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Part-Time Farming in Central Victoria

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This paper reports the results of a survey of part-time farmers in two shires close to Melbourne in 1974-75. The farmers were a very diverse group in terms of off-farm employment and income; few derived substantial income from farming and the majority indicated that they farmed for non-financial reasons. Part-time farming appeared to be a stable working/living arrangement and part-time farms were about as productive as full-time farms in the same shire. Possible tax savings associated with part-time farming are discussed. The findings raise doubts about the appropriateness of profit-maximising models for analysing part-time farmer behaviour.

Introduction

Part-time farming has been fairly extensively studied in Europe and North America [12] [13] [19], but very little research on the topic has been carried out in Australia. What information we do have is mainly a by-product of broader research projects [4] [9] [10] [24]. This reflects the lesser importance of part-time farming in Australia compared with Europe and North America. For example, Australian Bureau of Statistics (A.B.S.) data on multiple jobholding show that in August 1975, 7.4 percent of persons employed in primary production were multiple jobholders [1], compared with 45 percent of the labour force residing on U.S. farms in 1971 [16]. This is due to several features of the Australian rural economy, including:

- (i) the relatively large size of most Australian farms when first established and the relatively elastic demand for many Australian agricultural products, leading (at least until recently) to less pressure for agricultural adjustment than in Europe and North America [25];
- (ii) much less decentralisation of off-farm employment opportunities than in Europe and North America;
- (iii) less seasonal variation of labour requirements in a multiple-product livestock-oriented agriculture than in a crop-oriented agriculture.

Compared with the Northern Hemisphere countries, there is a lack of data about part-time farming in Australia. The only regularly-published information is the A.B.S. survey of multiple jobholding, mentioned above, and what little can be gleaned from the "sub-commercial" category in the A.B.S. *Classification of Rural Holdings by Size and Type of Activity* and from *Taxation Statistics*.

Part-time farming in Australia deserves more attention, for at least two reasons. It is a significant means of adjustment of human and other resources out of, and into, agriculture [4] and it involves a significant

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proportion of the scarce land resources in the farming areas surrounding our larger cities [26]. Part-time farms lie in the transitional zones between the agricultural and non-agricultural sectors and between the rural and urban environments; they may well be important in determining the nature and extent of resource adjustment and/or land-use problems in many areas.

Definition

There is no precise definition of the term “part-time farmer” which is generally accepted by writers on the subject (see [6] [13] [17]). However, there is one aspect of a definition upon which almost all seem to agree — the farm operator must have another income-yielding occupation (retirement might be considered an “occupation”) besides farming. Thus part-time farming might be better termed multiple jobholding by farm operators [14]. Precise definitions required for particular policy purposes must go beyond this and specify such things as an amount or share of the operator’s time and/or income devoted to farm/off-farm work which identify him/her as a part-time farmer.

The major objective of this study is to learn more about farm operators who are multiple jobholders, therefore the definition used here is a very broad one. A part-time farmer is defined as any farm operator who has another income-yielding occupation or has retired from another occupation without agriculture becoming his/her major source of income.

Numbers and Types of Part-Time Farmers

The A.B.S. statistics divide multiple jobholders in agriculture into two groups according to whether their main job is in or outside agriculture. In August 1975 the estimated numbers of persons involved were 17500 and 19300 respectively [1]. Not all these persons would be farm operators; on the other hand, some farm operators who were multiple jobholders would be missed because (i) the A.B.S. survey asked about employment in a particular week, and (ii) to be classified as multiple jobholders, persons had to be employed in at least one of their jobs as a wage and salary earner. Thus many farm operators who were multiple jobholders on a seasonal basis (*e.g.* shearers, harvesting contractors) or self-employed in their other activity (businessmen, members of professions, tradesmen, farm contractors) would be missed by the A.B.S.

A comparison of A.B.S. statistics on multiple jobholding in August 1973 and B.A.E. survey data for the wheat, sheep and dairy industries in 1972-73, quoted by Sexton [24], indicates that the A.B.S. survey underestimates multiple jobholding by farmers. The A.B.S. found that 4.7 percent of persons whose main job was in primary production and 7.8 percent of all persons employed in primary production were multiple jobholders. The B.A.E. reported that 9 percent of wheat farmers surveyed, 30 percent of woolgrowers and 12.5 percent of dairy farmers worked off-farm during 1972-73.

The A.B.S. statistics suggest that at least half of the part-time farmers in Australia are persons whose main job is outside agriculture; however, with some exceptions [9] [26], most of the available information about part-time farming in Australia comes from studies of farm operators whose main job

is farming. This study deliberately focusses on farming areas close to Melbourne where a high proportion of part-time farmers are expected to have a main job outside agriculture. Its major aim is to provide information about the extent and economic significance of part-time farming in these areas.

The Survey

The area considered for the survey comprised all rural areas within an 80 kilometre radius of the centre of Melbourne. Since local government rating rolls provide the most comprehensive listing of rural holdings in this area, the choice of survey areas involved a choice of local government areas (LGA's). The Australian Bureau of Statistics provided information about the distribution of agricultural holdings by area and estimated value of production in 1972-73 for all non-metropolitan LGA's within 80 kilometres of Melbourne. Criteria used to select LGA's for the survey were:

- (i) large numbers and a relatively high proportion of agricultural holdings with small areas and values of production;
- (ii) a high proportion of land used for agriculture;
- (iii) as far as possible, a representative cross-section of major types of agriculture in the Melbourne area.

After weighing these factors, two LGA's were chosen for the survey: Kilmore, north of Melbourne, a predominantly sheep/beef area; and the North and West ridings of Lillydale, east of Melbourne, where the major agricultural enterprises are dairying, beef and orcharding. In each case areas zoned for public and urban use were excluded.

Rating rolls in both shires indicated a preponderance of small rural holdings, most being subcommercial from an agricultural point of view. To allow substantial representation of larger part-time farms in each sample, a sample of holdings stratified by size of holding was selected in each shire.

Based upon agricultural productivity and existing zoning in each shire, non-urban holdings in each were divided into two size classes: 4 to 50, and over 50, hectares in Kilmore; and 2 to 25, and over 25, hectares in Lillydale.¹ A random sample of 90 rated holdings was selected from each of these four populations. Identification of the part-time farmers in each sample was in some cases made by shire staff, but more frequently by a brief telephone interview, and in a few cases by a mail questionnaire.² Interviews of those identified as part-time farmers took place between November, 1974 and February, 1975. A total of 43 interviews were conducted in Kilmore and 39 in Lillydale.

¹ As a matter of terminology, these are referred to as "small" and "large" part-time farms, respectively, for each shire.

² A respondent was identified as a part-time farmer if he/she fitted the definition given earlier. The holding was considered a "farm" if any sales of agricultural products either took place in 1973-74 or were planned for succeeding years.

The Efficiency of the Sampling Procedure

The objective of the sampling/identification procedure was to obtain a stratified random sample of part-time farms in each shire. In the event, it proved expensive in terms of both time and funds, and did not produce samples which were perfectly stratified or random.

Table 1 shows the type and final disposition of the 397 holdings³ randomly selected from the shire rating rolls and the causes and extent of both these problems. The procedure adopted was expensive⁴ and time-consuming because of:

- (i) the large number of full-time farmers, non-farmers, and untraceable owners in the samples. Without other information about the identity and occupational status of persons in operational control of holdings, most of them had to be traced and interviewed by telephone (and occasionally by mail);
- (ii) the restriction of most telephone contacts to evenings and weekends; and
- (iii) unwillingness to co-operate on the part of a substantial minority of identified part-time farmers. The main reasons were lack of interest, the high value operators placed on their time, and, apparently, suspicion concerning the use of the survey information given the then-recent publicity about "Collins Street" farmers.

The other major problem with the sampling technique was that the population of interest, *operational* holdings, was not identical with the sampled population, *rated* holdings, many operational units being split into two or more pieces for rating purposes. This discrepancy is responsible for some of the sample wastage indicated in Table 1; it also lead to errors in the stratification process, so that some holdings sampled in the "small" category turned out to be "large". The operators of these holdings were interviewed; hence the failure to obtain a proper stratified random sample of part-time farms.

As a result of the high rate of "wastage" from the original samples, less than one-third of the sampled operators were identified as part-time, and less than one quarter interviewed, as Table 1 shows.

³ Made up of three samples of 90 holdings and one of 127. As Table 1 shows, it was necessary to sample 127 large holdings in Kilmore shire to obtain 12 complete interviews.

⁴ Identifying and interviewing the 82 respondents obtained from the 397 holdings sampled took two interviewers approximately three months between November 1974 and February 1975, at a total cost of approximately \$35 per interview, including the interviewers' salaries, travel, telephone and postage costs.

Table 1: Samples of Rated Holdings Classified According to Type of Holding (Percentage of Sample Holdings in Parentheses)

	Kilmore			Lillydale (N and W Ridings)		
	Small holdings (4-50 ha.)	Large holdings (over 50 ha.)	All holdings	Small holdings (2-25 ha.)	Large holdings (Over 25 ha.)	All holdings
Total no. in population surveyed	304	211	515	239	137	376
Total no. in sample — composed of:	90 (100)	127 (100)	217 (100)	90 (100)	90 (100)	180 (100)
Full-time farms	4 (4) 6 (7)	70 (55)	80 (37)	10 (11) 3 (3)	41 (46)	54 (30)
Part-time farms interviewed	28 (31) 3 (3)	12 (9)	43 (20)	22 (24) 1 (1)	16 (18)	39 (22)
Part-time farms not interviewed	5 (6) 1 (1)	12 (9)	18 (8)	12 (13)	8 (9)	20 (11)
Farms but unable to classify		9 (7)	9 (4)		2 (2)	2 (1)
Non-farm holdings (residences, subdivisions, church property, quarries, recreation areas, unused, etc.)	13 (14)	8 (6)	21 (10)	14 (16)	3 (3)	17 (9)
Portions of operational units sampled previously	8 (9)	10 (8)	18 (8)	10 (11)	18 (20)	28 (16)
No information on use of holding	22 (24)	6 (5)	28 (13)	18 (20)	2 (2)	20 (11)

Survey Results⁵

Characteristics of Surveyed Part-Time Farms and Farmers

Based upon 1973 agricultural census data, the small and large part-time farms surveyed accounted for roughly 1 percent and 5½ percent respectively of the area of all agricultural holdings in each shire. Table 2 shows the size distribution of the surveyed farms in the two shires. In interpreting these results and those which follow, it must be remembered that the fraction of the population sampled is approximately twice as great for large as for small holdings; thus the combined results for all farms understate the relative importance of small farms and their characteristics.

Table 2: Frequency Distribution of Part-Time Farms by Area Operated

Size Class (ha)	Kilmore		Lillydale	
	Small	Large	Small	Large
2-4			5	
4.1-10	9		12	
10.1-25	10		5	
25.1-50	9			8
50.1-100		6		4
100.1-200		6		3
200.1-400		3		2
Total	28	15	22	17

Almost all the land in the farms was used for grazing and animal fodder production (89 percent in Kilmore and 92 percent in Lillydale). Of the remainder, most was unused in 1974, either due to recent acquisition or because it was uncleared. Crops and orchards accounted for just over 1 percent of the farm area in Kilmore, and just under 1 percent in Lillydale.

The part-time farmers varied widely in age, household size and educational attainments. The most striking personal characteristics of the farmers as a group were the high percentage with university or technical college education (27 percent) and the high percentage of cases where either the operator or his spouse had lived or worked on a farm prior to having their own farm (73 percent). If we eliminate former full-time farmers from consideration, the percentage with previous farm experience is 65 percent.

There was a marked contrast between the two survey areas in the length of time the respondents had been running their own farm. Forty percent of the Kilmore farmers had commenced farming during the previous two years, compared with only ten percent of the Lillydale farmers. The recent establishment of many of the Kilmore farms was reflected in the fact that two-thirds of the Kilmore farmers did not live on their properties, compared with one-third of the Lillydale farmers. The greater incidence of absentee operators in Kilmore was probably also due to its greater distance from the metropolitan labour market.⁶

⁵ Additional results are reported in Wills [27].

⁶ Kilmore is approximately 60 kilometres from the city centre, and 37 from the edge of the built-up area, versus about 43 and 8 kilometres, respectively, for Coldstream, which is approximately in the centre of the Lillydale survey area.

REVIEW OF MARKETING AND AGRICULTURAL ECONOMICS

Off-Farm and Farm Work

Table 3 lists the farmers according to their main, second and other jobs. They held a wide variety of off-farm jobs. The categories of professionals and managers/administrators/company directors were relatively numerous. However, no major occupational category is unrepresented.

Table 3: Frequency Distribution of Farmers by Main, Second and Third Jobs

Occupation	Kilmore		Lillydale		Total both Shires
	Small	Large	Small	Large	
<i>Main job:</i>					
Professional	6	3	4	4	17
Manager/administrator/director	4	4	3	3	14
Sales/retail business	2		4	3	9
Retirement	5		2		7
Agent (stock, real estate)	1	3	1		5
Contractor—transport	3			2	5
—other	1	1			2
Farmer			2	3	5
Production process worker/labourer	1	2	2		5
Skilled tradesman	1		2	1	4
Clerical	1	1	1		3
Foreman/supervisor	1	1	1		3
Services/recreation	2			1	3
	28	15	22	17	82
<i>Second job:</i>					
Farmer	27	15	16	14	72
Intend to farm			3		3
Farmworker	1		1		2
Semi-retirement			1	1	2
Agent (stock)				1	1
Clerical			1		1
Recreation				1	1
	28	15	22	17	82
<i>Third job:</i>					
Farmer	1		1		2
Director	1		1		2
Part-time famer (another farm)				1	1
Services	1				1
	3	0	2	1	6

Since many more Lillydale farmers than Kilmore farmers lived on their farms, and much more non-farm employment is available close to Lillydale than to Kilmore, it is not surprising that a higher proportion of the Lillydale farmers had off-farm jobs within the local shire (40 percent in Lillydale compared with 21 percent in Kilmore). Also, as Table 4 shows, the Lillydale farmers spent more time on farm work and less on off-farm work than the Kilmore farmers (ignoring the small number of semi-retired farmers who did not work off-farm). The time spent on farm work varied

WILLS: PART-TIME FARMING

widely, especially in Lillydale, where a few farmers had only minor off-farm employment.

Table 4: Average Weekly Hours Worked Off-Farm and on the Farm by Part-Time Farmers and Members of Their Families^a (Standard deviations in parentheses)

	Kilmore			Lillydale			All Farms		
	Not Retired	Retired ^b		Not Retired	Retired ^b		Not Retired	Retired ^b	
	Off-farm	Farm	Farm	Off-farm	Farm	Farm	Off-farm	Farm	Farm
No. of Farms	35		5	31		4	66		9
Operator	49.3 (14.4)	14.5 (9.5)	29.4 (17.2)	44.8 (21.1)	22.1 (16.8)	14.8 (7.1)	47.3 (17.8)	18.0 (13.8)	22.9 (15.0)
Spouse	9.0 (14.8)	5.0 (6.8)	d	6.8 (15.1)	3.7 (6.5)	d	8.0 (14.9)	4.5 (6.7)	d
Other family members ^c	11.3 (21.3)	4.4 (9.8)	d	17.6 (38.1)	3.1 (5.8)	d	13.9 (30.1)	3.7 (8.2)	d

a As reported by the farmers — data from 75 farms operating in 1974.

b Retired from off-farm work.

c More than one person on some farms.

d Not calculated.

Reasons for Part-Time Farming

Twenty-four percent of the surveyed farmers were former full-time farmers. The majority of these took off-farm jobs to increase their incomes; a few had given up full-time work due to age or ill-health. These farmers were slightly older than the former non-farmers; the respective average ages of the two groups were 50 and 44.

Table 5 summarizes the farmers' current major reasons for farming (as of November 1974-February 1975). They are grouped into three broad categories. "Way of life" reasons, involving preferences for rural or farm life/work/environment/recreation/retirement, were by far the most common category of reasons given; 65 of the 82 farmers mentioned these as first and/or second reasons for farming, while only 20 farmers mentioned financial reasons such as increased income, investment or tax reduction. Small numbers gave other less general reasons, *e.g.* close family ties to farming, a desire to farm full-time, and interests in particular enterprises/animals.

The relative insignificance of financial reasons for part-time farming should be seen in the context of the unattractive financial environment applying to these part-time farms in late 1974-early 1975 (in particular depressed beef prices, stable land prices, high superphosphate prices and the 1973 tax changes affecting farmers). On the other hand, leaving out the former full-time farmers, the relative frequencies of reasons were approximately the same when the farmers were asked why they had first started farming.

Table 5: Frequencies of First and Second Reasons Given for Part-Time Farming at Present^a

Reasons	Kilmore				Lillydale				Totals — both shires	
	1st	2nd	Small	Large	1st	2nd	Small	Large	1st only	Both reasons
<i>Financial</i>										
Increase income										
As an investment	2	1	1	1	3	2	1	1	6	9
Tax reduction		2	2						4	6
Complements non-farm business		2	1				1	1	1	5
<i>"Way of Life"</i>									2	2
Enjoy rural life	15	1	3	4	6	7	2	3	31	41
Enjoy farm work	2	2	1	4	3	3	3	3	9	21
Get away from city	2	5	2	2	2	2	2		2	11
Good family environment	1								3	5
Recreation	1	3	2	2	1	1	1	1	5	12
Retirement interest	4	1							4	5
<i>Other</i>										
Personal/family ties to farming			4		1	1			6	6
Intend to farm full-time			1	1	1			1	1	4
Interest in a particular enterprise							1	1	2	2
Need land for animals							1		1	6
Control vegetation			5		1				1	2
Food self-sufficiency			1		1				1	1
Can't sell				1				1	1	3
Always a part-time farmer	1		1						1	1
Nil									1	1
	28	24	15	15	22	17	9	13	82	143

^a Some farmers gave only one reason; a few gave three or more.

WILLS: PART-TIME FARMING

Estimated Farm Returns and Expenditures and Farm and Off-Farm Incomes, 1973-74

The precision of the farmers' estimates of farm returns and expenditures during 1973-74 varied between farms. A quarter of the farmers provided the interviewers with income tax returns or accounting data, over half provided fairly precise estimates based on these and other sources, and a fifth gave only rough estimates.

Table 6 shows that beef production was the main income-producing activity on most of the survey farms. Sheep and wool production, horse breeding and fruit growing were more important on a few farms. Over one-third of the Kilmore farmers and nearly one-fifth of the Lillydale farmers did not sell any farm products in 1973-74. Both returns and expenditures were highly variable between farms, as Table 7 shows.

Table 6: Gross Returns for Various Products Sold by Survey Farmers in 1973-74

Product	Kilmore		Lillydale	
	Small	Large	Small	Large
Cattle — no. farms	13	10	13	14
— value (\$)	19100	60800	13000	192400
Milk — no. farms				1
— value (\$)				43100
Sheep — no. farms	1	1		4
— value (\$)	300	4500		34700
Wool — no. farms	3	5		2
— value (\$)	200	10400		13000
Horses — no. farms	2			3
— value (\$)	6400			64800
Fruit — no. farms			3	1
— value (\$)			13500	2500
Other — no. farms	3		2	3
— value (\$)	3200		2600	600
Total — no. farms	16	12	16	16
— value (\$)	29200	75700	29100	351100
No. of farms with no agricultural sales in 1973-74	12	3	6	1

Farm incomes were estimated on the basis of the returns and expenditures data. These estimates are subject to error due to: (i) inaccurate/incomplete data obtained from some farmers; (ii) inadequate data to properly take account of changes in the value of livestock inventories (the technique used was simply to treat any surplus of expenditures on livestock over the value of livestock sold as an increase in the value of inventory); and (iii)

REVIEW OF MARKETING AND AGRICULTURAL ECONOMICS

incomplete data on capital items subject to depreciation. Thus the mean and standard deviation for net farm income in Table 7 should be interpreted as indicating the general situation on the survey farms in 1973-74, but not as precise estimates. These figures do suggest that few of the farms were very profitable ventures on a before-tax basis in 1973-74. Only 21 percent of the Kilmore farms and 54 percent of the Lillydale farms yielded positive farm incomes; the higher incidence of negative farm incomes in Kilmore appears to be a result of the recent establishment of many of the part-time farms in that area.

Table 7: Average Farm Returns and Expenditures,^a Net Farm Income and Off-Farm Incomes of Part-Time Farmers, 1973-74 (Standard Deviations in Parentheses)

	Kilmore		Lillydale	
	Small \$	Large \$	Small \$	Large \$
Farm Returns	1040 (1990)	5400 (5840)	1320 (1780)	20650 (29190)
Farm Expenditures	1140 (1360)	6400 (6790)	1080 (970)	13740 (16870)
Net Farm Income	—100 (950)	—1000 (6040)	240 (1050)	6910 (15800)
Operator's Off-Farm Income	11380 (6240)	16610 (13840)	8800 (6360)	13830 (9330)
Operator and Spouse's Off-Farm Income	13130 (6670)	19220 (13480)	10190 (8380)	18740 (12830)

a Expenditures include all 1973-74 spending on livestock purchases but not spending on farm machinery and improvements.

The estimates of off-farm incomes obtained in the survey are less reliable than the farm returns/expenditures data. About a third of the farmers were unwilling to divulge information about their off-farm income; six of these would only reveal that it was more than a specific figure; in seven cases no information was given, and an estimate was made using other survey data, chiefly the nature of the farmer's off-farm job. Also two of the co-operative farmers did not have precise knowledge of their spouses' off-farm incomes.

Off-farm incomes were quite variable, reflecting the variety of occupations listed in Table 3, but much less variable than farm incomes. The relatively high average figures conceal the low off-farm incomes received by a few respondents who were mainly farmers or elderly and semi-retired. Off-farm incomes far exceeded farm incomes in the great majority of cases. Farm income exceeded off-farm income for one farm in Kilmore and four in Lillydale. On only 9 percent of Kilmore farms and 30 percent of Lillydale farms was farm income more than 20 percent of the operator and spouse's total income from all sources.

Farmers' Plans and Problems

Almost all of the farmers planned to continue farming notwithstanding the apparent non-profitability of a majority of the farms in 1973-74. This may reflect a predominance of non-financial reasons for part-time farming, as indicated by Table 5, and/or a belief that farming will be profitable in the long-term, especially when combined with capital gains and tax savings due to farming. Three farmers planned to farm full-time. Nineteen of the forty-two absentee operators intended to take up residence on their farms.

Questioning about planned changes in farming operations revealed a distinct difference between the farmers in the two shires: on the generally recently established Kilmore farms the most common changes planned were basic improvements to the property; *e.g.* improved pastures, watering facilities, structures; in Lillydale, the most common response was that no changes were planned, followed by plans to increase returns from the property by shifting to more intensive enterprises, *e.g.* market gardens, feedlots, livestock studs.

The level/variability of product prices, costs and returns was viewed as the most serious problem facing these farmers. Resource constraints (operator's time, finance) were a distant second, and problems associated with the local environment (*e.g.* lack of water, erosion), the federal government (the superphosphate bounty, tax concessions), and local government (rates, zoning) were each mentioned by a small minority of farmers.

Part-Time Farming and Agricultural Adjustment

As mentioned earlier, a quarter of the farmers interviewed were former full-time farmers. Of these, 65 percent gave increased income as their major reason for taking off-farm work, and a further 15 percent gave it as a subsidiary reason. These ex-full-time farmers did not see part-time farming as a transitory stage preceding the cessation of farming. Sixty percent of them had been working off their farms for more than five years and all but one planned to continue part-time farming. One farmer planned to return to full-time farming.

Most of the respondents who were former non-farmers also saw part-time farming as a continuing work arrangement; 44 percent of them had been part-time farmers for more than five years, 90 percent planned to continue part-time farming and 3 percent planned to farm full-time. However, in contrast to the movement out of farming, this in-movement did not appear to be primarily motivated by expected financial gain. Only one in four of the former non-farmers gave financial reasons for commencing farming and for continuing farming at present.

It appears, therefore, that part-time farming in the environs of Melbourne is generally a stable working/living arrangement, rather than a transitional phase *en route* between full-time farming and full-time off-farm work. A number of overseas studies report similar findings (*e.g.* [11][20][21]). This stability is encouraging in that comparative-statics-type analyses are then appropriate for part-time farming; on the other hand, the importance of non-financial reasons for farming suggests that much of this resource allocation may not be amenable to conventional economic analysis.

Resource Use on Part-Time Farms

Some of the overseas research on part-time farming has been concerned with the productivity of part-time farms, particularly from an agricultural point of view. Part-time farms have often been found to be less productive or less efficient as agricultural units than full-time farms [11] [13] [17]. However, assuming the objective of the part-time farm household is to maximise the flow of income and/or satisfaction from employment of the household's limited resources both *on and off* the farm (and not necessarily on an annual basis, remembering life-cycle theories of household behaviour), this is scarcely surprising. For example, assuming that the part-time farmer's time has a higher opportunity cost than that of the full-time farmer, we would expect to observe part-time farmers choosing less labour-intensive enterprises and techniques than would be considered optimum for farming in general — as appears to be the case in Lillydale, where the part-time farmers concentrated on beef cattle and avoided dairying. Further, if the values the part-time farmer places on his resources are close to the society's values, then a narrow focus on the farm side of his activities may lead to incorrect conclusions concerning the efficiency of part-time farming from society's point of view.

Having said that, it is still of interest to compare the general levels of resource use and output on the part-time farms with those of other farms in the same area, to see whether substantial differences do exist. This comparison appears relevant to the occasionally-expressed concern about the "under-utilisation" or "mismanagement" of farm land close to Melbourne, with the frequent implication that somebody should preserve it for "genuine" farmers.

No comparable survey of full-time farms in the Kilmore and Lillydale areas is available, so in Table 8 rates of resource use and gross returns per hectare and per man on the survey farms are compared with those calculated from

Table 8: Rates of Resource Use and Gross Returns Per Hectare and Per Man in the Shires of Kilmore, Lillydale and Healesville^a and on the Survey Farms,^b 1973-74

	Kilmore			Lillydale			
	Shire ^a	Survey Farms ^b		Lillydale Shire ^a	Healesville Shire ^a	Survey Farms ^b	
		Small	Large			Small	Large
Percentage of pasture fertilised	59	41	53	62	59	53	68
Rate of Fertiliser use on pasture (tonne/ha)	0.20	0.21	0.30	0.27	0.28	0.45	0.26
Cattle equivalent per pasture hectare ^c	1.09	1.03	0.93	1.54	1.58	1.36	1.28
Cattle equivalent per man equivalent ^d	156	57	279	17	50	33	149
Gross returns per hectare (\$)	60	59	41	341	91	164	205
Gross returns per man (\$) ^d equivalent	12700	3500	14100	5700	4600	5200	25300

a Source: A.B.S., (1975) and A.B.S. Melbourne office.

b Source: Survey of part-time farmers.

c Assuming 1 sheep equals 1/8 of a beast.

d Ignoring the work of wives and children and assuming that a full-time man works 50 hours per week and a full-time female equals 1/2 a full-time man.

WILLS: PART-TIME FARMING

the Australian Bureau of Statistics' 1973-74 agricultural, pastoral and dairying statistics for each shire [2].⁷ Survey holdings where the operator had not commenced production in 1973-74 are omitted. The survey results in Table 8 show that the rates of stocking and fertiliser use on pastures are not very different from those for the relevant shires as a whole. The large and small part-time farms yield relatively high and low-to-average gross returns per full-time man respectively, due largely to the numbers of livestock carried per man in each case. However, gross returns per hectare are similar for large and small part-time farms and not very different from the shire averages, assuming that the Lillydale survey area is intermediate in character between Lillydale as a whole and Healesville.

These results do not support the view that part-time farms are inefficient in agricultural terms, except insofar as they indicate that some small part-time farms are relatively inefficient users of agricultural labour. However, if the small amounts of farm labour required on these small farms have low off-farm opportunity costs and/or yield direct satisfaction to the farmer, this "inefficiency" disappears. Conversely, large part-time farms yield high returns to labour, presumably reflecting the high off-farm opportunity costs of substantial amounts of time spent on farm work.

Part-Time Farming and Taxation

Only 4 of the 82 survey farmers mentioned farm tax concessions as a major reason for commencing part-time farming and only 5 mentioned it as a current reason for part-time farming. However, Table 9 shows that a majority of the farmers had used the primary producer concessions available prior to the 1973 Budget. Only 18 percent reported that they had

Table 9: Percentage of Farmers Using Various Farm Taxation Concessions and Responses to 1973 Tax Changes

Concessions	Kilmore		Lillydale		Total both Shires
	Small	Large	Small	Large	
Plant and machinery depreciation	43	67	59	76	59
Capital and expenditure write-offs	46	67	68	59	59
Averaging — yes	36	40	55	59	46
— uncertain	14		9		7
Deduction of farm losses — yes	39	73	55	65	55
— uncertain	7				2
None of the above	25	7	23	12	18
1973 tax changes caused:					
— reduced spending	43	53	14	24	33
— no change	57	47	86	76	67

⁷ Statistics for the shire of Healesville are also included. The survey covered only the North and West Ridings of Lillydale, on the south side of the Yarra River, and omitted the East Riding, which is largely devoted to intensive fruit and vegetable production. The bulk of the agricultural land in Healesville is just across the Yarra from the Lillydale survey area.

not used any of the concessions, and some of these were only commencing farming in 1973-74. The 1973 Budget changes had reportedly affected spending on one-third of the farms, mostly in Kilmore, where many farms were at an early stage of development.

Far too little is known about the farm households' gross receipts and tax-deductible expenditures in the years up to and including 1973-74, and the organisation of their farm and off-farm businesses, to enable direct estimates of their individual savings resulting from primary producer tax concessions. However, we can get an idea of the possible magnitude of particular types of tax savings by relating individual farmers' reported capital expenditures and pre-tax farming losses to their estimated total incomes from farm and off-farm sources. The results of three such hypothetical calculations are presented in Table 10: (i) estimates of immediate tax savings derived from specific farm tax concessions *assumed* available in 1973-74 (Case I); (ii) estimates of the tax savings derived from the deductibility of *assumed* farm mortgage interest payments (Case II); and (iii) estimates of the reductions in tax payable on individuals' *off-farm incomes* due to their losses on farming activities (Case III).⁸ Case I assumes immediate deductibility of expenditures on fencing, pastures, clearing and water, a 20 percent investment allowance on plant and machinery, and that in their absence taxable income is equal to 75 percent of the sum of the farm income and the operator's off-farm income. In Case II it is assumed that those farmers who purchased the whole or part of their land between 1968 and 1973 borrowed 60 percent of the purchase sum, with interest charged annually at 10 percent, repayable in six equal annual instalments.⁹ Taxable income, calculated as in Case I, is then reduced by the interest component of each annual payment. Case III assumes that farmers' taxable off-farm incomes are 75 percent of their off-farm incomes.

The estimates of possible tax savings of various types are reported in Table 10. They make no allowance for: (1) averaging of primary producer incomes, which may produce either tax savings or tax losses, depending on whether the farmer's taxable income is rising or falling; (2) tax savings due to the ability to treat some personal expenses (e.g. rates payable on the family dwelling, part of car running costs and telephone bills) as tax-deductible costs of running a farm business; and (3) income splitting (via partnerships, family companies, etc.) made possible by running a farm business. In these circumstances, the higher Case II or Case III averages in the table probably underestimate the overall *actual* tax savings of the survey farmers, even though not all the farmers were primary producer taxpayers in 1973-74.

Concentrating on particular types of tax savings, the estimates for Case I in Table 10 suggest that only a minority of the part-time farmers, mainly those who had recently established farms in the Kilmore area, spent so much on replaceable capital items in 1973-74 that specific farm tax concessions for

⁸ Losses as reported by farmers; in most cases they differ from the estimated net farm incomes reported in Table 7.

⁹ The assumed terms and conditions of loans were derived from discussions with staff of the Melbourne offices of three of the commercial banks.

WILLS: PART-TIME FARMING

these items could have resulted in major additions to their after-tax incomes. This may be due to the fact that most of the expenditures listed in Table 10 took place after the well-publicised removal of major farm tax concessions in the 1973 Budget. As mentioned above, one-third of the farmers said that they had spent less in 1973-74 as a result. On the other hand, when asked about their replaceable capital expenditures in the years 1970-71 to 1972-73, most of the farmers who had been established at least three years reported annual expenditures equal to or less than the 1973-74 amounts. These results suggest that the farm tax concessions abolished in 1973 were not a major reason for the continuation of part-time farming on developed farms, as in Lillydale; they did provide an incentive for the creation of new part-time farms, as in Kilmore.

Table 10: Estimates of Possible Tax Savings for Part-Time Farmers, 1973-74

	Kilmore		Lillydale	
	Small	Large	Small	Large
Case I: Immediate write-off of spending on fencing, pastures, clearing and water, 20 percent investment allowance on plant and machinery.				
— Average of all farms (\$)	257	570	76	220
— Average of 3 farms with largest tax savings (\$)	1127	1399	375	525
— Tax savings less than \$200 (%)	63	50	91	53
Case II: Deduction of farm mortgage interest payments.				
— Average of all farms (\$)	224	288	134	951
— Average of 3 farms with largest tax savings (\$)	709	1244	681	3555
— Tax savings less than \$200 (%)	59	71	86	41
Case III: Reduction in tax payable on off-farm incomes due to farm losses				
— Average of all farms (\$)	246	794	79	1300
— Average of 3 farms with largest tax reductions (\$)	1479	2232	456	5934
— Tax reduction less than \$200 (%)	74	50	82	65
Average farm plus off-farm income of the farm operator (\$)	13030	18220	9040	20740

The hypothetical estimates for Case II indicate that a minority of the part-time farmers would have obtained substantial benefits from the tax-deductibility of farm mortgage interest payments in 1973-74, if they had borrowed a major part of the purchase price of their properties on terms and conditions similar to those assumed and had been assessed as primary producers. The figures for the large farms surveyed in Lillydale reflect the purchase of six properties, all costing in excess of \$100,000, in the period 1970-73. These estimates highlight the large tax savings possible (in the

years immediately after purchase) when relatively short-term loans are used to finance the purchase of expensive rural properties. The incentive to engage in primary production will be greatest in the case of urban fringe properties, where the purchase prices (and hence the potential tax savings) will generally be highest in relation to the costs of establishing primary producer status.¹⁰

Thirty-six percent of the survey farmers reported farming losses for 1973-74. Even in the absence of specific farm tax concessions the operation of a farm business with high levels of tax-deductible expenses leading to losses may provide a means for the conversion of taxable off-farm earnings into tax-free capital gains, and/or personal expenses into farm business expenses. It is not suggested that all or indeed any of the reported losses were incurred for this reason, so the Case III estimates in Table 10 represent the *maximum* tax reductions possible assuming the losses were incurred solely and successfully to reduce tax payable on the farmers' off-farm incomes.

Motivations of Part-Time Farmers on the Urban Fringe

The results in Table 5 suggest that most part-time farmers on the urban fringe farm because they enjoy farming as a way of life/work/recreation, a common finding in studies of urban fringe farming (e.g. [6][11][26]). Table 5 also suggests a stronger hypothesis, namely that a majority of the farmers farm for "way of life" rather than for financial reasons, and that they may be prepared to forego more profitable alternatives in order to satisfy their preferences.¹¹ There are survey findings consistent with this hypothesis: the very low or negative returns from most of the survey farms in 1973-74;¹² the farm backgrounds of a majority of the farmers or their spouses; the intention of almost all farmers to continue farming despite the unfavourable economic prospects in 1974-75, and the high off-farm incomes received by many of the farmers, which would permit them to forego profitable alternatives without risking financial hardship for themselves or their families. Conversely, a majority of the farmers saw current returns/costs as a serious farming problem, indicating that they were concerned about profitability. Also most farmers took advantage of primary producer tax concessions, and comparison of the (probably conservative) estimates of possible tax savings in Table 10 with the estimates of pre-tax farm incomes in Table 7 suggests that a majority of the survey farms were probably at least marginally profitable after taxes in 1973-74.

¹⁰ Where a person buys urban fringe land at a price exceeding its agricultural value and qualifies as a primary producer, part of the tax savings resulting from deductibility of interest payments will be due to the higher value of the land for potential non-agricultural uses.

¹¹ For some evidence of similar preferences among full-time farmers, see Hawkins and Watson [15, pp. 27-30].

¹² High expected rates of capital gain on farm holdings do not in themselves seem to be a major reason for part-time farming. Only 7 percent of farmers gave property investment as a major reason, and, in any case, there is no need to farm to obtain the capital gain. Figures supplied by the Valuer-General's Office indicate that during the period 1970-74 the rate of appreciation of farm land in Kilmore and Lillydale shires was approximately equal to the rate of appreciation of vacant building blocks in the shires and adjacent suburban municipalities.

The hypothesis that a majority of part-time farmers farm for "way of life" rather than financial reasons cannot be tested with the available survey data. Several years' financial data are required, plus information about the farmers' plans and expectations, their business arrangements and their farm and off-farm work and investment alternatives. It is hoped to obtain this information from some of the survey farmers in a follow-up survey being conducted in 1978.

If it is accepted that most part-time farmers derive direct satisfaction from farm life and work, this indicates a need for models which explicitly take such satisfaction into account. Models of part-time farmer behaviour developed to date have viewed both farm and off-farm work solely as income-generating activities (*e.g.* [7] [18] [22] [24]), ignoring the possibility of strong preferences for farm work. Assuming that both the time spent on farm and off-farm work and the resulting income (net losses) are sources of utility (disutility), this omission would not be serious if the marginal utilities derived from time spent on farm and off-farm work are approximately equal at the margin where the decision whether to devote time to work on or off the farm is made — this may be a reasonable assumption for farmers whose main job is farming, and for whom off-farm work is a minor activity undertaken to supplement their income from the farm. In this connection Lee argues:

"... there is no *a priori* reason for assuming that one hour of farm labour involves less disutility than one hour of work in a factory or an office. . . . one could probably find evidence that when farmers gain experience with the regularity of income from off-farm work (plus the possibility that the off-farm work is cleaner and less strenuous than farm work), once-strong preferences for farm work begin to weaken. This may be especially true where the operator can still live on his farm, farm part-time, and thus retain most of the benefits of rural life" [18, p 88].

Lee's model and the other models referred to above were in fact developed to be applied to farmers whose main job was farming. However, the omission of preferences for farm work is likely to result in misleading conclusions about economic responses if the model is applied to affluent part-time farmers whose main job is off-farm, as in the present study.

As a first step towards dealing with strong preferences for farming, a highly simplified model of part-time farmer behaviour with utility derived directly from time spent on farm work is outlined in the Appendix. The obvious major problem with such a model is that of quantifying the utilities/disutilities associated with time spent on alternative types of work and leisure.

Assuming that most of the survey farmers farm at least partly for non-financial reasons, and noting their general non-dependence on farming for income, is it likely that they are as responsive to economic changes, such as changes in agricultural prices and in farm tax concessions, as full-time farmers? This can only be tested by observing part-time farmers' responses over time. It is an issue whose practical significance will increase as numbers of part-time farmers increase and their impact on agricultural adjustment and the outcomes of agricultural policies grows.

Summary and Conclusions

Experience in this study indicates that identifying part-time farmers is an expensive and time-consuming procedure when carried out separately from other farm census and survey activities. To date the A.B.S. has not produced any separate agricultural or economic statistics relating to farm operators who are multiple jobholders. Current and planned expansions of the A.B.S. agricultural statistics data base may solve this problem [23]. In the absence of census or nation-wide survey information about the farm and off-farm work, income, costs, *etc.*, of farmers who are multiple jobholders, research into part-time farming in Australia will continue to be limited in scope and restricted and/or possibly biased in its conclusions.

Few of the part-time farmers studied derived substantial income from farming in 1973-74; most shared a preference for farming as a way of life or work or recreation, most had some experience of farming prior to operating their own farm and most specialised in beef cattle production. On the other hand, they were a very diverse group in terms of personal characteristics such as age and education and in the size of their farms, their length of farming experience, their off-farm jobs and levels of income from farm and off-farm sources. This diversity underscores the problems, pointed out by the B.A.E. [3], of defining who is a "genuine" farmer for taxation purposes — or for that matter for other purposes such as assessing local government rates or establishing eligibility for government assistance available to farmers, *e.g.* loans at preferential interest rates.

The fact that, almost without exception, the survey farmers regarded their part-time status as continuing rather than transitional, suggests that part-time farming around Melbourne will continue to increase in importance. If generally true, this emphasises the need for improved data collection and more careful definition of part-time farmers/"hobby" farmers, *etc.*, since as part-time farming increases in relative importance, its ability to influence the outcomes of agricultural policies based on studies of full-time farmers and aimed at influencing full-time farmers will increase.

The survey results do not support the view that part-time farms are less productive than full-time farms. On the contrary, they tend to support the view, prevalent amongst agricultural economists [8], that most large "commercial" part-time farms out-perform full-time farms of equivalent size.

While the farm tax concessions abolished in August 1973 had undoubtedly benefited most of the survey farmers, the amount of tax savings was probably quite small for developed farms, as opposed to new farms. Farmers generally viewed the removal of the concessions as a minor problem compared to the high costs of and low returns from farming in 1974-75. Other continuing tax concessions may have been more important for many farmers. Hypothetical tax calculations show that, if survey properties had been purchased using substantial amounts of borrowed funds and the farmers had been assessed as primary producers, tax savings resulting from deductibility of farm mortgage interest payments would have been widespread in 1973-74, and very large in the case of a few high-priced urban fringe properties.

It appears that most, if not all, part-time farmers derive direct satisfaction from farm life and work, as do most full-time farmers. This indicates the need for models of farmer behaviour which explicitly take such satisfaction into account. In the absence of models which integrate the farm and off-farm consumption and production behaviour of part-time farmers, there is a danger of formulating and testing hypotheses about part-time farming which are based upon a partial view of farmer behaviour, thereby leading to misleading conclusions about part-time farmers' responses to economic and other changes.

Appendix

An Economic Model of Part-Time Farmer Behaviour

The highly simplified model of part-time farmer behaviour which follows is intended to capture the essential aspects of the trade-off between farm and off-farm work when the part-time farmer is viewed as both a consumer and a producer. It draws on the work of Becker [5] and Sexton [24] insofar as activities which enter the farmer's utility function are assumed to require inputs of time as well as (or in the absence of) purchased consumption goods.

To simplify matters as much as possible, assume we have a part-time farmer who makes up a single-person household. He divides his time between off-farm work, farm work, consumption of a single purchased commodity and some fixed amount of time devoted to essential bodily needs which is physiologically necessary in order to undertake the other activities. He spends H_N , H_F and H_C hours on off-farm work, farm work and consumption respectively. Omitting the time devoted to essential bodily needs, we define the total time available as

$$T = H_N + H_F + H_C \quad (1)$$

The part-time farmer's utility function is

$$U = U(X, H_F) \quad (2)$$

where X is the quantity of the single purchased commodity used in consumption and

$$H_C = tX \quad (3)$$

t is the fixed time requirement per unit of the purchased commodity consumed, *i.e.* consumption requires proportions of the purchased commodity and time, as assumed in Becker [5, p. 496].

The farmer maximises utility subject to two constraints:

(i) the time constraint referred to above.

$$T = H_N + H_F + tX \quad (4)$$

and

(ii) the expenditure constraint equating the farmer's off-farm and farm earnings to his expenditure on the purchased commodity,

$$w_N H_N + w_F H_F = pX \quad (5)$$

where w_N = the off-farm wage rate

w_F = the net farm return per hour of farm work $< w_N$

p = the unit price of the purchased commodity,
and w_N , w_F , p are independent of the levels of H_N , H_F , X .

Dividing (5) through by p gives

$$\omega_N H_N + \omega_F H_F = X \quad (5a)$$

where ω_N and ω_F are wages and net farm returns per hour in terms of the purchased commodity.

As Becker [5, pp. 496-97] has pointed out in the case of "normal" purchased consumption goods, the constraints (4) and (5/5a) are not independent because time can be converted into funds available for expenditure by using less time for consumption and more at work (in Becker's terms we can think of farm work as a commodity requiring time for consumption but with a negative purchase price). Solving for H_N in (4) and substituting the resulting value in (5a) gives the single constraint

$$\omega_N T = (1 + \omega_N t)X + (\omega_N - \omega_F)H_F \quad (6)$$

where $\omega_N T$ is what Becker calls "full income", *i.e.* the maximum income achievable, here measured in units of X .

A visual interpretation of constraints (4), (5a) and (6) appears in Figure 1. For any fixed value of H_N , the time constraint (4) is represented in X/H_F space as a negatively-sloped line AB between the X (horizontal) and H_F (vertical) axes, with an intercept on the latter axis of $T - H_N$, and a slope of $-t$. The expenditure constraint (5a) is represented as the line CE , with an intercept at $\omega_N H_N$ on the X axis, and a slope of $1/\omega_F$ (CDE will be positively sloped if net returns from farming are positive). Both constraints hold at the point of intersection of the two lines, D . Now suppose H_N is allowed to vary. As H_N increases (decreases), the time constraint line moves inwards (outwards), reflecting less (more) time available for farm work and consumption of the purchased good, and the expenditure constraint line moves to the right (left), since more (less) off-farm work increases (decreases) the funds available for purchases of the consumption good. The combined shifts of AB and CE cause their point of intersection D to trace out a line FD' which indicates all combinations of H_N , H_F and X which satisfy both constraints, (4) and (5a), *i.e.* it represents the single total resource constraint (6), with an intercept at $\omega_N T / (1 + \omega_N t)$ on the X axis, and a negative slope of $(1 + \omega_N t) / (\omega_N - \omega_F)$. Here $(1 + \omega_N t)$ and $(\omega_N - \omega_F)$ can be thought of as the "full prices" of X and H_F respectively, incorporating both the cost of commodity purchases and the cost of earnings foregone.

Note that the total resource constraint (6) is only defined for amounts of time totalling T , hence it does not extend above the point where the time constraint $A'B'$ intersects the expenditure constraint $C'E'$ at D' (representing a situation where $H_N = 0$ and therefore $T = H_F + tX$). Above D' only the time constraint applies. Thus the set of combinations of X and H_F attainable by the part-time farmer is bounded by the two axes and the lines $A'D'$ and $D'F$.

Assuming that the part-time farmer maximises utility where both constraints apply (*i.e.* along FD') the total resource constraint (6) will hold. Then maximising utility (2), subject to (6), is equivalent, for an interior solution, to finding a saddle point for the Lagrangian function

$$L = U(X, H_F) + \lambda[\omega_N T - (1 + \omega_N t) X - (\omega_N - \omega_F) H_F] \quad (7)$$
$$U_C - \lambda(1 + \omega_N t) = 0 \quad (8)$$

$$U_F - \lambda(\omega_N - \omega_F) = 0 \quad (9)$$

$$\omega_{\text{N}}T - (1 + \omega_{\text{N}}t)X - (\omega_{\text{N}} - \omega_{\text{F}})H_{\text{F}} = 0 \quad (10)$$

Differentiation of the first order conditions (8)-(10) with respect to the exogenous variables ω_N and ω_F will yield a system of equations which will indicate how time spent on farm work, purchased good consumption, and, using (4), time spent on off-farm work, respond to changes in the off-farm wage and net returns from farm work. In terms of Figure 1, these comparative statics results are obtained by observing the changes in the point of the tangency between the total resource constraint line, (FD' in Figure 1), and the highest attainable indifference curve ($\bar{U}\bar{U}$ in Figure 1) as the constraint line shifts in response to changes in ω_N and ω_F . Given the initial position of the constraint line in Figure 1, changes in ω_N cause it to rotate about D' (anticlockwise if ω_N increases, and *vice versa*); changes in ω_F cause it to rotate about F (clockwise if ω_F increases, and *vice versa*).

217

REVIEW OF MARKETING AND AGRICULTURAL ECONOMICS

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