

Time-Series Changes in the Management of Forest Owners' Cooperatives Evident in their Financial Statements: Based on the *Statistics of the Forest owners' cooperative in Yamagata Prefecture*

Masahiro HAYAJIRI¹, Masahiro YAMAMOTO², Koji TAKAHASHI³

¹*Tottori Regional cooperation & Research Center*

²*Department of management of technology, Graduate School of Science and Engineering, Yamagata University*

³*Graduate School of Science and Engineering, Yamagata University*

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Abstract

To clarify the future direction of the development of forest owners' cooperatives, it is essential to precisely grasp their management trend. Financial statements (balance sheet, and profit and loss statement) are the most useful sources of information for this purpose. However, the management analyses using these sources are rarely conducted. One reason for this is that not all prefectures publicize the data on the financial statements of each forest owners' cooperative. To provide the basic research material on the analyses of the management of forest owners' cooperatives, this paper uses the data of the financial statements of all of the 15 forest owners' cooperatives in Yamagata Prefecture existing as of the year 2006 and shows the time-series changes of their management from fiscal 1974 to 2006. These data are publicized by the Yamagata Prefectural Office.

1. Introduction

The management of forest owners' cooperatives, which are cooperatives of forest owners, is becoming increasingly severe due to the sluggish production activities of forestry and the aging of their members. Qualitative analyses have been actively conducted on the managerial problems of forest owners' cooperatives, but not quantitative analyses.¹⁻²⁾ In addition, studies fully utilizing financial statements (balance sheet, and profit and loss statement), which are useful sources of information for quantitative analyses, have rarely been attempted.

As the researchers of this study, we have analyzed the management of the forest owners' cooperatives using the *Statistics of the Forest owners' cooperative in Yamagata Prefecture*, published by the Yamagata Prefectural Office. This record of statistics is an essential reference material to

reveal the history and current situations of the management of the forest owners' cooperatives in Yamagata. The statistics are a historically important academic material as well, given that not all prefectures publicize the financial statements of their forest owners' cooperatives. The paper presents the time-series changes in the management of the forest owners' cooperatives in Yamagata Prefecture using these meaningful data of the financial statements, in order to provide the basic material on the quantitative analyses of the management of forest owners' cooperatives.

2. Methods

This study conducts real number and ratio analyses utilizing the data of the financial statements in the *Statistics of the Forest owners' cooperative in Yamagata Prefecture*. The targeted

Table 1 Financial indicators

Indicator	Formula for computation
ROE (ordinary profit) (%)	Ordinary profit / Net-Assets × 100
ROS (ordinary profit) (%)	Ordinary profit / Total Business Earnings × 100
Total assets turnover (times)	Total Business Earnings / Assets ^a
SGA ratio (%)	Business Administration Expenses / Total Business Earnings × 100
Personnel expenses ratio (%)	Personnel expenses / Total Business Earnings × 100
Equity ratio (%)	Net-Assets / Assets ^a × 100
Current ratio (%)	Current Assets / Current Liabilities × 100

^a Assets = "Assets" (excluding Current Deficit Unappropriated) – (Long-term receivable + Receivable of AFC). AFC is abbreviation of 'Agriculture forestry and fisheries finance corporation'.

cases are those of Tendoshi Forest Owners' Cooperative(TFOC), Higashineshi Forest Owners' Cooperative(HFOC), Yuza Forest Owners' Cooperative(YuFOC), Sakata Forest Owners' Cooperative(SFOC), Akumichiho Forest Owners' Cooperative(AkFOC), Yamagatachiho Forest Owners' Cooperative(YaFOC), Nishimurayama-chiho Forest Owners' Cooperative(NmFOC), Atsumimachi Forest Owners' Cooperative(At-FOC), Kitamurayama Forest Owners' Cooperative(KiFOC), Yonezawachiho Forest Owners' Cooperative (YoFOC), Dewashonai Forest Owners' Cooperative (DFOC), Kaneyamamachi Forest Owners' Cooperative (KaFOC), Oguni-machi Forest Owners' Cooperative (OFOC), Nishiokitamafurusato Forest Owners' Cooperative (NoFOC) and Mogamikoiki Forest Owners' Cooperative (MFOC). These are the fifteen forest owners' cooperatives operating as of March 31st, 2007 in Yamagata.

The targeted period is that of the 33 years from fiscal 1974, when the second term of the Forest Owners' Cooperative Associations Merger Promotion Law (the fundamental law on which the promotion of forest owners' cooperative amalgamation is based) started, to the present time (fiscal 2006).

In order to clarify the changes in management conditions, the management indicators were

applied to the numerical values of the financial statements for each three-year period were totaled and used in the calculation. The ratio analyses adopt some technical terms and mathematical formulae (Table1). For their details, refer to Hayajiri and Yamamoto (2009).^{3,4)}

3. Results

3.1 Changes in the Management Environment and the Reorganization of Cooperatives

The total assets of the forest owners' cooperatives in Yamagata continued to decline after they peaked at approximately 6 billion JPY at fiscal 1983, and eventually decreased almost by half to approximately 3.3 billion JPY at fiscal 2006 (Fig.1). In more details, while the cash ratio has increased, long-term receivable and receivable of AFC (agriculture forestry and fisheries finance corporation) have decreased. Meanwhile, the assets of all the cooperatives at fiscal 2006 are lower than those at their peak time (Table 2).

The total business earnings reached approximately 7.2 billion JPY in fiscal 1996 (Fig.2). In fiscal 2006, however, total business earnings

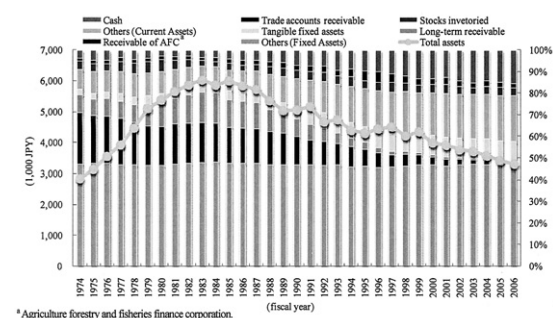


Fig.1 Changes in total assets of forest owners' cooperatives and the breakdown in Yamagata Prefecture between fiscal 1974 and 2006

Table 2 Changes in total assets of forest owners' cooperatives in Yamagata Prefecture

	TFOC	HFOC	YuFOC	SFOC	AkFOC	YaFOC	KaFOC	AtFOC	KiFOC	NmFOC	YoFOC	NoFOC	OFOC	DFOC	MFOC	Total ^a
1975	9,411	76,356	55,128	2,484	—	—	52,120	392,716	—	—	—	—	61,076	—	—	3,143,008
1980	24,407	378,166	99,995	7,293	—	270,038	66,764	636,715	—	415,375	—	—	131,029	—	—	5,373,771
1985	30,776	233,369	83,635	10,921	—	334,162	92,704	705,448	—	511,587	—	—	181,037	—	—	5,994,023
1990	36,100	215,583	72,183	33,872	—	268,566	136,973	562,802	—	467,282	—	—	266,894	—	—	5,051,418
1995	33,399	186,793	89,820	100,422	—	285,697	265,063	396,938	—	461,669	—	—	211,778	—	313,964	4,293,263
2000	29,540	162,689	100,053	157,300	—	231,081	215,539	299,754	240,362	392,022	305,805	376,094	209,779	519,447	371,386	3,982,237
2005	26,896	139,155	126,977	139,958	170,535	221,625	221,867	168,277	258,460	295,090	213,415	261,955	223,783	394,337	360,259	3,412,313

^a All cooperatives in Yamagata Prefecture.

Table 3 Changes in total business earnings of forest owners' cooperatives in Yamagata Prefecture

	TFOC	HFOC	YuFOC	SFOC	AkFOC	YaFOC	KaFOC	AtFOC	KiFOC	NmFOC	YoFOC	NoFOC	OFOC	DFOC	MFOC	Total ^a
1975	10,343	135,217	27,668	11,641	—	—	94,703	222,590	—	—	—	—	128,914	—	—	2,526,278
1980	21,766	223,322	53,957	24,000	—	232,569	105,021	255,410	—	352,981	—	—	282,679	—	—	4,514,958
1985	51,189	115,884	51,933	30,271	—	346,496	172,694	288,659	—	500,648	—	—	456,674	—	—	5,212,535
1990	44,137	121,385	51,540	81,941	—	374,913	203,061	339,413	—	445,960	—	—	553,757	—	—	5,620,434
1995	38,563	161,893	146,035	175,362	—	327,364	705,447	243,865	—	551,287	—	—	498,138	—	166,002	6,920,097
2000	47,393	110,126	110,166	163,385	—	276,181	364,322	331,460	316,870	438,145	484,999	610,618	511,190	591,999	154,064	5,664,516
2005	35,721	44,483	148,376	145,847	137,561	172,223	330,075	256,840	214,606	291,431	247,775	336,830	440,263	292,899	110,499	3,755,639

^a All cooperatives in Yamagata Prefecture.

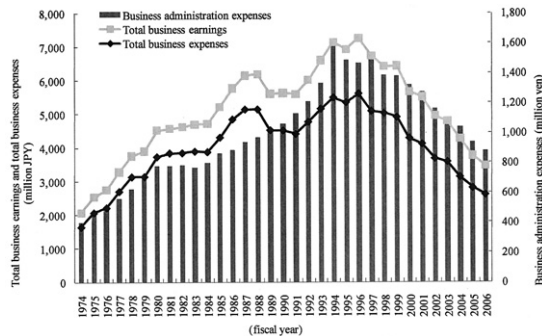


Fig.2 Changes in total business earnings, total business expenses and business administration expenses of forest owners' cooperatives in Yamagata Prefecture between fiscal 1974 and 2006

Table 4 Reorganization of forest owners' cooperatives in Yamagata Prefecture between fiscal 1974 and 2006

Date of foundation	Merged cooperative	Predecessor cooperative
July 4, 1975	Tendoshi	Tendoshi, Hoi
December 7, 1976	Yamagatachiho	Yamagatachi, Kaminoyamashi, Yamamoto, Yamanobemachi, Nakayamamachi
September 28, 1977	Yonezawashi	Bansai, Yamakami, Minamihara, Yonezawashiseki, Tsunagi, Misawatobu, Misawaseibu, Hirohata, Yonezawa, Kamigo
January 19, 1980	Nishimurayamachiho	Sagaishi, Kahoku, Nishikawamachi, Ashimachi, Oemachi
August 1, 1990	Hirata	Hirata, Higashihirata
April 3, 1995	Mogamikoiki	Shinjoshi, Mogamimachi, Funagatamachi, Mamurogawamachi, Okuramura, Sakegawamura, Tozawamura
October 1, 1996	Kitamurayama	Murayamashi, Obanzawashi, Oshidamachi
January 6, 1997	Yonezawachiho	Yonezawashi, Nanyoshi, Takahatamachi, Kawanishimachi
April 1, 1997	Dewashonai	Tsuruokashi, Tachikawamachi, Haguromachi, Asahimura, Kushibikimachi
April 1, 1999	Nishiokitamafurusato	Nagaishi, Shirakamachi, Idemachi
April 2, 2001	Akumichiho	Yawatamachi, Matsuyama, Hirata

Table 5 Type of the forest owners' cooperative of Yamagata Prefecture (as of March 31st, 2007)

Number of full-time executives and employees (person)	Total business earnings (1,000 JPY)			
	~100,000	100,001-200,000	200,001-300,000	300,001-
1-5	Tendoshi (TFOC) Higashineshi (HFOC)	Yuza (YuFOC) Sakata (SFOC)	—	—
6-10	—	Akumichiho (AkFOC) Yamagatachiho (YaFOC)	Kaneyamamachi (KaFOC) Atsumimachi (AtFOC) Kitamurayama (KiFOC) Nishimurayamachiho (NmFOC)	—
11-	—	—	Yonezawachiho (YoFOC) Nishiokitamafurusato (NoFOC)	Ogunimachi (OFOC) Dewashonai (DFOC) Mogamikoiki (MFOC)

declined to the lowest level in the last 33 years. The recent trend of the declining total business earnings is evident in each cooperative as well (Table3). The same also applies to total business expenses. However, business administration expenses declined more slowly than did total business earnings and expenses.

In the mid-1990s and after that, when the management of the forest owners' cooperatives began to become stagnant, the cooperatives started to be reorganized again (Table4). Because of this reorganization, the number of the cooperatives in Yamagata Prefecture has decreased from 35 to 15. As a result, new, wider-area cooperatives covering two or more municipal governments were established. As of

March 31st in 2007, there were cooperatives with different management scales, ranging from a small one with five or fewer full-time executives and employees and with total business earnings of 100 million JPY or less, to a large one with 11 or more full-time executives and employees and with total business earnings of more than 300 million JPY (Table 5).

3.2 Shift in the Management Situation evident in the ratio analysis

First, the study examines ROA, ROS, and total assets turnover, in order to determine the shift in the management situation (Table6, Table7). ROA means the reproduction ratio of capita and is the most basic concept indicating

Table 6 Changes in ROA and ROS of forest owners' cooperatives in Yamagata Prefecture

	TFOC	HFOC	YuFOC	SFOC	AkFOC	YaFOC	KaFOC	AtFOC	KiFOC	NmFOC	YoFOC	NoFOC	OFOC	DFOC	MFOC	Unit: % Total ^a
ROA (ordinary profit)																
1974-1976	—	0.4	0.4	5.5	—	—	1.0	0.6	—	—	—	—	1.3	—	—	0.6
1977-1979	0.1	-5.9	0.3	2.7	—	-1.9	-0.2	1.8	—	—	—	—	4.9	—	—	0.5
1980-1982	0.6	-15.7	0.3	1.6	—	-16.5	-3.8	-4.2	—	-0.8	—	—	3.6	—	—	-2.0
1983-1985	0.7	-1.0	-0.8	2.8	—	8.0	-1.0	1.8	—	0.3	—	—	4.3	—	—	1.6
1986-1988	1.1	5.5	1.0	5.2	—	5.6	0.5	1.2	—	3.6	—	—	2.1	—	—	2.2
1989-1991	0.9	2.8	0.9	10.2	—	0.8	2.6	0.8	—	1.9	—	—	1.3	—	—	2.4
1992-1994	1.7	6.8	3.4	25.4	—	2.8	4.5	-2.0	—	5.7	—	—	0.8	—	—	3.8
1995-1997	2.5	10.9	11.5	9.6	—	6.5	1.0	-4.3	—	4.9	—	—	1.2	—	9.3	5.4
1998-2000	5.3	1.7	3.3	14.0	—	3.7	-38.6	7.0	—	2.6	0.5	—	1.2	1.7	8.2	2.9
2001-2003	5.2	1.8	8.5	6.0	2.4	1.4	10.5	30.5	3.8	1.3	1.8	-0.2	1.2	1.4	2.4	3.8
2004-2006	0.1	0.8	6.7	0.3	0.9	0.9	9.2	5.1	1.4	1.9	-0.2	-1.6	0.9	-0.5	0.9	1.5
ROS (ordinary profit)																
1974-1976	—	0.2	0.3	1.2	—	—	0.4	0.3	—	—	—	—	0.3	—	—	0.3
1977-1979	0.0	-3.9	0.3	0.7	—	-0.8	-0.1	1.1	—	—	—	—	1.2	—	—	0.2
1980-1982	0.1	-9.9	0.2	0.5	—	-7.0	-1.7	-2.6	—	-0.3	—	—	1.0	—	—	-0.9
1983-1985	0.2	-0.8	-0.7	0.9	—	3.3	-0.4	1.1	—	0.1	—	—	1.0	—	—	0.7
1986-1988	0.4	5.7	0.7	2.1	—	2.4	0.2	0.6	—	1.0	—	—	0.6	—	—	0.9
1989-1991	0.4	2.8	0.9	4.0	—	0.5	1.3	0.6	—	0.9	—	—	0.5	—	—	1.2
1992-1994	0.8	5.9	2.2	12.2	—	1.7	1.8	-1.5	—	2.9	—	—	0.3	—	—	1.7
1995-1997	1.4	8.0	8.2	5.4	—	4.5	0.4	-4.0	—	3.3	—	—	0.4	—	3.4	2.6
1998-2000	2.7	1.8	2.8	8.4	—	2.6	-19.9	4.2	—	2.0	0.3	—	0.4	1.2	3.9	1.7
2001-2003	2.7	2.4	5.7	4.8	1.5	1.5	6.1	12.3	3.2	1.2	1.1	-0.1	0.5	1.3	1.5	2.6
2004-2006	0.0	1.9	6.2	0.3	0.8	1.1	5.8	2.9	1.5	2.0	-0.1	-1.2	0.5	-0.6	0.8	1.3

^a All cooperatives in Yamagata Prefecture.

Table 7 Changes in total assets turnover of forest owners' cooperatives in Yamagata Prefecture

	TFOC	HFOC	YuFOC	SFOC	AkFOC	YaFOC	KaFOC	AtFOC	KiFOC	NmFOC	YoFOC	NoFOC	OFOC	DFOC	MFOC	Unit: times Total ^a
1974-1976	—	2.6	1.3	4.8	—	—	2.3	2.1	—	—	—	—	3.8	—	—	2.1
1977-1979	2.8	1.5	1.0	4.0	—	2.3	2.3	1.7	—	—	—	—	4.0	—	—	2.1
1980-1982	5.0	1.6	1.5	3.1	—	2.4	2.3	1.6	—	3.0	—	—	3.6	—	—	2.3
1983-1985	3.5	1.2	1.2	3.3	—	2.4	2.5	1.7	—	3.3	—	—	4.2	—	—	2.3
1986-1988	2.5	1.0	1.5	2.5	—	2.3	2.8	2.1	—	3.5	—	—	3.3	—	—	2.5
1989-1991	2.0	1.0	1.0	2.6	—	1.6	2.1	1.4	—	2.2	—	—	2.7	—	—	2.0
1992-1994	2.0	1.2	1.6	2.1	—	1.6	2.5	1.3	—	2.0	—	—	2.7	—	—	2.2
1995-1997	1.8	1.4	1.4	1.8	—	1.4	2.5	1.1	—	1.5	—	—	2.7	—	2.8	2.1
1998-2000	1.9	0.9	1.2	1.7	—	1.4	1.9	1.7	—	1.3	1.9	—	2.7	1.4	2.1	1.8
2001-2003	1.9	0.8	1.5	1.2	1.6	1.0	1.7	2.5	1.2	1.1	1.6	1.7	2.3	1.1	1.6	1.5
2004-2006	1.6	0.4	1.1	1.1	1.2	0.8	1.6	1.8	0.9	0.9	1.3	1.3	2.1	0.9	1.2	1.2

^a All cooperatives in Yamagata Prefecture.

the efficiency in management. ROA can be divided into ROS and total assets turnover. ROS is the ratio of return to total business earnings and it indicates how large a margin is. Total assets turnover is used to grasp how much profit was made within a year on given capital, representing the efficiency of the capital. Meanwhile, the ratio analysis uses numerical values except for long-term receivable (long-teem loans payable) and receivable of AFC (loans payable of AFC). There is no evident trend detected in the shifts of ROA and ROS, although the declining trend in total assets turnover implies a decline in the efficiency of the management.

Second, the study examines the ratio of the business administration expenses to total business earnings and the ratio of the personnel expenses to total business earnings (Table8). The index of the former is called the SGA ratio

and latter index the personnel expenses ratio. The SGA ratio is the index that represents the percentage of the business administration expenses toward total business earnings, the personnel expenses ratio shows the percentage of the personnel expenses, within business administration expenses, toward total business earnings. In both ratios, it is said that the smaller the numerical values are, the more efficient the operational cost management and personnel costs are. The SGA of the fifteen cooperatives except for Kaneyamamachi Forest Owners' Cooperative(KaFOC) are in the upward trend. The personnel expenses ratio exhibits a similar tendency.

The study also examines the equity ratio and the current ratio (Table9). The equity ratio is an index used in the safety analyses and represents the ratio of equity capital in the total capital. The larger the numerical value is, the

Table 8 Changes in SGA ratio and personnel expenses ratio of forest owners' cooperatives in Yamagata Prefecture

	TFOC	HFOC	YuFOC	SFOC	AkFOC	YaFOC	KaFOC	AtFOC	KiFOC	NmFOC	YoFOC	NoFOC	OFOC	DFOC	MFOC	Unit: % Total ^a
SGA ratio																
1974-1976	—	15.3	35.3	42.0	—	—	16.6	14.3	—	—	—	—	17.4	—	—	18.6
1977-1979	15.8	16.6	27.5	37.9	—	21.5	16.5	12.8	—	—	—	—	18.8	—	—	17.3
1980-1982	23.1	15.5	18.5	35.5	—	15.9	18.3	15.3	—	23.3	—	—	14.8	—	—	17.0
1983-1985	11.2	17.5	31.5	31.0	—	10.7	16.4	15.8	—	20.9	—	—	14.5	—	—	16.6
1986-1988	11.8	14.8	23.3	25.0	—	12.2	12.7	14.3	—	19.7	—	—	15.1	—	—	15.4
1989-1991	17.0	17.3	40.2	21.9	—	15.6	13.7	16.7	—	27.9	—	—	17.5	—	—	19.1
1992-1994	23.7	19.0	35.4	21.7	—	17.9	12.3	19.9	—	30.1	—	—	21.0	—	—	20.9
1995-1997	22.8	18.4	29.7	20.2	—	19.4	15.9	24.4	—	35.5	—	—	22.8	—	18.2	21.3
1998-2000	20.7	23.9	34.6	22.1	—	21.1	11.0	17.3	—	34.8	22.3	—	23.8	20.7	20.7	22.1
2001-2003	21.2	25.6	19.4	26.7	24.1	26.6	7.2	14.0	20.7	37.4	22.0	25.0	25.8	23.6	24.1	23.2
2004-2006	27.9	30.7	24.3	28.5	27.6	28.3	6.4	16.3	22.8	36.3	24.5	26.3	28.7	23.8	27.6	24.9
Personnel expenses ratio																
1974-1976	—	0.0	0.0	0.0	—	—	0.0	0.0	—	—	—	—	0.0	—	—	0.0
1977-1979	0.0	0.0	0.0	0.0	—	0.0	0.0	0.0	—	—	—	—	0.0	—	—	0.0
1980-1982	12.5	10.0	11.8	31.2	—	28.0	14.9	10.2	—	16.4	—	—	9.3	—	—	12.9
1983-1985	5.1	11.4	20.7	25.2	—	26.7	13.0	11.7	—	16.1	—	—	9.4	—	—	13.1
1986-1988	3.9	8.2	15.3	20.9	—	21.9	10.1	9.7	—	11.3	—	—	11.0	—	—	11.6
1989-1991	8.1	10.7	26.1	16.7	—	25.0	11.4	12.1	—	16.9	—	—	14.4	—	—	14.1
1992-1994	11.6	12.9	28.4	17.2	—	32.5	8.2	15.3	—	17.7	—	—	18.5	—	—	15.3
1995-1997	14.0	11.3	18.3	10.4	—	27.4	7.3	19.0	—	19.5	—	—	18.3	—	10.8	14.2
1998-2000	11.4	12.3	17.5	10.3	—	32.9	3.4	11.3	—	20.4	15.7	—	18.6	13.2	13.4	15.0
2001-2003	13.6	13.7	7.9	14.5	16.2	43.9	3.1	8.9	15.4	21.3	14.3	15.9	19.7	14.2	16.2	16.0
2004-2006	18.3	18.2	10.4	15.8	19.8	46.7	2.9	10.2	15.6	21.3	15.1	17.9	21.0	13.3	19.8	17.4

^a All cooperatives in Yamagata Prefecture.

Table 9 Changes in equity ratio and current ratio of forest owners' cooperatives in Yamagata Prefecture

	TFOC	HFOC	YuFOC	SFOC	AkFOC	YaFOC	KaFOC	AtFOC	KiFOC	NmFOC	YoFOC	NoFOC	OFOC	DFOC	MFOC	Unit: % Total ^a
Equity ratio																
1974-1976	—	38.0	40.1	31.6	—	—	36.8	28.9	—	—	—	—	42.1	—	—	29.5
1977-1979	35.3	29.7	30.3	33.7	—	37.8	29.2	29.5	—	—	—	—	53.3	—	—	29.7
1980-1982	61.1	19.2	48.0	30.9	—	13.0	26.0	23.9	—	66.0	—	—	51.4	—	—	32.1
1983-1985	21.1	11.8	61.0	38.1	—	45.2	38.1	49.0	—	75.5	—	—	61.6	—	—	41.3
1986-1988	15.3	30.4	50.3	33.1	—	47.2	32.1	57.7	—	69.7	—	—	46.1	—	—	42.7
1989-1991	24.7	46.1	54.6	37.6	—	38.0	22.3	44.4	—	59.6	—	—	46.3	—	—	42.6
1992-1994	34.8	62.5	58.0	55.6	—	44.0	19.5	41.4	—	51.4	—	—	51.9	—	—	46.3
1995-1997	30.8	80.5	41.0	63.6	—	48.1	23.2	34.7	—	44.0	—	—	57.1	—	64.4	52.3
1998-2000	32.6	84.7	59.3	66.1	—	60.5	-67.7	15.4	—	49.1	42.9	—	63.5	50.2	72.2	53.1
2001-2003	46.3	84.9	55.6	80.4	74.2	60.1	-58.4	1.8	79.8	53.9	46.0	65.5	63.5	65.2	74.2	57.1
2004-2006	52.1	86.6	62.3	85.9	77.2	63.6	-24.2	55.2	84.0	64.3	58.8	79.0	68.0	66.3	77.2	65.8
Current ratio																
1974-1976	—	140.6	158.0	260.2	—	—	164.0	141.4	—	—	—	—	141.3	—	—	131.8
1977-1979	134.4	112.4	65.6	538.3	—	107.8	186.3	139.2	—	—	—	—	210.7	—	—	134.5
1980-1982	195.1	115.1	100.5	348.9	—	92.4	179.2	115.3	—	291.9	—	—	248.0	—	—	147.3
1983-1985	116.7	51.0	199.4	998.1	—	181.8	168.1	186.7	—	430.1	—	—	330.6	—	—	177.6
1986-1988	111.5	65.8	176.5	289.8	—	182.4	147.5	245.8	—	297.2	—	—	189.5	—	—	181.7
1989-1991	129.0	75.7	227.0	326.9	—	128.9	129.3	160.3	—	233.5	—	—	194.6	—	—	174.1
1992-1994	165.4	93.8	272.8	417.9	—	169.9	103.4	138.7	—	229.9	—	—	219.1	—	—	186.1
1995-1997	168.0	268.3	192.8	311.5	—	208.8	110.5	175.9	—	229.9	—	—	250.7	—	255.4	220.9
1998-2000	185.3	520.6	489.9	328.2	—	386.6	45.3	116.0	—	286.5	271.2	—	323.9	268.2	384.3	227.9
2001-2003	299.9	735.1	242.1	455.6	534.8	434.8	47.4	79.9	418.4	332.4	302.3	223.4	298.3	594.0	534.8	251.1
2004-2006	1,314.6	1,474.2	300.4	474.1	816.5	672.0	62.1	234.7	933.2	504.1	349.0	471.6	281.9	717.0	816.5	353.2

^a All cooperatives in Yamagata Prefecture.

more stable the composition of the capital and the management are. This index is highly valued in judging the financial situation of a cooperative. The current ratio shows how much current asset, which is the asset applicable to the reimbursement of the current liabilities within a year, is owned. The higher the ratio is, the more capital there is for short-term cash management. The standards of the equity ratio and the current ratio are in the upward trend in all the cooperatives except for Kaneyamamachi Forest Owners' Cooperative(KaFOC), suggesting improvement in their financial situations.

3.3 Structural Changes of the Profit and Loss by Operating Departments

The operating departments of forest owners' cooperatives mainly consist of consulting, sales, purchasing utilization and finance. These departments offer various services to their members. The consulting departments provide managerial instructions, and the sales departments produce and sell forestry products and processed goods of these products. The purchasing departments provide forestry materials. The utilization departments are engaged in afforestation and tending, the control of pests, and subsidy-related operations. The finance departments conduct loan opera-

Table 10 Changes in total business earnings by operational departments of forest owners' cooperatives in Yamagata Prefecture

	Unit: %																				
	Utilization						Sales						Others								
	1975	1980	1985	1990	1995	2000	1975	1980	1985	1990	1995	2000	2005	1975	1980	1985	1990	1995	2000	2005	
TFOC	51.5	59.0	84.4	84.5	83.6	90.1	89.9	0.0	0.0	1.9	0.0	0.0	0.0	0.0	48.5	41.0	13.6	15.5	16.4	9.9	10.1
HFOC	34.2	35.2	63.2	69.0	72.2	72.0	70.3	53.7	56.4	22.5	20.9	21.4	22.2	19.6	12.1	8.4	14.4	10.0	6.4	5.8	10.1
YiFOC	15.2	26.7	34.6	42.6	83.8	77.4	94.0	39.4	34.0	34.5	24.1	4.3	7.3	0.3	45.3	39.3	30.8	33.3	11.9	15.2	5.7
SFOC	30.2	34.8	39.2	57.9	69.0	82.7	93.2	0.0	0.0	0.0	7.9	1.0	1.9	2.1	69.8	65.2	60.8	34.2	30.0	15.5	4.7
AkFOC	—	—	—	—	—	—	65.5	—	—	—	—	—	—	16.4	—	—	—	—	—	—	18.2
YaFOC	—	41.6	84.6	75.2	87.7	84.4	80.5	—	40.2	1.6	14.6	3.7	3.3	2.4	—	18.2	13.8	10.3	8.6	12.4	17.1
KaFOC	1.6	9.2	22.6	4.2	11.2	33.6	37.5	85.8	71.9	66.6	89.2	74.1	56.1	40.6	12.6	18.9	10.9	6.7	14.7	10.4	21.9
AiFOC	12.2	22.3	26.8	24.9	37.0	22.2	23.2	55.1	40.1	43.6	58.0	44.5	68.6	70.7	32.7	37.7	29.6	17.1	18.4	9.2	6.2
KiFOC	—	—	—	—	—	78.0	78.3	—	—	—	—	—	—	16.1	11.2	—	—	—	—	5.8	10.5
NmFOC	—	49.2	57.0	62.7	69.1	63.4	63.0	—	26.6	26.6	13.8	19.3	25.6	12.8	—	24.2	16.4	23.5	11.5	11.1	24.2
YoFOC	—	—	—	—	—	80.0	74.7	—	—	—	—	—	13.9	19.3	—	—	—	—	—	6.1	6.0
NoFOC	—	—	—	—	—	66.9	52.5	—	—	—	—	—	26.1	40.5	—	—	—	—	—	7.0	7.0
OFOC	60.6	60.2	40.5	31.7	30.5	25.7	20.6	21.4	26.9	39.3	52.0	50.8	54.4	61.4	17.9	12.9	20.1	16.3	18.7	19.9	18.1
DFOC	—	—	—	—	—	49.8	66.8	—	—	—	—	—	42.4	22.0	—	—	—	—	—	7.8	11.2
MFOC	—	—	—	—	53.6	41.9	47.2	—	—	—	—	—	38.4	52.3	46.4	—	—	—	8.0	5.8	6.4
Total *	32.0	39.3	51.9	48.2	56.4	54.1	54.2	40.0	38.9	29.4	37.0	32.0	36.7	34.2	28.0	21.8	18.6	14.8	11.6	9.2	11.6

*All cooperatives in Yamagata Prefecture.

Table 11 Changes in total business profit by operational departments of forest owners' cooperatives in Yamagata Prefecture

	Unit: %																			
	Utilization						Sales						Others							
	1975	1980	1985	1990	1995	2000	1975	1980	1985	1990	1995	2000	2005	1975	1980	1985	1990	1995	2000	2005
TFOC	46.4	30.5	67.2	95.6	81.1	92.3	94.0	0.0	0.0	2.2	0.0	0.0	0.0	53.6	69.5	30.6	4.4	18.9	7.7	6.0
HFOC	31.6	34.1	76.4	78.5	84.5	85.6	86.2	53.8	60.5	10.5	13.0	10.9	10.2	5.6	14.6	5.4	13.1	8.6	4.6	4.2
YiFOC	29.5	32.1	47.2	43.4	80.7	76.5	96.4	31.9	32.3	22.7	21.1	4.0	4.5	0.0	38.6	35.6	30.1	35.5	15.3	19.0
SFOC	26.6	24.7	36.6	68.7	80.7	92.9	100.3	0.0	0.0	0.0	10.0	1.9	3.6	2.7	73.4	75.3	63.4	21.3	17.3	3.5
AkFOC	—	—	—	—	—	—	58.8	—	—	—	—	—	—	6.8	—	—	—	—	—	34.4
YaFOC	—	37.6	87.3	81.6	94.0	94.2	89.7	—	43.8	1.1	18.4	3.8	0.9	1.7	—	18.6	11.6	0.0	2.3	4.9
KaFOC	9.1	27.1	25.2	22.6	16.7	55.9	49.3	57.2	44.4	66.8	73.6	66.7	37.5	19.8	33.7	28.5	8.0	3.9	16.6	6.6
AiFOC	25.4	45.7	36.8	41.4	45.1	36.1	65.1	42.2	2.8	34.8	38.0	39.9	53.9	21.9	32.4	51.5	28.4	20.6	15.0	10.0
KiFOC	—	—	—	—	—	93.6	95.1	—	—	—	—	—	7.5	5.4	—	—	—	—	—	-1.1
NmFOC	—	64.7	65.4	70.9	76.5	71.9	68.2	—	18.1	16.1	13.0	17.0	22.5	12.8	—	17.2	18.4	16.1	6.5	5.6
YoFOC	—	—	—	—	—	94.4	91.7	—	—	—	—	—	4.0	5.9	—	—	—	—	—	1.6
NoFOC	—	—	—	—	—	94.7	65.3	—	—	—	—	—	2.6	31.3	—	—	—	—	—	2.7
OFOC	56.2	58.8	43.6	39.0	46.5	38.3	32.6	28.7	33.5	46.0	51.1	43.2	54.1	58.9	15.1	7.7	10.4	9.9	10.3	7.7
DFOC	—	—	—	—	—	46.2	69.7	—	—	—	—	—	43.4	18.1	—	—	—	—	—	10.4
MFOC	—	—	—	—	83.5	76.9	66.3	—	—	—	—	13.8	20.7	31.0	—	—	—	—	2.7	2.4
Total *	37.6	49.6	62.0	60.2	73.4	72.9	69.5	34.6	31.7	22.3	28.1	19.1	22.1	22.9	27.8	18.7	15.7	11.7	7.4	4.9

*All cooperatives in Yamagata Prefecture.

tions, among others. As for the profit and loss of operating departments, the paper divides the departments into utilization, sales and the others (consulting, purchasing, and finance) for separate examinations. Overall, there has been no change in the revenue structure in each operating department (Table10). However, these departments have different revenue structures from each other. In the utilization department of fiscal 2005, the minimum value was 20.6 percent and the maximum value was 94.0 percent. In the sales department of the same year, the minimum value was zero percent and the maximum value was 70.7 percent.

The examination of the profit structure based on the data of the total business profit (margin profit) reveals that overall the ratio of the utilization department is becoming larger while those of the sales and other departments are either decreasing or stagnating (Table11). However, a closer look at each department can show that the status of management varies in different cooperatives, just as can be seen in

revenue structures.

4. Conclusion

Since the end of World War II, forest owners' cooperatives have functioned as vital entities for the management of forests in this country. These days, however, their management environment is becoming increasingly severe, as is evident in the decrease in their revenues. One of their policies to survive through this difficulty is, for example, the consolidation of some cooperatives, which has already been attempted.⁵⁾ Forest owners' cooperatives are now going through their transition period. In order to decide where forest owners' cooperatives should go and to set them on a right path, it is necessary to understand their management trend. In this respect, the financial statements data presented in this paper are the most useful source of information to know the trend. The data are also essential basic materials in discussing the direction of the development of the cooperative. For example, the analyses of

the data on the financial statements reveal not only the declining revenues. The analyses also enable us to grasp the more detailed pictures of the management. They can disclose, for example, that declining revenue ratios are accompanying those declining revenues while the financial grounds are becoming stronger.

Furthermore, this study has another merit. Although not all prefectures publicize the data on the financial statements of each forest owners' cooperative, they are easy to obtain if they are available as booklets. In the future, it is necessary to establish more unified analytic methods and collect information throughout the nation for full-scale experimental studies using large-scale quantitative data.

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