Staff Paper

Share Milkers: New Zealand Rules
Michigan Economics
by

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Executive Summary

New Zealand dairy farmers have a system of working young managers into their industry called sharemilking. Young people start with no capital as hired help, and progress through tenant situations where they receive 29%, then 39%, then 50% of milk sales. By middle age they may accumulate enough resources to become owner operators.

This paper examines how New Zealand sharemilking rules would work given Michigan dairy farm economics. The average income statement of 143 Telfarmers for 1994 was allocated between owner and tenant. The profit measure is called net income to equity. All owner and family labor is treated as an expense. Cash interest and depreciation are expenses; inventory changes of livestock and crop inventories are included. The net income to equity averaged $19,269 for the 143 farms.

The various tenant percentages would split the profit as follows:

	Owner	Tenant
29% Sharemilker	$-20,452	$39,721
39% Sharemilker	-25,199	44,468
50% Sharemilker	136,039	-116,770

Given the different organizational structure of Michigan's dairy farms, neither landlord nor tenant would likely find New Zealand's percentage allocations acceptable.

Information Sources

The New Zealand splits between landlords and tenants were taken from Management and Financial Characteristics of New Zealand Dairy Farms by Warren J. Parker, Massey University, Palmerston North, New Zealand, August, 1993, 36 pages. It was given at a Workshop on "Parallels in Dairy Grazing in New Zealand and the Midwest" at Arlington Research Station, Wisconsin, August 25-28, 1993. Added details were taken from unpublished correspondence course materials from New Zealand.

Telfarm is a mail in accounting system farmers voluntarily subscribe to and pay for sponsored by Michigan State University Extension and the Department of Agricultural Economics.

Specialized dairy farmers who have completed the fiscal year including reporting inventory changes and cropping results have their management analyses pooled and averaged. In 1994, there were 143 such farms.

Telfarm software automatically splits the results into livestock and crop divisions. This break out of expense data made it possible to closely duplicate the New Zealand rules. For example, in the 29% share milker rules, the tenant provides all the livestock labor, and the owner does the crops labor. Telfarm allocates labor between crops and livestock, allowing this budgeting analysis to closely simulate the rules. However, a few assumptions were needed. These are described in a later section.

Results

The next 3 tables show the budgeted results for 29%, 39% and 50% share, respectively. Each Table has the same 1994 Telfarm base situation on the left. The real estate owner, or landlord, portion is in the center and the tenant, or share milker, portion is on the right of each table. The line number column on the left is merely for referencing in the below discussion.

Table 1. Comparing NZ Sharemilker Strategies 71% - 29%

Average returns for 143 Michigan Telfarmers

Line Number	Base Situation, 1994			Farm Owner	29% Share Milker
1	**INCOME**				
2	Milk income:				
3	Cows	128			
4	Lbs. sold	19,908			
5	Price	$13.48			
6					
7	Milk income:		$344,386	$244,514	$99,872
8	Bob calves:				
9	60 hd	$120	7,200	5,112	2,088
10	Cull Cows:				
11	36 hd	519	18,590	18,590	
12	Bred heifers:				
13	10 hd	1,100	11,000	11,000	
14	Replacement heifer transfer:				
15	Value at weaning			30 hd $175 (5,250)	5,250
16	Cash crops		27,638	27,638	
17	Government payments		7,025	7,025	
18					
19	Total cash income		$415,839	$308,629	$107,210
20					

			Base		Owner		29 % Share
21	**EXPENSES**						
22	Labor Costs:						
23	Operator (noncash)						
24	Crops						
25	1,222 hr	$6.50	7,943	1,222 hr $6.50	$7,943		
26	Dairy cattle						
27	1,560 hr	6.50	10,140			1,560 hr $6.50	$10,140
28	Family (noncash)						
29	Crops						
30	989 hr	6.50	6,429	989 hr 6.50	6,429		
31	Dairy cattle						
32	1,263 hr	6.50	8,210			1,263 hr 6.50	8,210
33	Hired (cash)						
34	Crops						
35	2,677 hr	8.64	23,129	2,677 hr 8.64	23,129		
36	Dairy cattle						
37	3,418 hr	8.64	29,532			3,418 hr 8.64	29,532
38	Machinery repairs:						
39	Crops		16,652		16,652		
40	Dairy cattle		9,561		9,361		200
41	Gas, oil, diesel:						
42	Crops		7,488		7,488		
43	Dairy cattle		952				952
44	Custom hire, crops		7,437		7,437		
45	Interest paid, machinery:						
46	Crops		1,761		1,761		
47	Dairy cattle		598		598		
48	Conservation, crops		185		185		
49	Buildings, shed repairs:						
50	Crops		2,530		2,530		
51	Dairy cattle		1,453		1,253		200
52	Insurance:						
53	Crops		1,890		1,890		
54	Dairy cattle		2,830		2,830		
55	Lease on buildings, crops		2,687		2,687		
56	Interest paid, buildings:						
57	Crops		655		655		
58	Dairy cattle		1,306		1,306		
59	Crop items:						
60	Fertilizer and lime		17,111		17,111		
61	Supplies and packaging		292		292		
62	Seeds and plants		8,171		8,171		
63	Chemicals, weed sprays		8,977		8,977		
64	Marketing		226		226		
65	Other items and irrigation		826		826		
66	Interest paid for inventory		2,660		2,660		
67	Dairy cattle items:						
68	Semen, breeding supplies		3,671		3,671		
69	Veterinary, drugs		11,067		11,067		

		Base	Owner			29 % Share
70	Marketing, milk hauling	21,963	15,594			6,369
71	Livestock supplies	9,096	6,458			2,638
72	Bedding, registrations, DHI	7,524	7,524			
73	Interest paid on cattle	5,696	5,696			
74	Land taxes:					
75	Crops	5,687	5,687			
76	Dairy cattle	1,464	1,464			
77	Interest paid, land:					
78	Crops	4,591	4,591			
79	Dairy cattle	44	44			
80	Cash rent, crop land	13,429	13,429			
81	Electricity, phone, utilities:					
82	Crops	1,112	1,112			
83	Dairy cattle	8,149	100			8,049
84	Miscellaneous items:					
85	Crops	1,642	1,642			
86	Dairy cattle	2,097	2,097			
87	Purchased dairy feeds	87,373	86,173	60 hd	20	1,200
88						
89	Total Above Expenses	$366,235	$298,746			$67,489
90						
91	Initial Income to Equity:	49,605	9,884			39,721
92						
93	Plus Inventory changes:					
94	Feeds and crops	$4,871	$4,871			0
95	Dairy cattle	10,030	10,030			0
96	Minus depreciation, capital adjustments:					
97	Machinery:					
98	Crops	19,859	19,859			0
99	Dairy cattle	7,297	7,297			0
100	Buildings:					
101	Crops	3,796	3,796			0
102	Dairy cattle	6,376	6,376			0
103	Purchased dairy livestock	10,925	10,925			0
104	Plus gain on sale of machinery	3,016	3,016			0
105						
106	**NET INCOME TO EQUITY**	$19,269	($20,452)			$39,721

Table 2. **Comparing NZ Sharemilker Strategies 61% - 39%**

Average returns for 143 Michigan Telfarmers

Line Number	Base Situation, 1994			Farm Owner			39% Share Milker		
1	**INCOME**								
2	Milk income:								
3	Cows	128							
4	Lbs. sold	19,908							
5	Price	$13.48							
6									
7	Milk income:		$344,386			$210,076			$134,311
8	Bob calves:								
9	60 hd	$120	7,200			4,392			2,808
10	Cull Cows:								
11	36 hd	519	18,590			18,590			
12	Bred heifers:								
13	10 hd	1,100	11,000			11,000			
14	Replacement heifer transfer:								
15	Value at weaning			30 hd	$175	(5,250)			5,250
16	Cash crops		27,638			27,638			
17	Government payments		7,025			7,025			
18									
19	Total cash income		$415,839			$273,471			$142,369
20									
21	**EXPENSES**								
22	Labor Costs:								
23	Operator (noncash)								
24	Crops								
25	1,222 hr	$6.50	7,943	611	hr$6.50	$3,972	611	hr$6.50	$3,972
26	Dairy cattle								
27	1,560 hr	6.50	10,140				1,560	hr$6.50	10,140
28	Family (noncash)								
29	Crops								
30	989 hr	6.50	6,429	495	hr 6.50	3,214	495	hr 6.50	3,214
31	Dairy cattle								
32	1,263 hr	6.50	8,210				1,263	hr 6.50	8,210
33	Hired (cash)								
34	Crops								
35	2,677 hr	8.64	23,129	1,339	hr 8.64	11,565	1,339	hr 8.64	11,565
36	Dairy cattle								
37	3,418 hr	8.64	29,532				3,418	hr 8.64	29,532
38	Machinery repairs:								
39	Crops		16,652			16,652			
40	Dairy cattle		9,561			9,361			200
41	Gas, oil, diesel:								
42	Crops		7,488			7,488			
43	Dairy cattle		952						952
44	Custom hire, crops		7,437			7,437			
45	Interest paid, machinery:								
46	Crops		1,761			1,761			

		Base	Owner			39 % Share
47	Dairy cattle	598	598			
48	Conservation, crops	185	185			
49	Buildings, shed repairs:					
50	Crops	2,530	2,530			
51	Dairy cattle	1,453	1,253			200
52	Insurance:					
53	Crops	1,890	1,890			
54	Dairy cattle	2,830	2,830			
55	Lease on buildings, crops	2,687	2,687			
56	Interest paid, buildings:					
57	Crops	655	655			
58	Dairy cattle	1,306	1,306			
59	Crop items:					
60	Fertilizer and lime	17,111	8,556			8,556
61	Supplies and packaging	292	292			
62	Seeds and plants	8,171	8,171			
63	Chemicals, weed sprays	8,977	8,977			
64	Marketing	226	226			
65	Other items and irrigation	826	826			
66	Interest paid for inventory	2,660	2,660			
67	Dairy cattle items:					
68	Semen, breeding supplies	3,671	3,671			
69	Veterinary, drugs	11,067	11,067			
70	Marketing, milk hauling	21,963	13,397			8,566
71	Livestock supplies	9,096	5,549			3,547
72	Bedding, registrations, DHI	7,524	7,524			
73	Interest paid on cattle	5,696	5,696			
74	Land taxes:					
75	Crops	5,687	5,687			
76	Dairy cattle	1,464	1,464			
77	Interest paid, land:					
78	Crops	4,591	4,591			
79	Dairy cattle	44	44			
80	Cash rent, crop land	13,429	13,429			
81	Electricity, phone, utilities:					
82	Crops	1,112	1,112			
83	Dairy cattle	8,149	100			8,049
84	Miscellaneous items:					
85	Crops	1,642	1,642			
86	Dairy cattle	2,097	2,097			
87	Purchased dairy feeds	87,373	86,173	60 hd	20	1,200
88						
89	Total Above Expenses	$366,235	$268,334			$97,901
90						
91	Initial Income to Equity:	49,605	5,137			44,468
92						
93	Plus Inventory changes:					
94	Feeds and crops	$4,871	$4,871			0
95	Dairy cattle	10,030	10,030			0

		Base	Owner	39 % Share
96	Minus depreciation, capital adjustments:			
97	Machinery:			
98	Crops	19,859	19,859	0
99	Dairy cattle	7,297	7,297	0
100	Buildings:			
101	Crops	3,796	3,796	0
102	Dairy cattle	6,376	6,376	0
103	Purchased dairy livestock	10,925	10,925	0
104	Plus gain on sale of machinery	3,016	3,016	0
105				
106	**NET INCOME TO EQUITY**	$19,269	($25,199)	$44,468

Table 3. **Comparing NZ Sharemilker Strategies 50% - 50%**

Average returns for 143 Michigan Telfarmers

Line Number	Base Situation, 1994			Farm Owner	50% Share Milker
1	**INCOME**				
2	Milk income:				
3	Cows	128			
4	Lbs. sold	19,908			
5	Price	$13.48			
6					
7	Milk income:		$344,386	$172,193	$172,193
8	Bob calves:				
9	60 hd	$120	7,200	3,600	3,600
10	Cull Cows:				
11	36 hd	519	18,590		18,590
12	Bred heifers:				
13	10 hd	1,100	11,000		11,000
14	Replacement heifer transfer:				
15	Value at weaning				
16	Cash crops		27,638	27,638	
17	Government payments		7,025	7,025	
18					
19	Total cash income		$415,839	$210,456	$205,383
20					
21	**EXPENSES**				
22	Labor Costs:				
23	Operator (noncash)				
24	Crops				
25	1,222 hr	$6.50	7,943	$0 1,222 hr	$6.50 $7,943
26	Dairy cattle				
27	1,560 hr	6.50	10,140	1,560 hr	6.50 10,140
28	Family (noncash)				
29	Crops				
30	989 hr	6.50	6,429	989 hr	6.50 6,429

			Base	Owner		50 % Share
31	Dairy cattle					
32	1,263 hr	6.50	8,210	1,263 hr	6.50	8,210
33	Hired (cash)					
34	Crops					
35	2,677 hr	8.64	23,129	2,677 hr	8.64	23,129
36	Dairy cattle					
37	3,418 hr	8.64	29,532	3,418 hr	8.64	29,532
38	Machinery repairs:					
39	Crops		16,652			16,652
40	Dairy cattle		9,561			9,561
41	Gas, oil, diesel:					
42	Crops		7,488			7,488
43	Dairy cattle		952			952
44	Custom hire, crops		7,437			7,437
45	Interest paid, machinery:					
46	Crops		1,761			1,761
47	Dairy cattle		598			598
48	Conservation, crops		185			185
49	Buildings, shed repairs:					
50	Crops		2,530	2,530		
51	Dairy cattle		1,453	1,453		
52	Insurance:					
53	Crops		1,890			1,890
54	Dairy cattle		2,830			2,830
55	Lease on buildings, crops		2,687	2,687		
56	Interest paid, buildings:					
57	Crops		655	655		
58	Dairy cattle		1,306	1,306		
59	Crop items:					
60	Fertilizer and lime		17,111	17,111		
61	Supplies and packaging		292			292
62	Seeds and plants		8,171	4,086		4,086
63	Chemicals, weed sprays		8,977	8,977		
64	Marketing		226	226		
65	Other items and irrigation		826			826
66	Interest paid for inventory		2,660			2,660
67	Dairy cattle items:					
68	Semen, breeding supplies		3,671			3,671
69	Veterinary, drugs		11,067			11,067
70	Marketing, milk hauling		21,963			21,963
71	Livestock supplies		9,096			9,096
72	Bedding, registrations, DHI		7,524			7,524
73	Interest paid on cattle		5,696			5,696
74	Land taxes:					
75	Crops		5,687	5,687		
76	Dairy cattle		1,464	1,464		
77	Interest paid, land:					
78	Crops		4,591	4,591		
79	Dairy cattle		44	44		

		Base	Owner	50 % Share
80	Cash rent, crop land	13,429	13,429	
81	Electricity, phone, utilities:			
82	Crops	1,112		1,112
83	Dairy cattle	8,149		8,149
84	Miscellaneous items:			
85	Crops	1,642		1,642
86	Dairy cattle	2,097		2,097
87	Purchased dairy feeds	87,373		87,373
88				
89	Total Above Expenses	$366,235	$64,246	$301,989
90				
91	Initial Income to Equity:	49,605	146,211	(96,606)
92				
93	Plus Inventory changes:			
94	Feeds and crops	$4,871		4,871
95	Dairy cattle	10,030		10,030
96	Minus depreciation, capital adjustments:			
97	Machinery:			
98	Crops	19,859		19,859
99	Dairy cattle	7,297		7,297
100	Buildings:			
101	Crops	3,796	3,796	0
102	Dairy cattle	6,376	6,376	0
103	Purchased dairy livestock	10,925		10,925
104	Plus gain on sale of machinery	3,016		3,016
105				
106	**NET INCOME TO EQUITY**	$19,269	$136,039	($116,770)

Discussion and Assumptions

The Michigan average of the 143 farms had 128 cows, and about $900,000 of assets, of which 25% were borrowed. There were 358 tillable acres owned and 214 rented.

The 29% tenant supplies all the labor for the livestock chores and gets 29% of both milk sales and bob calf sales. The owner provides all the feed including doing all the labor for harvesting and storing crops. Table 1, line 15, shows one of the rules; the tenant gets paid half the value at weaning for any replacement calves kept for the herd. We assumed 60 calves would be kept, worth $175 at weaning, with half being 30 head. This rule also applies to the 39% tenant.

Michigan dairy farms typically have a cash crop enterprise; excess corn, winter wheat, and soybeans are examples. The existence of crops also drive most of the government program

payments. On lines 16 and 17 we left the full income with the owner. In Table 3, the 50% tenant does all the labor on the farm, including the crop harvesting, and owns all the field machinery. The cash crop enterprise in Table 3 is subsidized by the tenant. In New Zealand, cash crops on dairy farms are not a factor, and considerably fewer farm grown crops would be raised for storage and feeding.

The labor differences are seen in lines 22 through 37. The Telfarm accounting system, for analysis purposes, charged all operator and family unpaid labor at $6.50 per hour. The farm reports the hours in each category. Hired labor averaged $8.64 per hour in 1994. This includes administration costs, fringe benefits and payroll taxes. In simulating the New Zealand allocations, we assumed the tenant would supply operator and unpaid hours comparable to the owner operator. The opportunity cost of family labor was ignored. Labor substitution was also ignored; in reality some of the unused operator labor could have replaced part of the more expensive hired labor.

The New Zealand tenant apparently has to supply the milking machine inflations and maintain them. We assumed in line 40 this was $200.

The New Zealand tenant supplies power less an electricity charge for pumping water. Apparently this is pumping water to the cows on pasture. This resulted in the line 43 and line 83 allocations.

Considering lines 69, 70 and 71, the 29% tenant provides that percentage of livestock supplies and all the cleaning compounds used. The owner provides all the veterinary and drugs, but the tenant does pay for bloat guard. We doubt any bloat guard was in line 69, so none was allocated to the tenant. It was not clear from the materials we had whether the tenant paid a share of the milk hauling on line 70. We assumed they do.

New Zealand custom is for the tenant to provide half the cost of calf grain up to weaning age. We assumed in Michigan the cost of grain through weaning was $40. per calf, with half being $20 for the 60 calves. See line 87.

Looking at line 106, the average of this sample of 143 Michigan dairy farms earned $19,269 return to equity. Recall that family and operator unpaid labor was charged as an expense. Table 1 shows that under New Zealand rules, the 29% share milker would have made $39,721 return to equity. In addition, the tenant would have had $10,140 from line 27 plus $8,210 from line 32. The owner would have had a loss of -$20,452.

The responsibility of the 39% share milker is similar to the 29% tenant. The 39% tenant does provide half the cost of added labor for crop production and part of the fertilizer costs. These are reflected in Table 2.

The budget for the 39% tenant shows on line 106 that the owner would lose -$25,199 while the share milker would gain $44,468 return to equity.

As shown in Table 3., the 50-50 share arrangement is different from the other two. The 50% tenant owns all the cows and field crop equipment, plus does all the work. The owner has the real estate, including barns and milking center. We assumed the landlord would keep all the cash crop income and government payments. The landlord would pay all the fertilizer purchased and half the seed.

Line 106 shows the 50% share milker under Michigan conditions would lose -$116,770 while the landlord would make $136,039 return on equity.

Implications

The New Zealand share milker system has a long history. It was designed to ease young people into dairy farming over a several year period. The young could start with no capital. They could learn the work, earn, save and advance at a pace related to their abilities. Farmers at retirement age would have a system allowing them to ease out of the business as they desired.

Many in Michigan's dairy industry are concerned at the high cost faced by a young person wishing to get into dairy farming. One hears of northern dairy farms with willing sellers but no buyers.

Michigan dairy farmers need a systematic way to bring young people into the industry. They applaud the New Zealand goals. The New Zealand share milker percentages and rules, as assumed in this paper, would likely need revision to be accepted by Michigan citizens.