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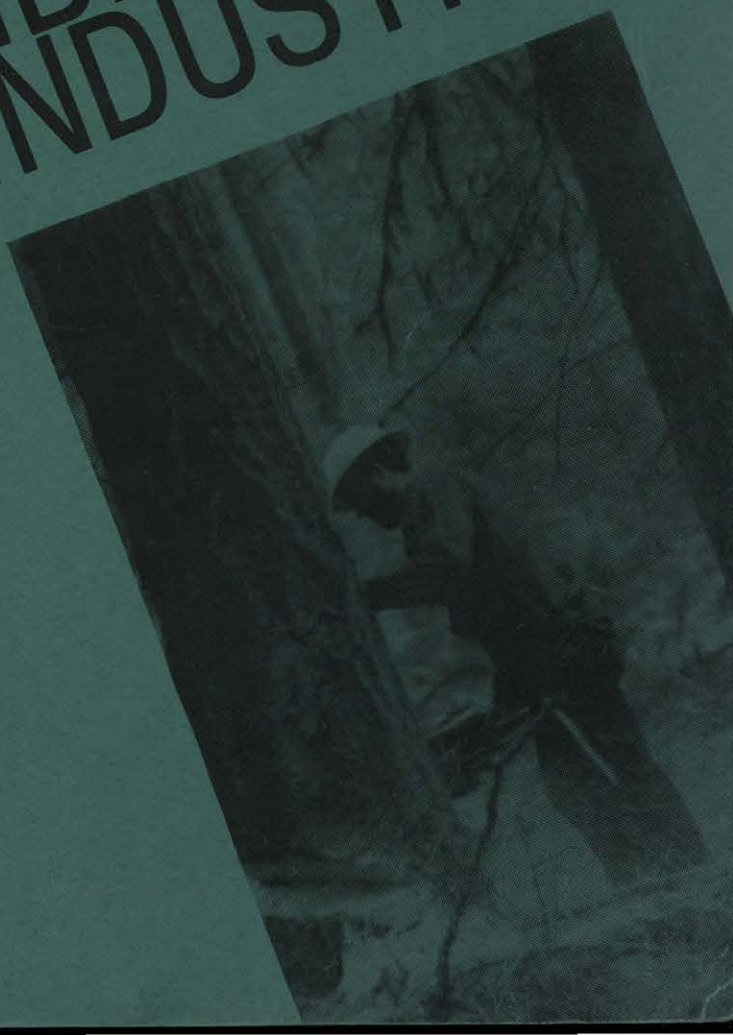

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TIMBER CUT, EMPLOYMENT AND WAGES: MULTIPLIERS FOR IDAHO'S TIMBER-USING INDUSTRY[1]

by

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What will be the impact on people -- number of jobs and wages -- if a decision is made to change the level of timber harvest in a particular area of Idaho? The answer to this question would seem to be of more than passing interest to land-use planners and decision-makers concerned with natural resource management. Indeed, assessment of these likely impacts does not appear discretionary, at least for Federal officials. A wide range of administrative and statutory law makes social and economic impact assessments mandatory. However, a generally inadequate information base has precluded meaningful assessments of probable employment and wage impacts resulting from changes in timber harvest levels. This paper is designed to augment the existing information base to better facilitate these needed evaluations.

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[1]The research reported here is part of the Idaho Forest Industry Study (Project 44-308) jointly sponsored by the Intermountain Forest and Range Experiment Station, U.S. Forest Service and the Forest, Wildlife and Range Experiment Station, University of Idaho.

[2]Authors are assistant professor, associate professor and graduate assistant, respectively, College of Forestry, Wildlife and Range Sciences, University of Idaho.

Probable impacts on employment and wages can be viewed in two major ways. First, impacts of a proposed change in the level of timber to be harvested can be analyzed in a total or *aggregate* context. Aggregate impacts on employment and wages include *direct* as well as *indirect* impacts. Direct impacts would concern primary consumers of timber harvest -- the timber-using industry. Indirect impacts are sometimes called secondary, spill-over or rippling effects; these involve employment and wage impacts on industries that support, or are supported by, the timber-using industry. The analytical techniques of input-output analysis and economic base multipliers are useful to measure aggregate impacts. The second way of viewing impacts is more restrictive, dealing only with *direct* impacts. This paper adopts the latter point of view. The methodology developed is applicable to employment and wage impacts in Idaho's timber-using industry that are likely to result from a change in the level of timber harvest in Idaho. The term "timber-using industry" refers to firms classified in the Standard Industrial Code as SIC 24: Lumber and Wood Products, Except Furniture, and SIC 26: Paper and Allied Products.[3]

Tables 1 and 2 show a series of multipliers relating Idaho's timber harvest to employment and wages in Idaho's timber-using industry. Boundaries of the six official state planning regions referenced in these tables are shown in Figure 1. Timber harvested outside Idaho but used by Idaho's industry is included as a seventh region of timber origin -- imports. The import region includes timber cut in Washington, Montana, Oregon and Wyoming.

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[3]Additionally, characteristics of the subclass, SIC 2433, were deleted from the overall SIC 24 class; this subclass deals with the manufacture of prefabricated homes which does not receive harvested timber.

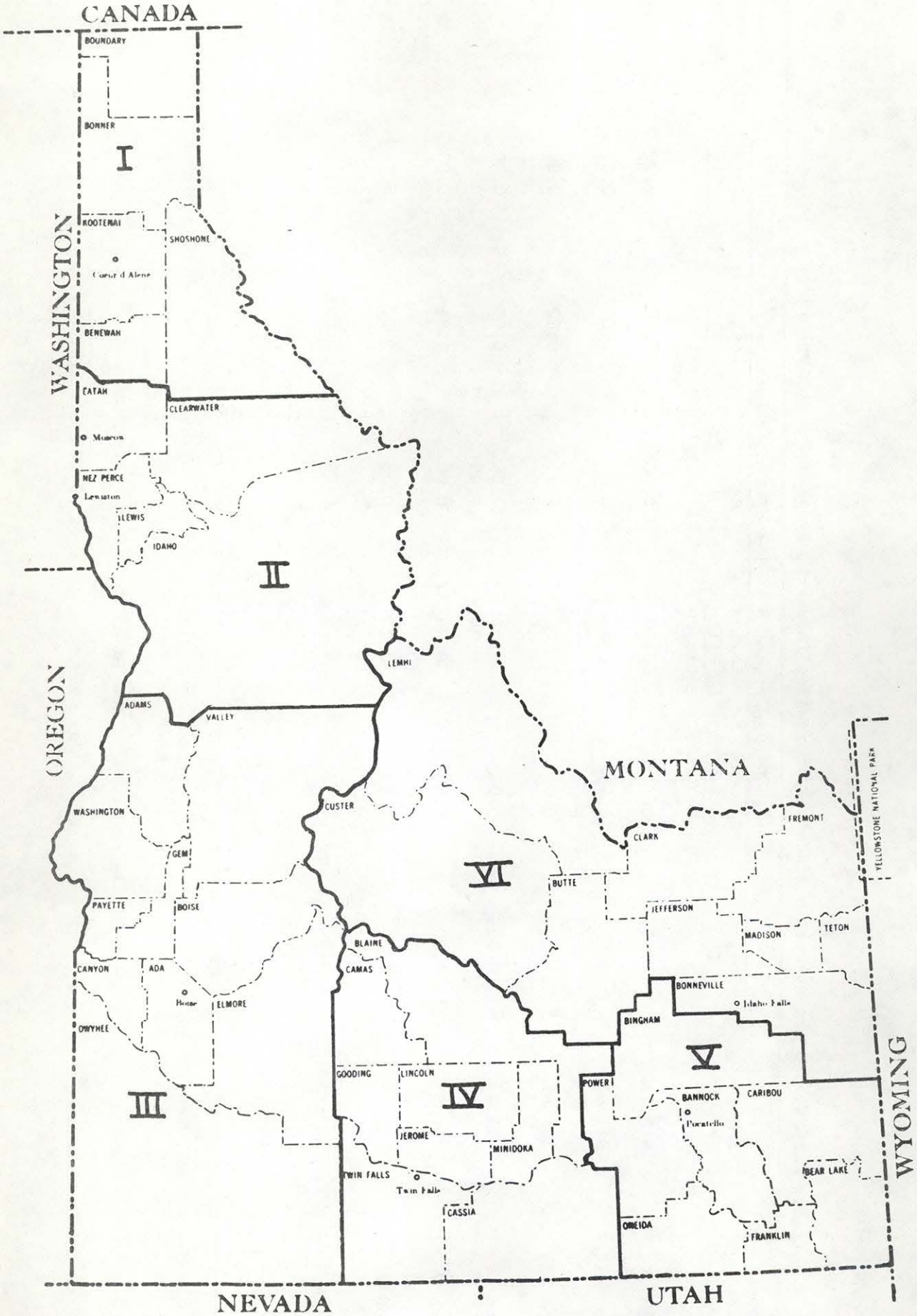

Figure 1. Official state planning regions in Idaho.

Table 1. Timber harvest and employment in Idaho's timber-using industry, by planning region, 1972.

Region of Timber Harvest	1972 Timber Harvest (MMBF)	Idaho State Planning Region of Timber Destination: Region I	Region II	Region III	Region IV	Region V	Region VI	Total 1972 Direct Employment
		(people employed per MMBF timber harvest)						
Region I	610.42	5.53	0.31	0.00	0.00	0.00	0.00	3,565
Region II	811.67	0.51	6.53	0.29 (0.23)[a]	0.00	0.00	0.00	5,950 (5,901)
Region III	207.61	0.00	0.07	15.26 (11.95)	0.11 (0.06)	0.00	0.00	3,206 (2,508)
Region IV	13.43	0.00	0.00	0.05 (0.04)	17.08 (9.90)	0.00	0.00	230 (133)
Region V	18.83	0.00	0.00	0.00	0.00	1.81 (0.74)	0.00	34 (14)
Region VI	96.45	0.00	0.00	0.75 (0.59)	0.00	0.00	5.76 (5.50)	628 (587)
Imports[b]	93.72	5.30	0.53	0.65 (0.51)	0.00	0.00	0.00	607 (594)
TOTALS	1852.13							14,219[c] (13,302)

[a] Counties with employment but receiving no timber were excluded from calculations; multipliers, where different, are shown in parentheses: these multipliers are similar to county multipliers.

[b] Imports were estimated from unpublished data obtained in the Idaho Forest Industry Study.

[c] Due to rounding errors, this total does not agree with the actual totals of 14,223 and (13,305).

Table 2. Timber harvest and wages in Idaho's timber-using industry, by planning region, 1972.

Region of Timber Harvest	1972 Timber Harvest (MMBF)	Idaho State Planning Region of Timber Destination: Region I	Region II	Region III	Region IV	Region V	Region VI	Total 1972 Direct Wages ($1,000)
		($1,000 wages per MMBF timber harvest)						
Region I	610.42	49.16	3.10	0.00	0.00	0.00	0.00	$ 31,901
Region II	811.67	4.57	64.16	3.12 (2.73)[a]	0.00	0.00	0.00	58,304 (57,988)
Region III	207.61	0.00	0.68	165.64 (145.08)	0.89 (0.49)	0.00	0.00	34,714 (30,361)
Region IV	13.43	0.00	0.00	0.60 (0.52)	140.73 (74.88)	0.00	0.00	1,898 (1,013)
Region V	18.83	0.00	0.00	0.00	0.00	68.67 (65.10)	0.00	1,293 (1,226)
Region VI	96.45	0.00	0.00	8.19 (7.17)	0.00	0.00	47.49 (45.79)	5,370 (5,108)
Imports[b]	93.72	47.13	5.17	7.09 (6.20)	0.00	0.00	0.00	5,566 (5,483)
TOTALS	1,852.13							$139,046[c] ($133,080)

[a]Counties with wages but receiving no timber were excluded from calculations; multipliers, where different, are shown in parentheses; these multipliers are similar to county multipliers.

[b]Imports were estimated from unpublished data obtained in the Idaho Forest Industry Study.

[c]Due to rounding errors, this total does not agree with the actual totals of $139,068,000 and ($133,097,000).

Note, while Idaho exports around 82 million board feet of timber to Washington, Montana, Utah, Wyoming, and Oregon, no comparable employment and wage data are available; therefore, no multipliers are listed for exported timber. Each multiplier[4] in the tables can be interpreted as a *conversion factor* -- a factor converting timber cut (in specific origin region) into employment and wage levels in regions receiving harvested timber. Multipliers indicated the estimated number of people employed or thousand dollars of wages paid per million board feet of timber cut. For example, the multiplier, .29 shown in Table 1 for timber cut in Region II and delivered to Region III should be interpreted as follows: each million board feet of timber cut in Region II is associated with .29 people employed in timber-using industries of Region III. Alternatively, when read completely across a horizontal row for a specified region by origin of cut multipliers show the overall pattern of employment or wage distribution associated with each million board feet timber cut in the region of origin. On a statewide basis, 7.68 (14,219 ÷ 1852.13) people were employed and 75.07 (139,046 ÷ 1852.13) thousand dollars of wages are associated with each million board feet of timber harvested and delivered to Idaho.

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[4]All multiplier calculations are similar. The following illustrates how employment multipliers were calculated for regions:

$$Mij = \left[(Tij \div \sum_i Tij)\ Ej \right] \div \sum_j Tij$$

Where: Tij = Timber volume harvest (MMBF) in region (i) and delivered to region (j) where j = 1 ···· 6, i = 1 ···· 7 and i=7 is for imported timber.

Ej = Employment total for timber-using industry in region (j).

Mij = Employment multipliers for region (j) per MMBF of timber harvest in region (i).

Table 3. Timber harvest and employment in Idaho's timber-using industry, by county, 1972.

	County of Timber Harvest	1972 Timber Harvest	Idaho County of Timber Destination[a]							
			1	2	3	4	5	8	9	10
		(MMBF)	(people employed per MMBF timber harvest)							
1.	Ada	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.	Adams	63.62	1.64	4.62	0.00	0.00	0.00	0.01	0.00	0.00
3.	Bannock	0.02	0.00	0.00	280.00	0.00	0.00	0.00	0.00	0.00
4.	Bear Lake	10.36	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00
5.	Benewah	113.83	0.00	0.00	0.00	0.00	2.77	0.00	0.11	0.00
6.	Bingham	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.	Blaine	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8.	Boise	61.69	9.28	0.00	0.00	0.00	0.00	4.65	0.00	0.00
9.	Bonner	105.26	0.00	0.00	0.00	0.00	0.00	0.00	6.11	0.00
10.	Bonneville	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.73
11.	Boundary	72.85	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12.	Butte	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13.	Camas	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14.	Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.	Caribou	3.91	0.00	0.00	0.00	0.17	0.00	0.00	0.00	0.00
16.	Cassia	9.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17.	Clark	6.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18.	Clearwater	482.71	0.00	0.00	0.00	0.00	0.15	0.00	0.00	0.00
19.	Custer	14.70	0.00	0.00	0.00	0.00	0.00	1.08	0.00	3.00
20.	Elmore	16.16	2.55	0.00	0.00	0.00	0.00	0.02	0.00	0.00
21.	Franklin	1.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22.	Fremont	38.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06
23.	Gem	13.03	0.00	0.00	0.00	0.00	0.00	8.32	0.00	0.00
24.	Gooding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25.	Idaho	208.36	0.02	0.00	0.00	0.00	0.01	0.00	0.00	0.00
26.	Jefferson	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27.	Jerome	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28.	Kootenai	78.43	0.00	0.00	0.00	0.00	0.12	0.00	1.18	0.00
29.	Latah	102.66	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.00
30.	Lemhi	35.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26
31.	Lewis	12.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32.	Lincoln	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33.	Madison	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34.	Minidoka	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35.	Nez Perce	5.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36.	Oneida	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37.	Owyhee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38.	Payette	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39.	Power	3.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40.	Shoshone	240.06	0.00	0.00	0.00	0.00	0.87	0.00	0.00	0.00
41.	Teton	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42.	Twin Falls	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43.	Valley	49.24	2.78	0.00	0.00	0.00	0.00	1.34	0.00	0.00
44.	Washington	3.87	2.74	2.39	0.00	0.00	0.00	0.00	0.00	0.00
	Imports[c]	93.72	1.05	0.00	0.00	0.00	0.24	0.00	3.59	0.00
	TOTALS	1852.13								

a) All counties are listed in the rows, but counties which had no reported forest industry employment are excluded from the columns. Counties excluded, therefore, have no multipliers.

b) "dd" means data withheld to avoid disclosing information on individual firms.

c) Imports were estimated from unpublished data obtained in the Idaho Forest Industry Study.

d) Due to rounding errors, this total does not agree with the actual total of 13,305.

Table 3. Continued

11	12	13	18	19	20	22	23	25	28	29
				(people employed per MMBF timber harvest)						
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.29	0.16	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.63	0.05
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	1.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.08	0.00	0.00	0.00
0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.88	0.02
0.00	0.00	0.00	0.00	dd	0.00	0.00	0.00	0.00	0.00	0.00
2.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.96	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	1.71	0.00	0.00	dd	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	1.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.84	0.00	0.00	0.00	0.00
0.00	0.00	0.00	2.57	0.00	0.00	0.00	0.00	0.33	0.48	0.46
0.00	dd[b]	0.00	0.00	dd	0.00	0.00	2.62	0.00	0.00	0.00
0.00	0.00	0.17	0.00	0.00	dd	0.00	0.12	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	3.92	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.23	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.27	0.00	0.00	0.00	0.06	3.78	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.43	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.62	4.36
0.00	0.00	0.00	0.00	dd	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.47	0.00	0.00	0.00	0.00	1.84	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.35	0.00	0.00	0.00	0.00	0.00	0.00	1.76
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.66	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	2.47	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.14	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.11

Table 3. Continued

30	31	33	35	40	42	43	44	Total 1972 Direct Wages
			(people employed per MMBF timber harvest)					
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	1.82	0.55	0.75	689.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.
0.00	0.00	0.00	0.63	0.02	0.00	0.00	0.00	708.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.
0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	1113.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	742.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	dd
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	294.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	dd
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.
0.00	0.00	6.64	0.00	0.00	0.00	0.00	0.00	45.
0.00	0.23	0.00	4.16	0.00	0.00	0.00	0.00	4049.
1.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	167.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	dd
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.04	0.00	0.52	0.00	0.00	0.00	0.00	0.00	175.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	189.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.03	0.00	0.51	0.00	0.00	0.26	0.02	1034.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.06	0.90	0.00	0.00	0.00	525.
0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.00	567.
4.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	dd[b]
0.00	2.44	0.00	0.50	0.00	0.00	0.00	0.00	65.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.88	0.00	2.25	0.00	0.00	0.00	0.00	29.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.64	0.94	0.00	0.00	0.00	1350.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	1.23	0.00	516.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.12	40.
0.00	0.00	0.00	0.52	0.00	0.00	0.00	0.00	648.
								13310.[d]

Table 4. Timber harvest and wages in Idaho's timber-using industry, by county, 1972.

County of Timber Harvest	1972 Timber Harvest (MMBF)	Idaho County of Timber Destination[a] 1	2	3	4	5	8	9	10
		($1,000 wages per MMBF timber harvest)							
1. Ada	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2. Adams	63.62	26.09	53.44	0.00	0.00	0.00	0.05	0.00	0.00
3. Bannock	0.02	0.00	0.00	48632.75	0.00	0.00	0.00	0.00	0.00
4. Bear Lake	10.36	0.00	0.00	0.00	0.64	0.00	0.00	0.00	0.00
5. Benewah	113.83	0.00	0.00	0.00	0.00	23.98	0.00	0.89	0.00
6. Bingham	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7. Blaine	0.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8. Boise	61.69	147.68	0.00	0.00	0.00	0.00	38.79	0.00	0.00
9. Bonner	105.26	0.00	0.00	0.00	0.00	0.04	0.00	48.82	0.00
10. Bonneville	1.63	0.00	0.00	0.00	0.00	0.00	0.00	0.00	83.25
11. Boundary	72.85	0.00	0.00	0.00	0.00	0.00	0.00	8.60	0.00
12. Butte	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13. Camas	3.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
14. Canyon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15. Caribou	3.91	0.00	0.00	0.00	0.81	0.00	0.00	0.00	0.00
16. Cassia	9.28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
17. Clark	6.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18. Clearwater	482.71	0.00	0.00	0.00	0.00	1.31	0.00	0.01	0.00
19. Custer	14.70	0.00	0.00	0.00	0.00	0.00	9.04	0.00	28.65
20. Elmore	16.16	40.52	0.00	0.00	0.00	0.00	0.18	0.00	0.00
21. Franklin	1.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22. Fremont	38.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.60
23. Gem	13.03	0.00	0.00	0.00	0.00	0.00	69.29	0.00	0.00
24. Gooding	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
25. Idaho	208.36	0.28	0.05	0.00	0.00	0.12	0.00	0.00	0.00
26. Jefferson	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
27. Jerome	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28. Kootenai	78.43	0.00	0.00	0.00	0.00	1.06	0.00	9.39	0.00
29. Latah	102.66	0.00	0.00	0.00	0.00	4.35	0.00	0.01	0.00
30. Lemhi	35.59	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.46
31. Lewis	12.45	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32. Lincoln	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
33. Madison	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34. Minidoka	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35. Nez Perce	5.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36. Oneida	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
37. Owyhee	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38. Payette	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39. Power	3.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40. Shoshone	240.06	0.00	0.00	0.00	0.00	7.50	0.00	0.00	0.00
41. Teton	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42. Twin Falls	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
43. Valley	49.24	44.25	0.00	0.00	0.00	0.00	11.15	0.00	0.00
44. Washington	3.87	43.67	27.61	0.00	0.00	0.00	0.00	0.00	0.00
Imports[c]	93.72	16.76	0.00	0.00	0.00	2.08	0.00	28.66	0.00
TOTALS	1852.13								

a) All are counties listed in the rows, but counties which paid no wages, are excluded from the columns. Counties excluded, therefore, have no multiplier.

b) "dd" means data withheld to avoid disclosing information on individual firms.

c) Imports were estimated from unpublished data obtained in the Idaho Forest Industry Study.

d) Due to rounding errors, this total does not agree with the actual total of $133,097,000; total includes all firms.

Table 4. Continued

11	12	13	18	19	20	22	23	25	28	29	30
				($1,000 wages per MMBF timber harvest)							
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.46	1.43	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.66	0.47	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	16.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	42.68	0.00	0.00	0.00	0.00
0.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.61	0.16	0.00
0.00	0.00	0.00	0.00	dd	0.00	0.00	0.00	0.00	0.00	0.00	0.00
15.91	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	9.33	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	16.03	0.00	0.00	dd	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	16.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	7.01	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	24.45	0.00	0.00	0.00	0.00	2.90	4.71	4.19	0.00
0.00	dd[b]	0.00	0.00	dd	0.00	0.00	27.45	0.00	0.00	0.00	15.31
0.00	0.00	1.60	0.00	0.00	dd	0.00	1.25	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	32.77	0.00	0.00	0.00	0.00	0.31
0.00	0.00	0.00	0.00	0.00	0.00	0.00	65.22	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	2.59	0.00	0.00	0.00	0.58	33.79	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	43.20	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.03	39.48	0.00
0.00	0.00	0.00	0.00	dd	0.00	0.00	0.00	0.00	0.00	0.00	41.79
0.00	0.00	0.00	4.48	0.00	0.00	0.00	0.00	16.42	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	3.33	0.00	0.00	0.00	0.00	0.00	0.00	15.92	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.26	0.00	0.00	0.32	0.00	0.00	0.00	0.00	0.00	24.09	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	53.83	0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.91	1.01	0.00

Table 4. Continued

31	33	35	40	42	43	44	Total 1972 Direct Wages
		($1,000 wages per MMBF timber harvest)					($1,000)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	$ 0.
0.00	0.00	0.00	0.00	12.82	8.06	1.94	7,462.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,216.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.
0.00	0.00	6.72	0.20	0.00	0.00	0.00	6,595.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.
0.00	0.00	0.00	0.00	0.00	0.44	0.00	14,163.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	6,097.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	dd
0.00	0.00	0.00	0.00	0.00	0.00	0.00	2,465.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	dd
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	151.
0.00	.49.73	0.00	0.00	0.00	0.00	0.00	341.
1.99	0.00	44.29	0.00	0.00	0.00	0.00	40,477.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,474
0.00	0.00	0.00	0.00	0.00	0.00	0.00	dd
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	3.91	0.00	0.00	0.00	0.00	0.00	1,448.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,752.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.25	0.00	5.38	0.00	0.00	3.82	0.04	9,776.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.61	8.33	0.00	0.00	0.00	4,909.
0.00	0.00	0.46	0.00	0.00	0.00	0.00	5,167.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	dd
21.38	0.00	5.35	0.00	0.00	0.00	0.00	593.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
7.71	0.00	23.91	0.00	0.00	0.00	0.00	280.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	6.85	8.71	0.00	0.00	0.00	12,660.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.
0.00	0.00	0.00	0.00	0.00	17.91	0.00	6,261
0.00	0.00	0.00	0.00	0.00	0.00	13.24	327.
0.00	0.00	5.49	0.00	0.00	0.00	0.00	6,193.
							$133,099.[d]

Similar employment and wage multipliers for the forty-four counties in Idaho are shown in Tables 3 and 4. Each multiplier should be interpreted as before.

Construction of Tables 1-4 required two basic types of data. First, the total pattern of timber cut and deliveries to counties in Idaho must be known. These data were developed as part of the Idaho Forestry Industry Study and are reported elsewhere.[5] The second type of data needed concerns employment and wage levels in Idaho's timber-using industry. These data were also obtained as part of the overall industry study and are reported elsewhere.[6] With these data available, Tables 1-4 were constructed by crediting employment and wages to state planning regions and counties on the basis of the distribution of timber cut between origin and destination.[7]

Tables 1-4 can be used in two major ways. First, the total direct impace on employment and wages resulting from a proposed change in the timber harvest level of a specific region or county can be determined. Simply multiply the the anticipated *change* in harvest level for a specific origin area times each multiplier included in that row; the sum of all multiplications is a measure of the total *direct* impact on employment and wages. The second major use of these tables is merely an extension of the

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[5] Koss, William D., Ervin G. Schuster, and E. Bruce Godfrey. Idaho: timber flow and future supply. Idaho Forest, Wildlife and Range Experiment Station. Information Series 13. (In publication process.)

[6] Schuster, Ervin G., William D. Koss, and E. Bruce Godfrey. Employment and wages in Idaho's forest products industry. Idaho Forest, Wildlife and Range Experiment Station. Information Series 6. 1974.

[7] The reader should note that employment and wages when allocated in this manner are not strictly comparable to the wages and employment data recorded earlier (see footnote #6.) Employment and Wages in this publication emphasize *origin* of timber rather than *destination* or county (region) of harvest vs. county of manufacture.

first. A left-hand column on each table shows the 1972 level of timber harvest associated with each region or county. The extreme right-hand column shows the result of multiplying each timber harvest level by associated multipliers for that area of origin and then summing across the row. Now, if an analyst wanted to determine total *direct* impacts in Idaho of changing timber harvest in several areas, the following procedure is appropriate: (a) identify and eliminate from consideration those areas for which no harvest change is anticipated; (b) multiply anticipated new harvest levels times the respective rows of multipliers and sum the products, as outlined above; (c) develop a new total for the extreme right-hand column by summing all rows; and (d) subtract the new total from the original total -- this difference is a measure of total *direct* impact in Idaho. Employment impacts so estimated, could then be used in conjunction with economic base multipliers to ascertain probable *aggregate* (direct and indirect) impacts.[8]

While many other uses likely exist for Tables 1-4, a word of caution is in order. Data used to develop these tables pertain to 1972. As such, they should be viewed as a one-time, snapshot of the relationship between Idaho timber harvest and employment and wage levels in Idaho's forest products industry. To the extent that 1972 was a nontypical year or that Idaho's timber-using industry is characterized by excess capacity, multipliers should be viewed with added caution. Therefore, utilization of these tables requires two major assumptions before assessment of future

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[8] Schuster, Ervin G., Charles R. Hatch, and William D. Koss. Location quotients, excess employment, and short run economic base multipliers for Idaho's forest products industry. Idaho Forest, Wildlife and Range Experiment Station. Information Series 10. 1975.

(other periods of time) impacts are made: (a) the internal linkages between the flow pattern of origin/destination of timber harvest and associated employment and wage levels are both reasonable and stable; and (b) changes in employment and wages due to changes in timber harvest are linear -- a given proportionate change in timber harvest will give rise to an identically proportionate change in relevant employment and wages. These assumptions seem most reasonable when analysis is restricted to modest changes in harvest levels and relatively short-range time horizons.

The multipliers contained in Tables 1-4 are designed to assist in evaluation of alternative systems of land-management associated with differing levels of timber harvest. Properly used, they will give an indication of probable impacts, one alternative relative to another -- not absolute impacts. As such, decision processes, based on more thorough impact assessments will be enhanced.