CHANGES AT THE URBAN-RURAL INTERFACE: THE CONTRIBUTION OF OFF-FARM WORK BY FARMERS

Ray D. Bollman

A common characteristic of rural change in most countries has been the net flow of human resources from the farm to the nonfarm sector. Off-farm work by farm family members has been identified as an important factor influencing this flow (Baumgartner; Hathaway, 1960 and 1967; Hathaway and Perkins, 1968a and 1968b; Kaldor and Edwards; Perkins, 1973; Perkins and Hathaway; and Szabo.) The purpose of this paper is to investigate the interrelationships between off-farm work and entry to and exit from farming. Data are drawn from a longitudinal micro data file on Canadian farmers from the 1966, 1971, and 1976 Censuses of Agriculture (table 1). The data are ideally suited to the study at the micro level of the impact of off-farm work on the movement of farmers to the nonfarm sector.

The first important point to note is that the relatively small change in the number of farmers between census periods is comprised of a surprisingly large rate of gross entry and gross exit. From 1966 to 1971, the number of census farm operators in Canada declined by 64,397 (14.9 percent), which was due to a gross exit of 152,354 (35.4 percent of the 1966 number of operators) and a gross entry of 87,957 (which was 24.0 percent of the number of 1971 operators) (table 2). Similarly, the net change in the 1971 to 1976 period was a decline of 27,527 (7.5 percent) which was due to a gross exit of 129,922 (35.5 percent of the 1971 operators) and a gross entry of 102,395 (30.3 percent of the 1966 operators). Thus, the number of gross entrants and gross exiters is so large that the determinants of both gross entry and gross exit must be understood in order to comprehend the changes at the urban-rural interface. The analysis of this paper is constrained to the impact of off-farm work.

Does Off-farm Work Influence Entry and Exit of Farmers?

Off-farm work appears to facilitate the entry of individuals into farming. The greater the number of days of off-farm work reported in 1976, the greater the proportion of operators who had entered in the 1971 to 1976 period (see the last row of table 2). However, in the 1966 to 1971 period, more than 25 days of off-farm work were required before the rate of entry became greater than the rate of entry of operators with no off-farm work (Bollman, 1979). Overall, 54.3 percent of the operators with full-time off-farm work in 1976 (greater than 228 days) started farming in the 1971 to 1976 period.

When we control for the demand for the operator's labour in farm work (measured by the size of farm in terms of total capital value), we find that the proportion of entrants tends to increase as the days of off-farm work increases, for each size of total capital value (table 2).

Off-farm work also facilitates the exit of individuals from farming. The greater the number of days of off-farm work reported in 1971, the greater is the proportion of operators who have exited in the 1971 to 1976 period (see the last row of table 3). However, nearly full-time off-farm work is required before the rate of exit is greater than for operators with no off-farm work. Similarly, in the 1966 to 1971 period, more than four months of off-farm work were required (Bollman, 1979). Thus, it appears that small amounts of off-farm work retard off-farm movement by farmers.

In this case, when we control for the demand for the operator's labour in farm work (again measured by the size of farm in terms of total capital value), we find that the proportion of exiters increases as the number of days of off-farm work increases, for each size class of total capital value (table 3). However, in each total capital value class under $25,000, the exit rate is greater if no off-

Table 1. Number and Percent of Census-farm Operators(1) who Entered(2) and Exited(3) between 1966 and 1971 and between 1971 and 1976, Canada(4) and Provinces

	Year	Number of Census-farm Operators(1)	Net Change	Percent Change	Gross Entry(2)	Percent Entering	Gross Exit(3)	Percent Exiting
Canada	1966	429,731			-	-	152,354	35.5
			-64,397	-15.0				
	1971	365,334			87,957	24.1	129,922	35.6
			-27,527	-7.5				
	1976	337,807			102,395	30.3	-	-
Newfoundland	1966	1,704			-	-	1,166	68.4
			-687	-40.3				
	1971	1,017			479	47.1	611	60.1
			-153	-15.1				
	1976	864			458	53.0	-	-
Prince Edward Island	1966	6,348			-	-	2,598	40.9
			-1,813	-28.6				
	1971	4,535			785	17.3	1,666	36.7
			-856	-18.9				
	1976	3,679			810	22.0	-	-
Nova Scotia	1966	9,593			-	-	5,154	53.7
			-3,605	-37.6				
	1971	5,988			1,549	25.9	2,698	45.1
			-569	-9.5				
	1976	5,419			2,129	39.3	-	-
New Brunswick	1966	8,689			-	-	4,457	51.3
			-3,222	-37.1				
	1971	5,467			1,235	22.6	2,433	44.5
			-933	-17.1				
	1976	4,534			1,500	33.0	-	-
Quebec	1966	80,146			-	-	31,129	38.8
			-18,992	-23.7				
	1971	61,154			12,137	19.9	23,846	39.0
			-9,642	-15.8				
	1976	51,512			14,204	27.6	-	-
Ontario	1966	109,805			-	-	43,128	39.3
			-15,167	-13.8				
	1971	94,638			27,961	29.6	34,551	36.5
			-5,918	-6.3				
	1976	88,720			28,633	32.3	-	-
Manitoba	1966	39,708			-	-	11,115	28.0
			-4,764	-12.0				
	1971	34,944			6,351	18.2	11,456	32.8
			-2,892	-8.3				
	1976	32,052			8,564	26.7	-	-
Saskatchewan	1966	85,431			-	-	24,083	28.2
			-8,728	-10.2				
	1971	76,703			15,355	20.0	23,336	30.4
			-6,029	-7.9				
	1976	70,675			17,307	24.5	-	-
Alberta	1966	69,250			-	-	20,789	30.0
			-6,726	-9.7				
	1971	62,524			14,063	22.5	20,574	32.9
			-1,565	-2.6				
	1976	60,959			19,009	31.2	-	-
British Columbia	1966	19,057			-	-	8,735	45.8
			-693	-3.6				
	1971	18,364			8,042	43.8	8,751	47.7
			1,030	5.6				
	1976	19,394			9,781	50.4	-	-

Source: Canada, Statistics Canada, 1966-1971-1976 Census of Agriculture Match.

(1) Operators of institutional farms are excluded.
(2) An entrant is an individual who was a census-farm operator in the latter period, but not in the former period.
(3) An exiter is an individual who was a census-farm operator in the former period, but not in the latter period.
(4) Canada excludes operators of farms in the Yukon and Northwest Territories.

farm work is reported than if full-time off-farm work is reported. For total capital value classes over $25,000, operators with full-time (or nearly full-time) off-farm work have a greater probability of exiting than if no off-farm work is reported (compare columns 1 and 11 in table 3). However, the mere incidence of off-farm work tends to retard off-farm movement for all total capital value classes less than $74,950 (compare columns 1 and 12 in table 3).

Summary and Implications

The movement of human resources from the farm to the nonfarm sector has been a predominant feature of developing economies. Such a movement has often been identified as a method of improving the welfare of the farm population. Off-farm work has been suggested as a means to facilitate this transfer (see the references cited in the first paragraph; Perkins, 1972; and Herndier).

The magnitude of gross exit and entry (table 1) suggests that the best way to increase net outward migration may be to employ policy measures to restrict entry. The size of gross exit appears sufficiently large without attempting to increase it still further.

An analysis of the impact of off-farm work on the gross entry and exit of farmers indicates that off-farm work promotes entry (table 2) but retards exit, except for the larger capital value classes (table 3). Thus, an increase in off-farm work will tend to reduce the net outward migration of farmers.

However, the major income source for census farm operators is off-farm work (Bollman, 1973). Thus, if the policy objective is to increase the welfare (specifically, the money incomes) of farmers, off-farm work should be promoted. The incomes of farmers will rise. The movement of labour out of agriculture will be retarded, but the increased substitution of off-farm work for farm work is, in itself, an adjustment of human resources from the farm to the nonfarm sector.

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Table 2

Number and Percent of Entering Farmers[a] in the 1971 to 1976 Period, by Size of 1976 Total Farm Capital Value, by Number of 1976 of Off-farm Work, CANADA[b]

Size of Total Farm Capital Value (1976)	Number of Days of Off-farm Work (1976)												
	0	1-6	7-12	13-24	25-48	49-72	73-96	97-126	127-156	157-228	229 & over	Subtotal, some days	Total
< 2,950													
Number (1976)	245	–	–	5	10	10	10	5	5	30	70	145	385
Entrants, 71-76	169	–	–	3	7	8	7	4	3	18	58	110	271
Percent Entrants	69	–	–	67	70	78	67	71	50	61	83	76	71
2,950-4,949													
Number (1976)	375	–	–	5	10	15	10	15	15	35	100	210	590
Entrants, 71-76	201	–	–	3	5	8	7	9	11	28	76	149	353
Percent Entrants	54	–	–	50	55	50	69	60	71	79	76	71	60
4,950-7,449													
Number (1976)	825	10	10	10	20	35	15	50	35	95	205	485	1,310
Entrants, 71-76	415	6	6	3	13	17	9	37	24	62	154	332	747
Percent Entrants	50	60	60	33	65	48	62	74	68	66	75	69	57
7,450-9,949													
Number (1976)	880	5	5	15	25	45	25	50	35	115	245	565	1,445
Entrants, 71-76	403	3	1	5	9	20	12	22	22	70	182	346	749
Percent Entrants	46	50	20	36	35	45	48	44	64	61	74	61	52
9,950-14,949													
Number (1976)	2,820	20	20	55	90	115	110	175	115	365	835	1,910	4,730
Entrants, 71-76	1,117	8	7	23	39	48	57	98	69	232	542	1,128	2,245
Percent Entrants	40	42	33	41	43	42	52	56	60	64	65	59	47
14,950-19,949													
Number (1976)	3,280	25	30	45	110	140	135	245	175	565	1,110	2,580	5,855
Entrants, 71-76	1,144	11	15	20	48	67	62	113	81	311	714	1,446	2,588
Percent Entrants	35	44	48	44	43	48	46	46	46	55	65	56	44

19,950- 24,949													
Number (1976)	4,030	40	40	90	145	195	150	250	230	715	1,300	3,165	7,190
Entrants, 71-76	1,433	13	20	42	56	86	57	113	111	385	810	1,698	3,129
Percent Entrants	36	32	50	47	39	44	38	45	48	54	62	54	44
24,950-49,949													
Number (1976)	23,975	255	265	485	1,050	1,140	1,065	1,620	1,315	4,285	8,200	19,695	43,670
Entrants, 71-76	6,786	79	78	175	379	437	436	665	572	2,207	4,855	9,890	16,676
Percent Entrants	28	31	30	36	36	38	41	41	44	52	59	50	38
49,950-74,949													
Number (1976)	27,220	260	335	545	1,095	1,110	975	1,675	1,195	4,520	8,635	20,340	47,565
Entrants, 71-76	6,895	69	105	166	385	398	395	708	521	2,354	4,868	9,968	16,865
Percent Entrants	25	27	31	30	35	36	41	42	44	52	56	49	35
74,950-99-949													
Number (1976)	24,270	270	320	490	880	920	780	1,255	885	3,335	6,830	15,960	40,230
Entrants, 71-76	5,712	64	89	154	281	355	298	544	376	1,642	3,721	7,522	13,233
Percent Entrants	24	24	28	31	32	39	38	43	43	49	54	47	33
99,950-149,949													
Number (1976)	38,595	475	480	770	1,260	1,310	1,065	1,790	1,160	4,435	7,950	20,700	59,290
Entrants, 71-76	8,379	101	119	216	370	454	380	681	495	2,007	4,017	8,841	17,219
Percent Entrants	22	21	25	28	29	35	36	38	43	45	51	43	29
149,950-199,949													
Number (1976)	26,630	370	375	525	910	775	645	975	595	2,200	3,755	11,120	37,750
Entrants, 71-76	5,260	94	105	136	245	248	240	340	231	955	1,838	4,429	9,689
Percent Entrants	20	26	28	26	27	32	37	35	39	43	49	40	26
199,950 and over													
Number (1976)	70,090	1,025	1,065	1,385	1,910	1,480	1,095	1,580	920	2,815	4,395	17,670	87,760
Entrants, 71-76	12,879	233	210	290	471	415	353	524	318	1,034	1,872	5,719	18,598
Percent Entrants	18	23	20	21	25	28	32	33	35	37	43	32	21
Total													
Number (1976)	223,235	2,770	2,950	4,420	7,530	7,285	6,090	9,680	6,680	23,505	43,635	114,545	337,785
Entrants, 71-76	50,792	689	757	1,233	2,315	2,559	2,318	3,855	2,835	11,303	23,715	51,578	102,371
Percent Entrants	23	25	26	28	31	35	38	40	42	48	54	45	30

a An entrant is an individual who was a census-farm operator in 1976 but not in 1971.
b Operators of institutional farms and farms in the Yukon and Northwest Territories are excluded.
Source: CANADA. Statistics Canada. 1966-1971-1976 Census of Agriculture Match

Table 3

Number and Percent of Exiting Farmers[a] in the 1971 to 1976 Period by Size of 1971 Total Farm Capital Value, by Number of 1971 Days of Off-farm Work, CANADA[b]

Size of Total Farm Capital Value (1971)	Number of Days of Off-farm Work (1971)												
	0	1-6	7-12	13-24	25-48	49-72	73-96	97-126	127-156	157-228	229 & over	Subtotal, some days	Total
<2,950													
Number (1971)	1,105	10	10	30	45	35	40	60	60	105	250	645	1,750
Exiters, 71-76	904	6	7	24	38	26	25	48	42	80	179	474	1,379
Percent Exiters	82	56	73	79	84	75	62	80	70	77	71	74	79
2,950-4,949													
Number (1971)	1,845	15	20	40	75	90	75	130	90	210	515	1,250	3,100
Exiters, 71-76	1,406	8	14	37	48	55	50	93	68	146	362	874	2,283
Percent Exiters	76	50	71	92	64	61	67	72	75	70	70	70	74
4,950-7,449													
Number (1971)	3,870	45	50	90	180	180	175	230	230	525	1,105	2,800	6,675
Exiters, 71-76	2,763	32	33	47	107	105	111	148	148	323	705	1,753	4,519
Percent Exiters	71	71	67	52	59	58	64	65	64	62	64	63	68
7,450-9,949													
Number (1971)	4,670	65	65	145	225	230	190	315	270	685	1,395	3,595	8,265
Exiters, 71-76	3,041	31	33	80	124	118	95	176	141	394	791	1,988	5,029
Percent Exiters	65	48	51	55	55	51	50	56	52	58	57	55	61
9,950-14,949													
Number (1971)	11,685	160	185	375	655	560	570	835	730	1,855	3,845	9,765	21,445
Exiters, 71-76	6,809	77	87	164	303	245	291	406	357	922	2,028	4,879	11,684
Percent Exiters	58	48	47	44	46	44	51	49	49	50	53	50	54
14,950-19,949													
Number (1971)	12,815	205	220	425	720	680	640	915	760	2,030	4,110	10,705	23,520
Exiters, 71-76	6,646	95	102	161	303	263	252	390	320	885	1,896	4,666	11,312
Percent Exiters	52	46	47	38	42	39	39	43	42	44	46	44	48

19,950-24,949													
Number (1971)	13,840	240	255	430	765	685	660	925	745	2,100	4,380	11,190	25,030
Exiters, 71-76	6,474	80	89	158	271	247	265	340	288	830	1,933	4,502	10,976
Percent Exiters	47	33	35	37	35	36	40	37	39	40	44	40	44
24,950-49,949													
Number (1971)	65,495	1,300	1,285	2,030	3,325	3,075	2,550	3,545	2,530	8,095	15,510	43,240	108,740
Exiters, 71-76	24,502	427	376	605	997	905	793	1,071	862	2,744	6,063	14,842	39,345
Percent Exiters	37	33	29	30	30	29	31	30	34	34	39	34	36
49,950-74,949													
Number (1971)	45,405	1,160	990	1,395	2,085	1,760	1,395	1,840	1,205	3,865	6,080	21,775	67,180
Exiters, 71-76	13,306	278	205	302	503	430	382	468	342	1,107	2,066	6,081	19,387
Percent Exiters	29	24	21	22	24	24	27	25	28	29	34	28	29
74,950-99,949													
Number (1971)	27,680	805	665	950	1,175	895	700	855	580	1,635	2,305	10,565	38,245
Exiters, 71-76	6,858	154	131	188	243	201	152	188	129	440	807	2,631	9,489
Percent Exiters	25	19	20	20	21	22	22	22	22	27	35	25	25
99,950-149,949													
Number (1971)	26,575	765	650	785	1,050	780	540	715	390	1,190	1,555	8,415	34,995
Exiters, 71-76	6,064	128	123	145	216	167	121	163	98	280	516	1,956	8,022
Percent Exiters	23	17	19	18	21	21	22	23	25	24	33	23	23
149,950-199,949													
Number (1971)	10,175	300	225	285	385	230	165	210	145	335	555	2,840	13,015
Exiters, 71-76	2,289	54	43	58	74	56	32	42	37	109	232	737	3,026
Percent Exiters	23	18	19	20	19	24	20	20	25	32	42	26	23
199,950 and over													
Number (1971)	10,925	260	200	265	285	220	135	185	125	275	495	2,445	13,370
Exiters, 71-76	2,820	59	38	56	59	40	33	49	30	86	192	651	3,471
Percent Exiters	26	23	19	21	21	22	24	26	24	31	39	27	26
Total													
Number (1971)	236,095	5,335	4,830	7,240	10,970	9,410	7,840	10,760	7,855	22,900	42,095	129,240	365,333
Exiters, 71-76	83,885	1,429	1,285	2,022	3,283	2,862	2,605	3,583	2,855	8,345	17,767	46,037	129,922
Percent Exiters	36	27	27	28	30	30	33	33	36	36	42	36	36

[a] An Exiter is an individual who was a census-farm operator in 1971, but not in 1976.
[b] Operators of institutional farms and farms in the Yukon and Northwest Territories are excluded.
Source: CANADA. Statistics Canada. 1966-1971-1976 Census of Agriculture Match.

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OPENER'S REMARKS--John R. Raeburn

My greatest surprise on reading the paper was at the high rates of gross entry and exit. These obviously make the policy issues all the more important. What would such a high gross entry rate really imply for the policymakers, including those concerned with education?

I have quickly and rather roughly determined from Bollman's tables--including some from his fuller paper--that rough annual exit rates were greater than the 3.3 percent that one would expect on the assumption of a 30 year age gap between father and son.

Bollman included more about ages at entry and exit in his longer paper, and we should understand that the age class intervals in which lie the median ages of leavers are generally as low as 45-54, with a slight tendency for the percentage of leavers who are over 59 to decrease in Nova Scotia and increase in Saskatchewan. And the age class in which the median age of entrants lies is 35-44, but 45-54 in Nova Scotia and 25-34 in Saskatchewan, in the 1971-76 period. The percentage of entrants who were older than 54 dropped substantially between 1966-71 and 1971-76.

I think all this and more is desirable as a background before we consider the regressions of exit and entry rates on age of operator, on farm capital value, or on other "size" measures. We do not have the provincial figures to help with these regression curves—but the all-Canada figures do require explanation against the background indicated, particularly if there are any policymakers thinking of promoting off-farm work or restricting it so as to reduce entry rates and thereby increase net outward migration. Policymakers should have more information on what and where off-farm work is; where it is available and where not; who wishes to do it and who does not; and who (in relation to their own farm business planning) could economically do it and who could not.

RAPPORTEUR'S REPORT--Linda Chase

What is a census farm and what constitutes off-farm work? Bollman used a constant farm definition of at least one acre and $50 gross sales. He distinguished between off-farm work and nonfarm work; full definitions appear in previous publications. It was noted that since new entrants may include the small shift from farm worker to farm operator, information on the origin of entrants would be useful. What is the impact of off-farm work on productivity? Bollman replied that in looking at resource use, part-time farmers may be less productive but still efficient. It was suggested that off-farm work seems to raise commercial farm numbers, indicating income stability at this level. Finally, there was interest expressed in the reasons for the upward trend in off-farm work. Bollman suggested that an incentive is the nonfarm demand for labour--as unemployment increases, participation in off-farm work declines.