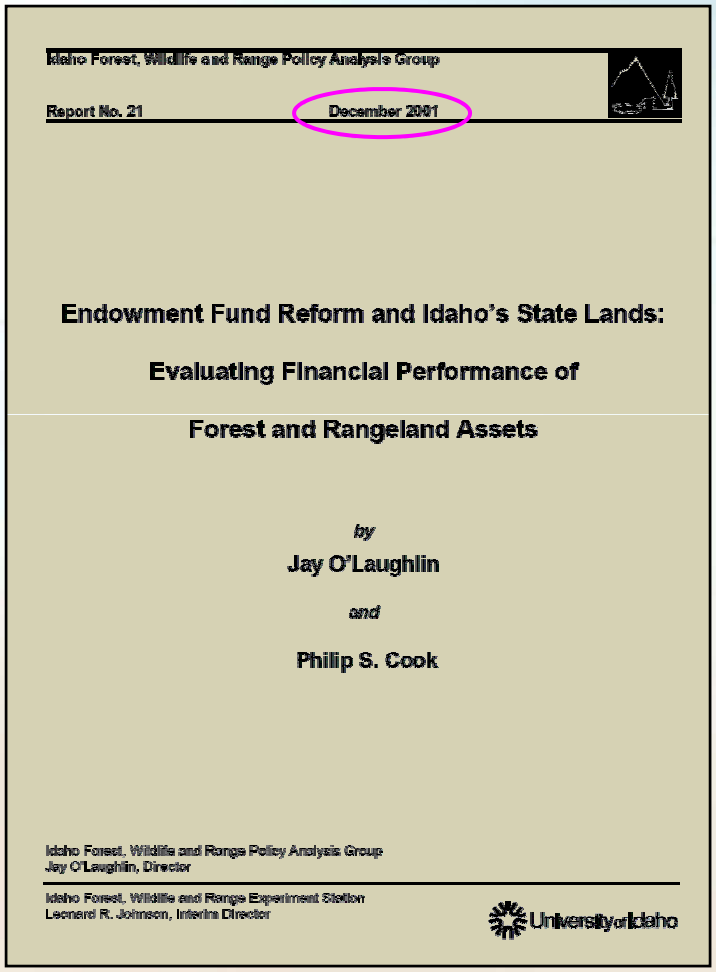
Idaho's State Lands: Establishing an Asset Value

Jay O'Laughlin
Professor, Dept. of Forest Resources
University of Idaho

Western Forest Economists
Session on Valuing Public Lands
May 8, 2007



Idaho Forest, Wildlife and Range Policy Analysis Group

Report No. 21 December 2001

Endowment Fund Reform and Idaho's State Lands:

Evaluating Financial Performance of

Forest and Rangeland Assets

by

Jay O'Laughlin

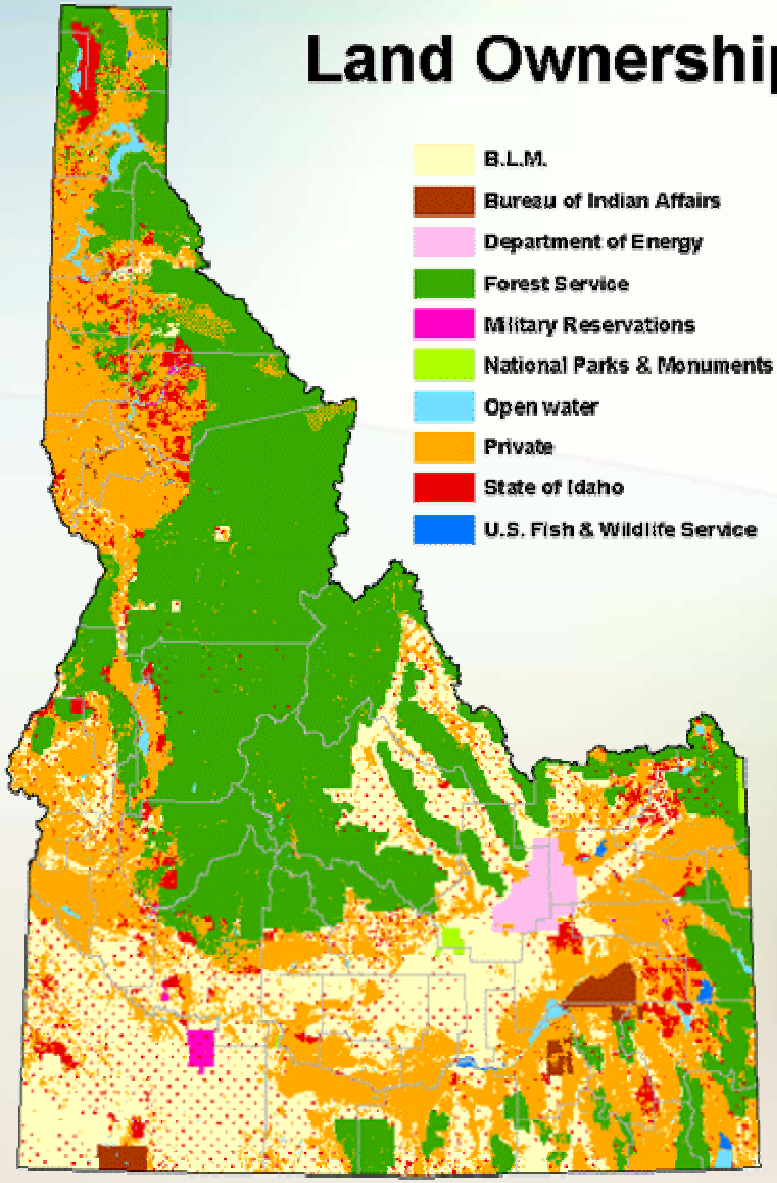
and

Philip S. Cook

Idaho Forest, Wildlife and Range Policy Analysis Group
Jay O'Laughlin, Director

Idaho Forest, Wildlife and Range Experiment Station
Leonard R. Johnson, Interim Director

University of Idaho



Objectives

The goal of this report is to evaluate Idaho's endowment trust land assets and asset management with appropriate indicators of financial performance. Specific objectives are:

- **Review the changes in Endowment Fund management [constitutional amendment, 2000] that have heightened concern for financial performance of land assets (Part 2).**
- **Select appropriate financial performance indicators for forest lands and rangelands (Part 3).**
- **Appraise the value of endowment forest lands and rangeland assets, and then measure the return on asset value provided by current IDL operations (Parts 4 and 5).**
- **Discuss managerial flexibility in the context of the Idaho Constitution's goal to provide "maximum long term financial return" to the trust beneficiaries (Part 6).**
- **Analyze alternative approaches for managing underperforming land assets (Part 7).**

Key Points

State trust lands, or "endowment lands" in Idaho, were granted at statehood from the federal public domain for the purpose of supporting public schools.

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.

Management is made more difficult by the absence of an unambiguous and universally acclaimed indicator of performance.

The rate of return on assets (ROA) is widely supported as a financial performance indicator, but calculation methods and appropriate standards or targets are somewhat ambiguous.

Financial Returns

The 994,000 acres of endowment forest land produced $62.7 million in timber-related net income in 2000, which was 93% of all income from endowment lands. More than 1.8 million acres are leased for grazing, providing $320,600 net income.

Do forests and rangelands provide an adequate rate of return on assets? The reply depends on the value of the land assets, and the performance target.

Appraising endowment land asset value is problematic, as is selecting an appropriate standard to judge performance.

Idaho's Endowment Fund Assets

Idaho, like other states, was granted lands from the federal public domain at statehood for the purpose of providing financial support to public schools.

Since statehood, more than one million acres of the original grant lands have been sold. Today there are 2,462,621 acres of "endowment lands" managed as a trust by the Idaho Department of Lands (IDL) under the policies and guidance of the trustees, the Idaho State Board of Land Commissioners (Land Board).

The Idaho Constitution sets the management goal for endowment lands as providing "maximum long term financial return" to the trust beneficiaries, which are the public schools and eight other public institutions.

Our Mission

IDAHO DEPARTMENT OF LANDS

We will manage endowment trust lands to maximize long-term financial returns to the beneficiary institutions and provide protection to Idaho's natural resources.

Table 2-1. Idaho endowment land acres by administrative area and economic use or asset class.

Administrative Area	Primary Forest Land	Secondary Forest Land	Cropland	Rangeland	Recreation/ Cottage Site	Other	Total
Priest Lake	103,786	65,364	---	977	189	14,768	185,714
Pend Oreille	89,926	13,131	63	7,703	---	26	104,243
St. Joe	129,788	20,962	---	24,598	25	266	160,050
Clearwater	248,312	19,325	61	209,749	---	270	292,951
Payette Lakes	88,179	15,438	98	148,865	107	3,336	188,907
Southwest	58,976	9,850	576	474,220	---	1,537	501,321
South Central	---	12,054	1,524	283,924	---	7,375	304,730
Eastern Idaho	39,145	79,947	11,081	687,618	496	5,846	724,705
Total	758,112	236,077	13,406	1,837,658	817	33,428	2,462,621

Net Income, 2006	**Forest Land**	**Comm. Real Estate**	**Ag. Land**	**Grazing Land**	**Res. Real Estate**	**Minerals**	**Total**
	$43,677,969	**$959,732**	**$65,957**	**$161,294**	**$3,918,654**	**$1,886,649**	**$50,670,255**

Forest Asset Valuation Methods

- Market value of standing timber (IDL)
  - Single-purchaser w/ "deep discount"
- Capitalized net income (IDL)
  - Average net income for past ten years
- Productivity taxation value (MT)
- Land expectation value (U of I)
  - Faustmann formula approach
  - Capitalized value of annual anticipated income based on long-term sustained yield (as determined by IDL)

Market Value of Timber

In the past IDL staff has assumed for valuation purposes that one or two large buyers would acquire the entire timberland holding, and then staff applied a "deep discount" of 40% to 60% to the standing timber inventory value as determined in Table 4-4 (S.F. Hamilton, IDL Director, retired, review comments; IDL 2000).

This would result in a 1999 valuation of somewhere in the neighborhood of $900 million to $1.4 billion.

Table 4-4. Merchantable forest products inventory on primary forest lands, Idaho Department of Lands, and estimated liquidation value, 1999.

Administrative Area	Timber Inventory Growing Stock Volume by Species (million board feet)							
	WP	PP	DF/L	GF/HEM/ SAF	WRC	ES	LP	Total
Priest Lake	49.5	18.4	189.7	379.7	128.5	51.7	69.3	886.8
Pend Oreille	24.7	60.4	290.5	171.6	105.2	3.5	30.4	686.3
St. Joe	54.7	28.4	596.8	707.3	170.4	15.3	178.2	1,751.1
Clearwater	61.3	216.8	822.0	1,1197.2	265.7	25.7	31.4	2.620.1
Payette Lakes	0.0	115.4	261.2	250.6	0.0	102.5	42.1	771.8
Southwest	0.0	149.1	146.9	49.0	0.0	0.0	6.8	351.8
Eastern Idaho	0.0	0.0	156.6	23.5	0.0	1.2	66.0	247.3
Total Volume	190.2	588.5	2,463.7	2,778.9	669.8	199.9	424.2	7,315.2
Stumpage Value ($ per mbf, 1999)	$450	$335	$300	$310	$450	$245	$250	$320
Volume x Value ($ million)	$86	$197	$739	$861	$301	$49	$106	$2,340
Liquidation Value* ($ million)	$34	$79	$296	$344	$120	$20	$42	$936

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This would result in a 1999 valuation of somewhere in the neighborhood of $900 million to $1.4 billion.

When there are other methods available, there is little justification for using this approach to determine the value of the timberland asset for financial performance measures such as return on asset value.

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Land Expectation Value

Land asset performance is highly dependent upon the valuation of the land asset.

What is land worth for growing timber? Foresters solved this problem 150 years ago with a discounted cash flow technique called land expectation value (LEV).

The LEV assumes a series of identical cash flows will be produced in perpetuity; the series can be annual, or on a longer periodic basis.

Large tracts of timber, such as Idaho endowment lands, can be evaluated as one forest management entity by considering annual net income, even though individual stands or parcels of land do not provide timber harvests each year.

Land Expectation Value

Land expectation value (LEV) relies on discounting anticipated future cash flows using an interest rate.

The LEV is very sensitive to the discount interest rate and timber stumpage market price changes.

Selection of an appropriate rate is a key policy decision. Simplicity would have the discount interest rate and performance target rate of return be one and the same.

Analysis with a range of rates from 3% to 7% is appropriate until the asset manager (IDL) and the trustee (Land Board) have developed procedures and systems for evaluating financial performance.

Valuation Methods Comparison

Method	Discount ("Cap") Rate 4%	6%
Market Value of Timber ("deep discount")*	$936,000,000	$1,404,000,000
Capitalized Net Income (10-yr. avg., 1991-2000)	$831,000,000	$1,209,000,000
Productivity Tax Formula (cap. value, MAI @ 80 yrs.)**	$1,336,000,000	$2,000,000,000
Land Expectation Value (cap. value, LT-SY)***	$826,000,000	$1,239,000,000

* 1999 inventory & stumpage value, less "discount" of 10 x cap. rate
** 5-yr. actual stumpage average, uninflated; less management costs
*** LT-SY = long-term sustained yield

Total Return on Assets (ROA)

The monetary value of a forest is in land and timber, and is increased by the biological growth of trees and by the value of timber "stumpage" in markets where prices change through the interaction of supply and demand factors.

"Total return" is the appropriate approach to performance evaluation. It includes not only net income realized from land management activities but also the unrealized change in land asset value.

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The change in asset value is the change in Land Expectation Value (LEV) from one year to the next.

To determine the rate of return on asset value, the total return is divided by the previous year's LEV.

Forest Land Performance - ROA

The value of forest land generally is determined by:

- **timber growing potential of the land,**
- **strategies for and investments in managing the timber growing stock inventory,**
- **the timber stumpage market, and**
- **the interest rate for guiding decisions.**

Using a 4% discount rate for 1999-2001 period,

LEV = $1 billion, and
timber income ROA = 5.7%
total ROA = − 2.9%

At a 6% discount rate,

LEV = $700 million, and
timber income ROA = 8.5%
total ROA = − 0.1%

Table 1. Financial performance indicators, Idaho endowment forest lands, 1999-2001

Forest Land	FY 1999	FY 2000	FY 2001	Average
Net income*	$66,426,300	$62,664,300	$52,225,400	$60,438,667
Change in net income (year-to-year %)*	9.3%	-5.7%	-16.7%	-4.4%
Cash expenditures as % of cash income*	11.9%	13.5%	14.5%	13.2%
Expected net income from timber[#]	$40,701,200	$49,590,800	$37,276,000	$42,522,667
Land expectation value (LEV) @ 4%[£]	$1,017,530,000	$1,239,770,000	$931,900,000	$1,063,066,675
Return on assets, timber income (ROA_T)	6.2%	6.2%	4.2%	5.7%
Return on assets, land value change (ROA_L)	-5.6%	21.8%	-24.8%	-8.6%
Total return on assets (ROA_{T+L})*	0.6%	28.0%	-20.6%	-2.9%
Land expectation value (LEV) @ 6%[£]	$678,353,333	$826,513,333	$621,266,667	$708,771,117
Return on assets, timber income (ROA_T)	9.2%	9.2%	6.3%	8.5%
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* Financial performance indicators recommended to the Western States Land Commissioners Association in a consulting firm's report (AIS 2000).

[#] Net income used to calculate land expectation value (LEV); for timber, it is the expected value of the long-term sustained-yield annual timber harvest times the current year's timber stumpage bid price; for grazing, it is attainable value of annual income, which is AUMs in the current year times an estimate of the fair market value grazing fee.

[£] Land expectation value (LEV) is the present value of perpetual series of net incomes at a selected interest rate; this *income capitalization* real estate appraisal technique can be used with either periodic or annual income streams.

Forest Land Performance

Each 1% increase in the discount rate increases timber income ROA by 1.5% because LEV is decreased.

Before a policy decision on the appropriate interest rate is made, the effects on timber stand management need careful consideration.

The higher the interest rate, the earlier trees will be cut.

Current cutting ages [in 2000] of 80+ years imply a management decision guide of less than 2%.

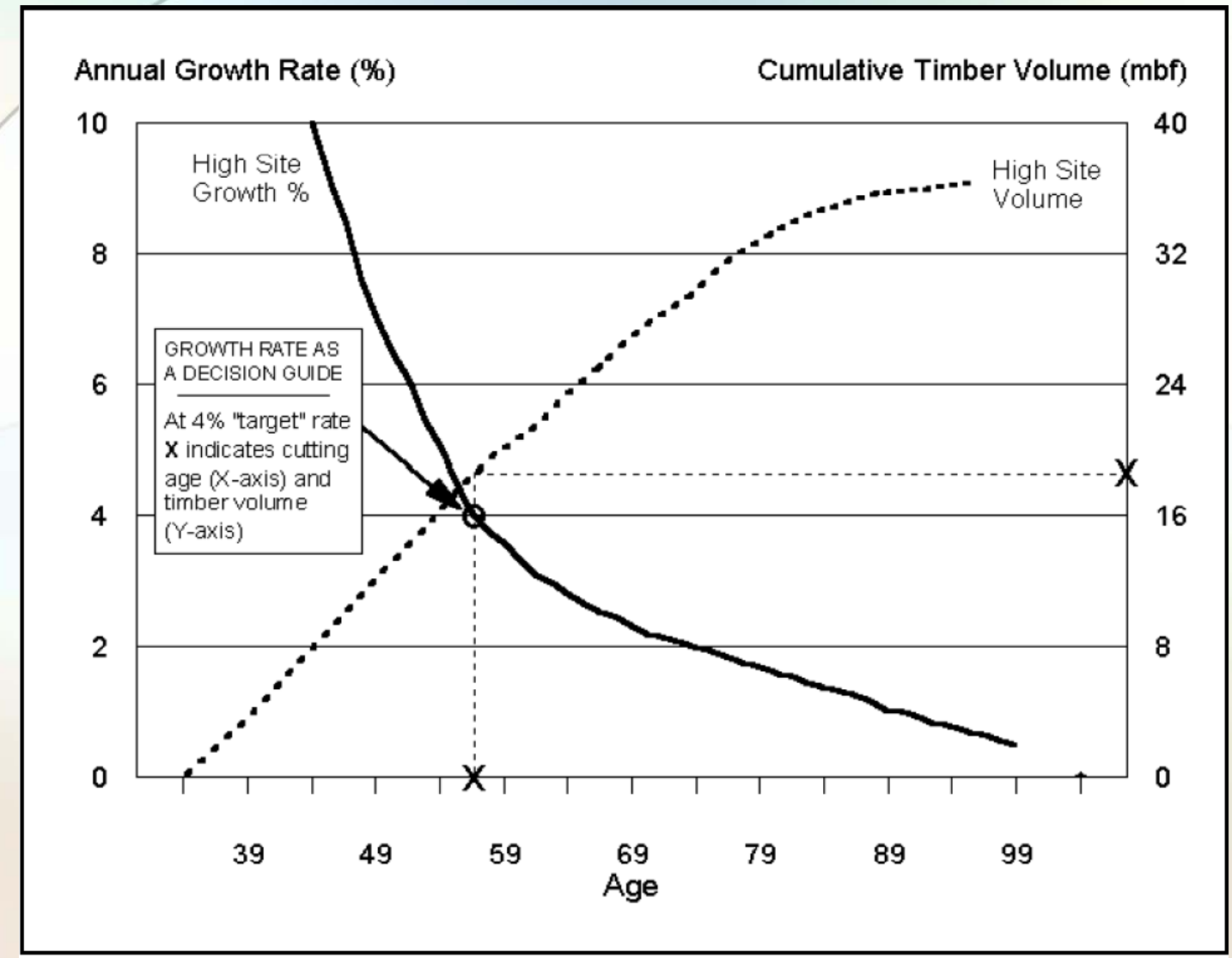

Figure 4-6. Annual growth rate as a timber harvesting decision guide, high-site lands, Idaho Department of Lands Clearwater region.

Note: This decision guide is a first approximation because the dollar value difference by age class is unknown. A more accurate financial decision model would use value growth, not just volume growth.

Improving Underperformance

If land parcels are not meeting the target, the first thing to do is reconsider whether the target is appropriate for that land classification, and if not, change it.

Selling or exchanging land is an option for reducing management costs. Sales are constitutionally limited to 100 sections or 64,000 acres per year.

Modifications in management policies or practices may improve financial performance. Forest land ROA performance of 4% to 9%, varying by discount rate and the timber stumpage market in a given year, may be enhanced by changing management practices.

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Options include reducing the cutting age from 80+ years to 55-70 years, and investing in thinning, fertilizing, and planting.

“… maximum long-term financial return …”

In the end, financial performance criteria have limited utility in comparing endowment trust land assets to other financial assets. An acre of Idaho forest or rangeland just is not the same thing as shares of stock in a corporation, because land provides environmental and social values as well as financial return for the beneficiaries. Policy decisions that guide trust land managers have been, and likely will continue to be, a balancing of financial, environmental, and social concerns.

“… maximum long-term financial return …”

In the beginning …

“I say that neither I nor you have any definite idea what this land is worth today which lies under the sun of Idaho or what it is going to be worth in the future.”

– Mr. Parker, *Idaho Constitutional Convention Proceedings* (1889)

“These school lands should remain to perpetuate the school fund, preserving a nucleus around which we may collect something for not only ourselves who live now, but for those who shall come after us.”

– Mr. Vineyard, *Idaho Constitutional Convention Proceedings* (1889)