 0.5% – 5.0% ROA.
- ❑ 2001 Citizens Committee recommended 6.0% ROA.

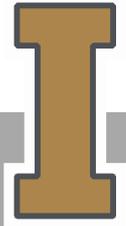


Summary statistics and financial performance  
Idaho endowment rangeland, FY 2011-2015  
(2105 dollars)

| Statistics and Performance Indicators (2015 \$)                       | FY2011       | FY2012       | FY2013       | FY2014       | FY2015       | FY13-FY15<br>Average | FY11-FY15<br>Average |
|---|--------------|--------------|--------------|--------------|--------------|----------------------|----------------------|
| (a) Acres leased for grazing  | 1,765,301    | 1,765,301    | 1,789,596    | 1,785,843    | 1,793,615    | 1,789,685            | 1,779,931            |
| (b) Animal unit months (AUMs) authorized                              | 256,886      | 260,000      | 258,324      | 258,946      | 259,157      | 258,809              | 258,663              |
| (c) Grazing fee, Idaho endowment land (\$/AUM)                        | \$ 5.13      | \$ 5.25      | \$ 6.36      | \$ 6.89      | \$ 6.77      | \$ 6.67              | \$ 6.08              |
| (d) Cash income from grazing (nominal)                                | \$ 1,878,863 | \$ 1,439,217 | \$ 1,932,652 | \$ 2,160,442 | \$ 2,265,606 | \$ 2,119,567         | \$ 1,935,356         |
| Direct income from grazing (no bonus bid) (nominal)                   | \$ 1,317,825 | \$ 1,365,000 | \$ 1,642,941 | \$ 1,784,138 | \$ 1,754,493 | \$ 1,727,190         | \$ 1,572,879         |
| (e) Cash expenditures for management (nominal)                        | \$ 959,029   | \$ 1,260,790 | \$ 1,253,309 | \$ 1,385,401 | \$ 1,454,532 | \$ 1,364,414         | \$ 1,262,612         |
| (f) Net income (nominal)  | \$ 919,834   | \$ 178,427   | \$ 679,343   | \$ 775,041   | \$ 811,074   | \$ 755,153           | \$ 672,744           |
| (d) Cash income from grazing  | \$ 1,986,605 | \$ 1,409,895 | \$ 1,973,146 | \$ 2,170,499 | \$ 2,265,606 | \$ 2,136,417         | \$ 1,961,150         |
| (e) Cash expenditures for management                                  | \$ 1,014,024 | \$ 1,306,061 | \$ 1,279,569 | \$ 1,391,850 | \$ 1,454,532 | \$ 1,375,317         | \$ 1,289,207         |
| (f) Net income  | \$ 972,581   | \$ 103,834   | \$ 693,577   | \$ 778,649   | \$ 811,074   | \$ 761,100           | \$ 671,943           |
| (g) Net income per AUM  | \$ 3.79      | \$ 0.40      | \$ 2.68      | \$ 3.01      | \$ 3.13      | \$ 2.94              | \$ 2.60              |
| (h) Net income per acre   | \$ 0.55      | \$ 0.06      | \$ 0.39      | \$ 0.44      | \$ 0.45      | \$ 0.43              | \$ 0.38              |
| (i) Idaho private land grazing fee (\$/AUM) (nominal)                 | \$ 15.00     | \$ 15.50     | \$ 15.50     | \$ 16.50     | \$ 17.00     | \$ 16.33             | \$ 15.90             |
| (i) Idaho private land grazing fee (\$/AUM)                           | \$ 15.86     | \$ 16.06     | \$ 15.82     | \$ 16.58     | \$ 17.00     | \$ 16.47             | \$ 16.26             |
| (j) Fee adjustment factor, private to public                          | 0.7          | 0.7          | 0.7          | 0.7          | 0.7          | 0.7                  | 0.7                  |
| (k) Fair market value public land grazing fee (\$/AUM)                | \$ 11.10     | \$ 11.24     | \$ 11.07     | \$ 11.61     | \$ 11.90     | \$ 11.53             | \$ 11.38             |
| (l) Attainable net income from grazing <sup>1</sup>                   | \$ 1,837,924 | \$ 1,616,859 | \$ 1,581,111 | \$ 1,613,477 | \$ 1,629,436 | \$ 1,608,008         | \$ 1,655,762         |
| (m) Land expectation value (LEV) @ 4% <sup>2</sup>                    | \$45,948,109 | \$40,421,475 | \$39,527,774 | \$40,336,932 | \$40,735,908 | \$40,200,205         | \$41,394,040         |
| (n) LEV per acre @ 4%   | \$ 26.03     | \$ 22.90     | \$ 22.09     | \$ 22.59     | \$ 22.71     | \$ 22.46             | \$ 23.26             |
| (o) Return on assets, grazing income (ROA <sub>G</sub> ) <sup>3</sup> | 2.6%         | 0.2%         | 1.7%         | 2.0%         | 2.0%         | 1.9%                 | 1.7%                 |
| (p) Return on assets, land value (ROA <sub>L</sub> ) <sup>4</sup>     | 21.5%        | -12.0%       | -2.2%        | 2.0%         | 1.0%         | 0.3%                 | 2.1%                 |
| (q) Total return on assets (ROA <sub>G+L</sub> )                      | 24.1%        | -11.8%       | -0.5%        | 4.0%         | 3.0%         | 2.2%                 | 3.8%                 |
| (r) Land expectation value (LEV) @ 6% <sup>2</sup>                    | \$30,632,073 | \$26,947,650 | \$26,351,850 | \$26,891,288 | \$27,157,272 | \$26,800,136         | \$27,596,026         |
| (s) LEV per acre @ 6%   | \$ 17.35     | \$ 15.27     | \$ 14.73     | \$ 15.06     | \$ 15.14     | \$ 14.97             | \$ 15.51             |
| (t) Return on assets, grazing income (ROA <sub>G</sub> ) <sup>3</sup> | 3.9%         | 0.3%         | 2.6%         | 3.0%         | 3.0%         | 2.8%                 | 2.5%                 |
| (u) Return on assets, land value (ROA <sub>L</sub> ) <sup>4</sup>     | 21.5%        | -12.0%       | -2.2%        | 2.0%         | 1.0%         | 0.3%                 | 2.1%                 |
| (v) Total return on assets (ROA <sub>G+L</sub> )                      | 25.4%        | -11.7%       | 0.4%         | 5.0%         | 4.0%         | 3.1%                 | 4.6%                 |

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Sensitivity analysis:  
Effect of grazing fee and interest rate on LEV and ROA<sub>g</sub>  
(2105 dollars)

|   | (A)<br>Federal<br>lands | (B)<br>Idaho state<br>trust lands | (C)<br>Effective<br>2016 | (D)<br>Fair Market<br>Value | (F)<br>Idaho private<br>lands |
|---|-------------------------|-----------------------------------|--------------------------|-----------------------------|-------------------------------|
| <b>Statistics and Performance Indicators (2015 d</b>  |                         |                                   |                          |                             |                               |
| <b>Net Income Calculation: 2015 Actual Values (\$/AUM)</b>                                    |                         |                                   |                          |                             |                               |
| (a) Grazing fee   | \$ 1.69                 | \$ 6.77                           | \$ 8.09                  | \$ 11.90                    | \$ 17.00                      |
| (b) IDL cash expenditures (\$/AUM)  | \$ 5.61                 | \$ 5.61                           | \$ 5.61                  | \$ 5.61                     | \$ 5.61                       |
| (c) Net income from grazing (\$/AUM)  | \$ (3.92)               | \$ 1.16                           | \$ 2.48                  | \$ 6.29                     | \$ 11.39                      |
| <b>Net Income Calculation: 2011-2015 Actual Values (\$/AUM)</b>                               |                         |                                   |                          |                             |                               |
| (d) Grazing fee   | \$ 1.42                 | \$ 6.08                           | \$ 8.09                  | \$ 11.38                    | \$ 16.26                      |
| (e) IDL cash expenditures (\$/AUM)  | \$ 4.98                 | \$ 4.98                           | \$ 4.98                  | \$ 4.98                     | \$ 4.98                       |
| (f) Net income from grazing (\$/AUM)  | \$ (3.56)               | \$ 1.10                           | \$ 3.11                  | \$ 6.40                     | \$ 11.28                      |
| <b>Land Expectation Value (LEV) Calculation: 2011-2015 Net Income Average Values (\$/AUM)</b> |                         |                                   |                          |                             |                               |
| (g) LEV @ 2% discount interest rate   | \$ (25.90)              | \$ 7.96                           | \$ 22.57                 | \$ 46.51                    | \$ 81.96                      |
| (h) LEV @ 3% discount interest rate   | \$ (17.26)              | \$ 5.31                           | \$ 15.05                 | \$ 31.01                    | \$ 54.64                      |
| (i) LEV @ 4% discount interest rate   | \$ (12.95)              | \$ 3.98                           | \$ 11.28                 | \$ 23.25                    | \$ 40.98                      |
| (j) LEV @ 5% discount interest rate   | \$ (10.36)              | \$ 3.19                           | \$ 9.03                  | \$ 18.60                    | \$ 32.78                      |
| (k) LEV @ 6% discount interest rate   | \$ (8.63)               | \$ 2.65                           | \$ 7.52                  | \$ 15.50                    | \$ 27.32                      |
| <b>Return on Assets (ROA) Calculation: 2015 Grazing Net Income / Fair Market Value (LEV)</b>  |                         |                                   |                          |                             |                               |
| (l) ROA with LEV @ 2% interest rate   | -1.2%                   | 0.4%                              | 0.8%                     | 2.0%                        | 3.6%                          |
| (m) ROA with LEV @ 3% interest rate   | -1.9%                   | 0.6%                              | 1.2%                     | 3.0%                        | 5.4%                          |
| (n) ROA with LEV @ 4% interest rate   | -2.5%                   | 0.7%                              | 1.6%                     | 4.0%                        | 7.2%                          |
| (o) ROA with LEV @ 5% interest rate   | -3.1%                   | 0.9%                              | 2.0%                     | 5.0%                        | 9.1%                          |
| (p) ROA with LEV @ 6% interest rate   | -3.7%                   | 1.1%                              | 2.4%                     | 6.0%                        | 10.9%                         |

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Question 4: What is an appropriate grazing fee?

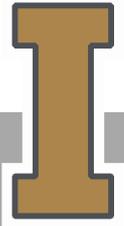
## Return on Assets (ROA)

Asset Perspective:

- ❑ Returns to beneficiaries are below benchmark rates of return obtained by other investments.
- ❑ Not possible to attain minimum return on asset from grazing net income ( $ROA_G$ ) with fees set below fair market value (LEV is indexed to FMV).

Ranch Perspective:

- ❑ Rangeland valuation involves more than just value of livestock production.
- ❑ Based on livestock returns and necessary improvements, public land ranchers argue they already pay too much to graze public lands.



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