

*Report to the  
Marlborough Winemakers*

**An Economic Analysis  
of the Wine Industry  
in Marlborough**

**Hugh Bigsby  
Mike Trought  
Ross Lambie  
Kathryn Bicknell**

**March 1998**

**Agribusiness and Economics Research Unit  
PO Box 84  
Lincoln University  
Canterbury  
New Zealand**

**Ph:(64)(3) 325-2811  
Fax: (64)(3) 325-3847**

---

# Contents

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGEMENTS

CHAPTER 1	SUMMARY	1
CHAPTER 2	INTRODUCTION: THE WINE INDUSTRY IN MARLBOROUGH	6
	2.1 Land Use in the Marlborough Region	6
	2.2 Brief History of Grape Growing and Wine Production in the Region	7
	2.3 Marlborough's Position in the New Zealand Wine Industry	10
CHAPTER 3	DIRECT IMPACT OF THE MARLBOROUGH WINE INDUSTRY	13
	3.1 Survey of Grape Growers and Wineries	13
	3.2 Wine Grape Production	13
	3.2.1 Industry Structure	13
	3.2.2 Grape Varieties in Marlborough	15
	3.2.3 Production Costs	18
	3.2.4 Grape Sales and Revenue	21
	3.2.5 Employment	21
	3.3 Wine Production	23
	3.3.1 Industry Structure	23
	3.3.2 Wine Production	24
	3.3.3 Annual Expenditure by Winemakers	24
	3.3.4 Wine Sales and Revenue	27
	3.3.5 Employment	29
	3.4 Hospitality Services	30
	3.4.1 General Profile	30
	3.4.2 Expenditures on Hospitality Services	30
	3.4.3 Revenue per Visitor for Wine Tasting and Restaurant Services	32
	3.4.4 Employment	33
CHAPTER 4	INDIRECT ECONOMIC IMPACT	34
	4.1 Introduction	34
	4.2 Methodology	35
	4.3 Results	36
	4.3.1 Wine Grape Sector	36
	4.3.2 Winemaking Sector	37
	4.3.3 Hospitality Sector	38
REFERENCES		39

---

---

## **List of Tables**

3.1	Capital Investment By Marlborough Wine Grape Growers	20
3.2	Aggregate Contribution to the Tax Base by Marlborough Wine Grape Growers	21
3.3	Capital Investment by Marlborough Wineries	26
3.4	Aggregate Contribution to the Tax Base by Marlborough Wineries	27
3.5	Per Visitor Costs for Wineries Providing Tasting and Restaurant Services	31
3.6	Capital Investment by Marlborough Wineries in Hospitality Services	32

---

## List of Figures

1.1	Direct Impact of the Marlborough Wine Industry	3
2.1	Land Use In Marlborough (1994)	6
2.2	Marlborough Horticultural Land Use (1994)	7
2.3	Marlborough Area Planted in Grapes	8
2.4	Number of Wineries in Marlborough	9
2.5	Producing Vineyard Area by Region: 1990 Vs 1997	10
2.6	Quantity of Wine Grapes Produced by Region 1990 Vs 1997	11
2.7	Number of Wineries by Region 1990 Vs 1997	11
2.8	Regional Vineyard Areas (1997)	12
3.1	Size Distribution of Marlborough Vineyards	14
3.2	Total Production of Marlborough Vineyards by Vineyard Size	14
3.3	Vineyards with Winemaking Facilities	15
3.4	Varieties Planted in Marlborough (1997)	16
3.5	Recent Trends in Marlborough Grape Production by Variety	16
3.6	Grape Trade Structure	17
3.7	Aggregate Annual Expenditure for Wine Grape Production in Marlborough	19
3.8	Percentage of Wineries Categorised by Quantity of Wine Sold	23
3.9	Aggregate Annual Expenditure for Wine Production in Marlborough	25
3.10	Market Outlets for Marlborough Wineries by Size Category	28
3.11	Revenue per Litre for Marlborough Winemakers by Market Outlet	28
3.12	Marlborough Wineries Engaged in Hospitality Services	30

---

## **Acknowledgements**

The authors would like to acknowledge the valuable contribution that various members of the Marlborough Winemakers Association have made throughout the course of this study. The provision of background information on the industry, assistance with the compilation of the mailing list, feedback on preliminary drafts of the survey, and continued support throughout the data gathering stage are all greatly acknowledged. In addition, we would like to extend a special thanks to the many industry participants who took the time to complete questionnaires – the analysis would clearly not have been possible without your input.

---

## 1. Summary

The rapid growth of the wine industry in Marlborough since the early 1970s raises a number of important economic questions. The increase in grape production and wine making has been accompanied by a structural shift on the Wairau Plains, away from pastoral agriculture. This trend appears likely to continue for the foreseeable future. In light of the important tradeoffs which must be made as a regional economy develops, it is imperative to understand the importance of key industries as sources of employment and generators of income and government revenue. This study contributes an understanding of the importance of grapes and wine locally, by quantifying the direct economic impact of the industry to Marlborough's regional economy. In addition, the links between the wine industry and other industries in the Marlborough region are explored through the use of a regional input-output model.

Marlborough is currently the largest viticultural region in New Zealand in terms of area and quantity of grapes produced. As of June 1997 there were approximately 185 wine grape growers and 2,655 hectares of producing vineyard area in the Marlborough Region. Investment in the industry has been strong since the late 1980's with the continual expansion of the area under production and number of wineries. With respect to grape producing area, Marlborough has achieved an increase of 79 percent, or 1,125 hectares, since 1990. The 1996 New Zealand Vineyard Survey states that Marlborough is expected to continue to be New Zealand's dominant wine grape region, with 36 percent of the national planting projected by 1999.

To complement the increase in wine grape production, there has been a corresponding increase in the number of wineries in Marlborough. Since 1990 the number of wineries in the Marlborough Region has increased by over 500 percent, compared to the national increase of 200 percent. Currently 47 of the Wine Institute's approximately 265 members are located in Marlborough.

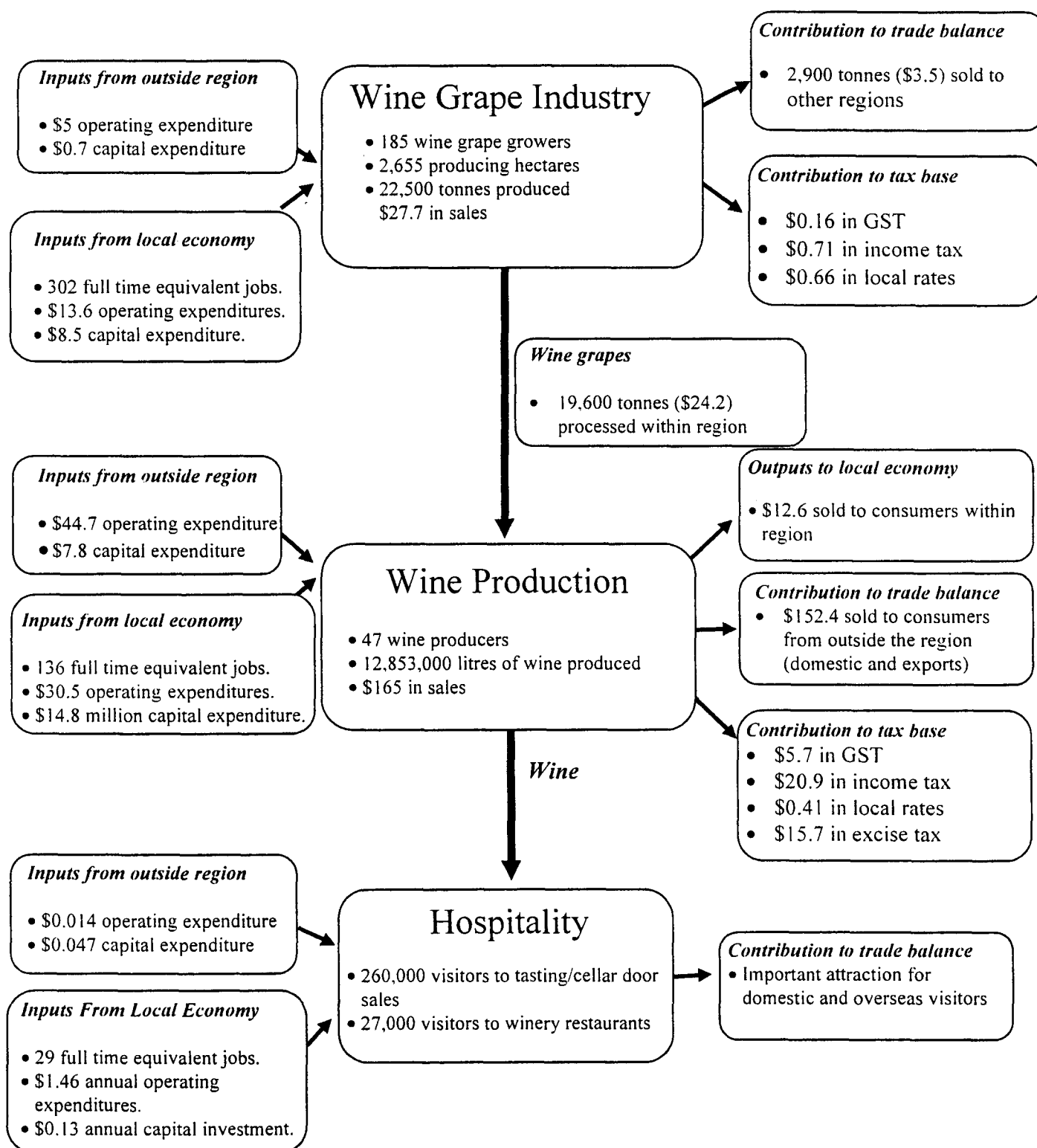
Wine tasting, cellar door sales and restaurant facilities provide a strong link between the wine industry and regional tourism. In a recent survey, visitors to the area listed visiting wineries

as the second most popular landbased activity in Marlborough. In 1996, 28 of the 47 wineries in Marlborough reported providing cellar door sales and wine tasting services. Seven of these wineries, or 15 percent of all wineries, also provided restaurant services.

Figure 1.1 summarises the estimates of the direct economic impact of the wine grape and winemaking industries on the Marlborough economy. Note that the input purchases and employment within the Marlborough Region are emphasised. Marlborough wine grape producers purchased approximately \$18.6 million worth of inputs, invested \$9.2 million in capital improvements (including new vineyard development), and provided 302 full-time equivalent jobs. The majority of the inputs into wine grape production are purchased from local suppliers, providing strong backward linkages with the regional economy.

Although some wine grapes were exported out of the region for further processing, the vast majority of the output from Marlborough vineyards went directly into Marlborough wine. Our estimates suggest that Marlborough winemakers purchased approximately \$75.2 million worth of inputs, spent \$22.6 million in capital improvements, and provided 136 full-time equivalent jobs. The majority of the inputs into the pre-bottling process are purchased locally, whereas many of the bottling costs are incurred outside the region.

The wine industry makes an important contribution to the tax base at the central and local levels. In addition to income tax and GST, the winemaking industry faces an excise tax of approximately \$1.91 per litre of wine. According to the survey results, at \$1.91 per litre the excise tax represents a larger component of the retail value of wine than the grapes. Survey results suggest that on an aggregate basis Marlborough wine sales generated approximately \$15.7 million in excise tax. Extrapolation from the survey results suggests that Marlborough grape growers and winemakers also contributed approximately \$5.8 million in GST, and \$21.6 million in income tax. In terms of a local contribution, respondents reported paying approximately \$1.1 million in local rates. Taken together, this implies a total tax contribution of almost \$44 million dollars, with over 99% going to the central government.

**Figure 1.1: Direct Impact of the Marlborough Wine Industry<sup>a</sup>**<sup>a</sup> Dollars are in millions



Survey results indicate that Marlborough winemakers providing hospitality services spent approximately \$1.47 million on inputs, made \$177,000 worth of capital improvements specifically related to their hospitality enterprise, and provided 29 full-time equivalent jobs.

An increase in final demand for wine industry output will set the region's economy in motion as winemakers and viticulturists purchase more inputs and hire additional employees to increase production. Final demand for wine includes exports as well as wine sold to other regions within New Zealand. This is a critical component of the overall demand for the wine industry. The majority of the demand for Marlborough wine grapes is derived from the demand for Marlborough wine. Final demand for local grapes, therefore, includes grapes sold to other winemaking regions. Survey results revealed that grape growers purchase a higher percentage of their inputs from inside the region than winemakers. Consequently, a \$1 increase in final demand for wine grapes will stimulate relatively more economic activity throughout the local economy than a \$1 increase in final demand for wine. More specifically, for every \$1 increase in final demand for Marlborough wine grapes, \$2.07 worth of economic activity is generated throughout the region. Every \$1 increase in final demand for Marlborough wine, on the other hand, generates \$1.75 worth of economic activity throughout the region.

Data limitations precluded the calculation of a regional multiplier for the hospitality industry. Results from an earlier study on the tourism industry in New Zealand, however, suggest that every dollar's worth of output in tourism, in the Bay of Plenty ultimately generates \$1.67 worth of economic activity in the local economy when labour is treated as a productive sector (Lim, 1991). Similar methodology applied to Canterbury indicates that a dollar spent on tourism in that region will generate \$1.91 worth of economic activity in the local economy. These results suggest that regional multipliers for tourism are likely to be similar in magnitude to those reported above for the wine industry.

In aggregate, the Marlborough wine industry purchased over \$95 million worth of inputs in the 1996/97 financial year. Of the total, approximately \$46 million (48%) were purchased from the local economy. Expenditure on capital was approximately \$32 million, over \$44

---

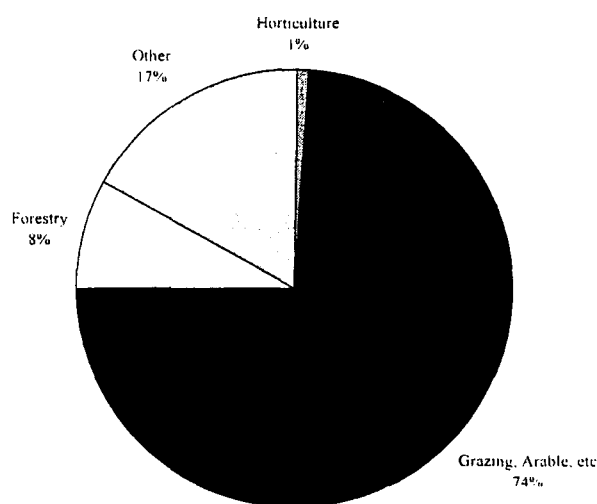
million was contributed to the tax base, and 467 full time equivalent jobs were supported. Of the capital expenditure, \$24 million was incurred within the region. Regional output multipliers give an indication of the direct and indirect impact of the wine industry on the region. These have been estimated at 2.07 and 1.75 for the wine grape and winemaking sectors, respectively.

## 2. Introduction: The Wine Industry in Marlborough

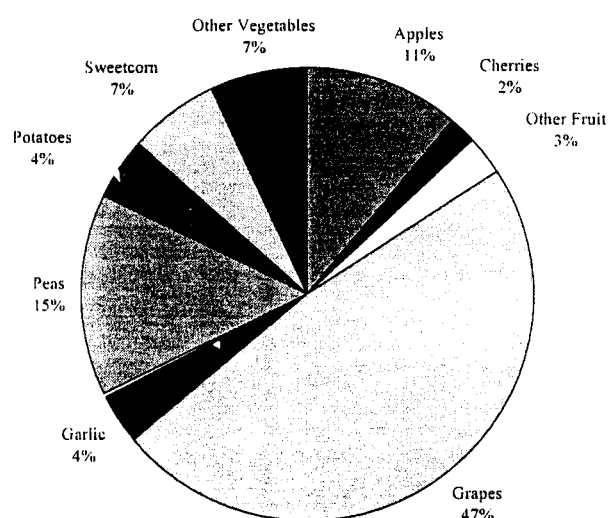
### 2.1 Land Use in the Marlborough Region

The free draining alluvial soils, abundant ground water and high sunshine hours in the Marlborough Region permit diverse land use activities. The Marlborough District Council (1996) identifies the predominant land uses as arable and pastoral farming, horticulture, viticulture, forestry and the built environment. Figure 2.1 illustrates the proportion of Marlborough land used in various activities in 1994, which is the most recent year for which consistent data is available. Focusing specifically on horticultural land use, grapes occupied nearly 50 percent of the available horticultural land in Marlborough in 1994 (Figure 2.2). Other major horticultural crops include peas, followed by apples (which can be grown free from fireblight) sweetcorn, potatoes, garlic, squash and cherries. Horticultural crops included in the "other" category consist of "other stone fruits", berry fruit and kiwifruit. Along with forestry, which has experienced a lot of interest from small investors, there has been increases in the area of land dedicated to grape production over the last few years.

**Figure 2.1: Land Use in Marlborough (1994)**



SOURCE: *Statistics New Zealand, Agricultural Statistics 1994*

**Figure 2.2: Marlborough Horticultural Land Use (1994)**

SOURCE: *Statistics New Zealand, Agricultural Statistics 1994*

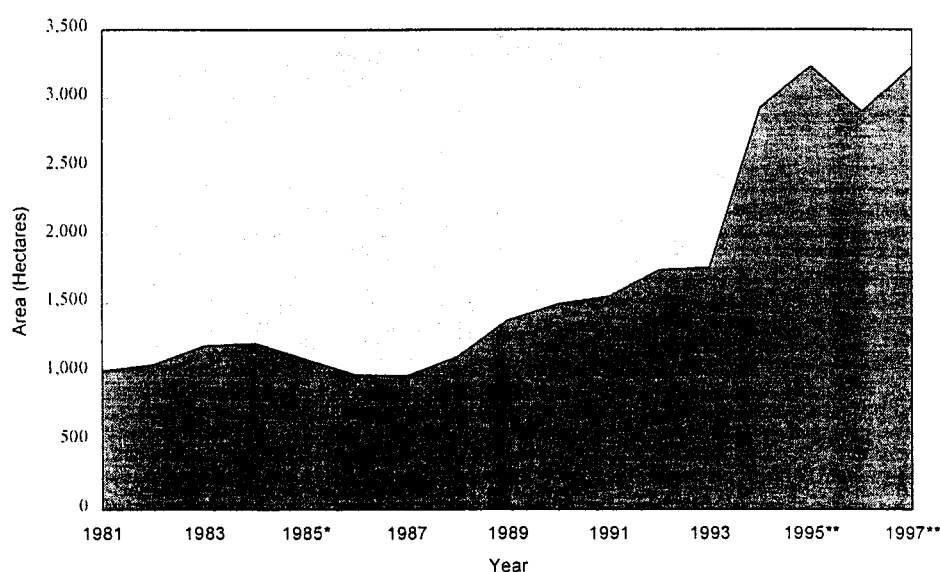
## 2.2 Brief History of Grape Growing and Wine Production in the Region

Three distinct periods characterise the history of grape growing and wine production in the Marlborough region. The first period begins around the mid 1870's when the first vineyard was established in the region followed five years later by the first winery (Brooks, 1992). This period extends through to the early 1970's, during which time the potential for wine production in Marlborough was generally overlooked with only a few small scale vineyards producing wine commercially.

The second phase relates to the period from the early 1970's through to the mid 1980's. Over this period the region's potential for wine production was increasingly acknowledged, resulting in a general expansion in hectares devoted to viticulture. Montana was the first of the large wine companies to arrive in the region and began planting in 1973. They were followed by Penfolds and then Corbans in the late 1970's who contracted growers and purchased grape growing land, respectively. The smaller boutique wineries, which began

with the establishment of Te Whare Ra in 1982, helped forge stronger links with tourism in the region and contributed to the realisation of the export potential of the regions wines.

**Figure 2.3: Marlborough Area Planted in Grapes**



SOURCE: *Statistics New Zealand*

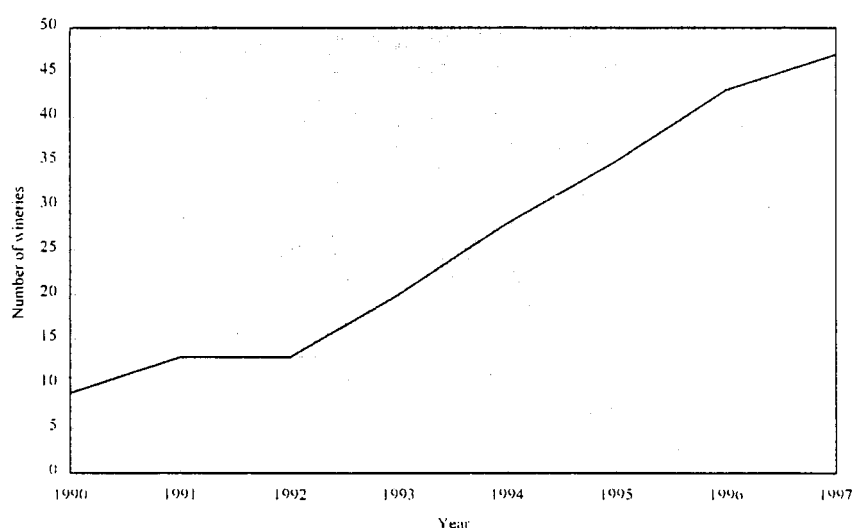
\* Interpolated

\*\* 1995 , 1996, 1997 New Zealand Vineyard Survey

In the third phase, which covers the period from the mid 1980's to the present, the industry has undergone decline and subsequent growth. Major problems confronting the industry at the beginning of this phase were oversupply, stagnant consumption and an increase in the sales tax on wine (Brooks, 1992). The government response to these problems was the implementation of a government funded vine extraction program which resulted in the removal of 189 hectares of grape vines. An additional problem arose in the 1980's with the discovery of Phylloxera in a vineyard in 1984. By 1992 it was estimated that 50 percent of the vineyards were affected by the pest. The presence of Phylloxera in Marlborough has resulted in additional investment by many growers in the purchase and planting of resistant rootstock. In hindsight these problems seem to have provided the region's wine industry with the opportunity to replant with higher value varieties. A trend that has occurred in the

development and redevelopment of vineyards over this period is towards export varieties rather than bulk varieties. The four main grape varieties grown in the region are Sauvignon Blanc, Chardonnay, Pinot Noir and Muller Thurgau. Forecasts indicate that there will be growth in areas planted in the first three grape varieties up to the end of the decade, while a reduction is expected in the area planted in Muller Thurgau (Horner, Haylock and Martin, 1996). Investment in the industry has been strong since the late 1980's with the continual expansion of both areas of grapes grown and numbers of wineries (Figures 2.3 and 2.4).

**Figure 2.4: Number of Wineries in Marlborough**

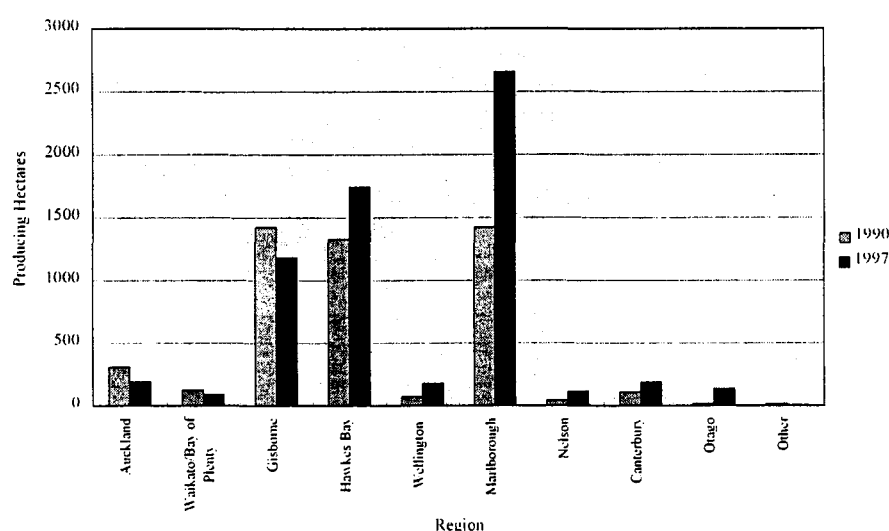


SOURCE: *Wine Institute of New Zealand Annual Report (1996, 1997)*

## 2.3 Marlborough's Position in the New Zealand Wine Industry

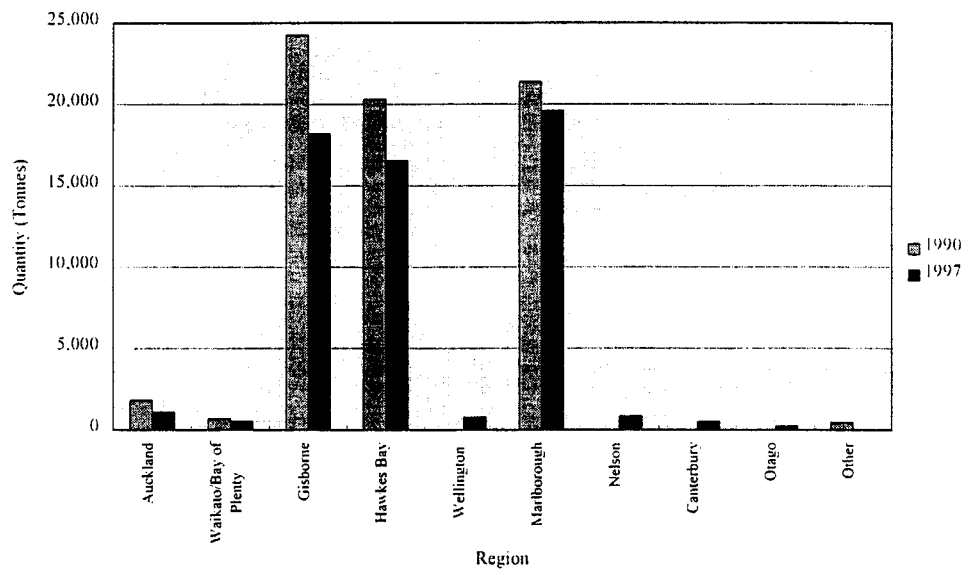
Marlborough, Gisborne and Hawkes Bay are the dominant producers of wine grapes in New Zealand. Since Marlborough replaced Hawkes Bay as New Zealand's largest wine grape producing area in 1990, and Gisborne as New Zealand's largest grape producer in 1995, it has remained the largest viticultural region in terms of area and quantity of grapes produced. Figures 2.5 - 2.7 compare New Zealand's main wine producing regions in 1990 and 1997.

**Figure 2.5: Producing Vineyard Area by Region 1990 vs 1997**

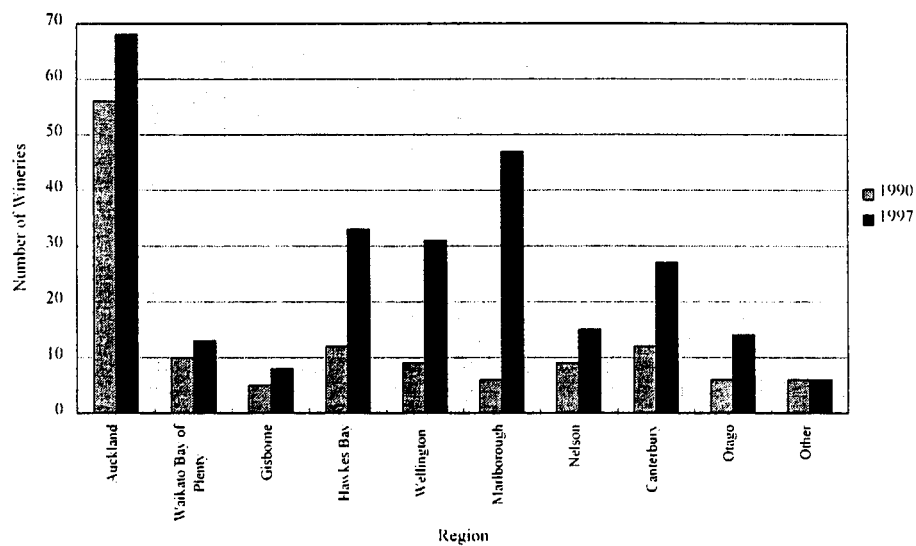


SOURCE: *Wine Institute of New Zealand Annual Report 1997*

With respect to grape producing area Marlborough has achieved an increase of 79 percent, or 1125 hectares, on the 1990 area while Hawkes Bay has increased 44 percent (582 hectares) and Gisborne has decreased 18 percent (253 hectares). In 1997 Marlborough ranked first in terms of tonnage of grapes produced followed by Gisborne and then Hawkes Bay. There has been a dramatic increase since 1990 in the number of wineries in Marlborough. By 1997 39 new wineries had been established, the next largest increase in winery numbers occurred in Hawkes Bay where 22 wineries were established.

**Figure 2.6: Quantity of Wine Grapes Produced by Region 1990 vs 1997**

SOURCE: *Wine Institute Annual Report 1997*

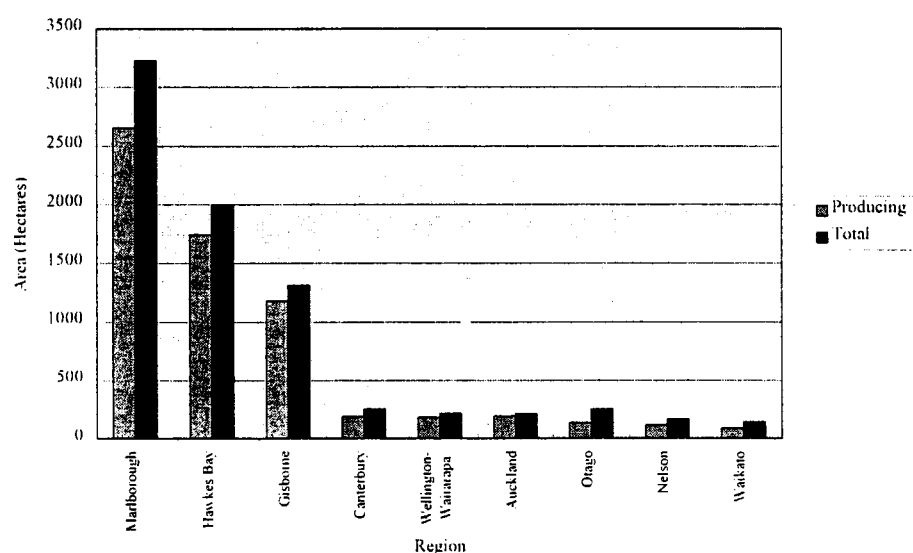
**Figure 2.7: Number of Wineries by Region 1990 vs 1997**

SOURCE: *Wine Institute Annual Report 1997*



The 1996 New Zealand Vineyard Survey states that the Marlborough is expected to continue to be New Zealand's dominant wine grape region with 36 percent of the national planting projected by 1999 (Horner, Haylock and Martin, 1996). The survey also discloses that in 1997 25 percent of Marlborough plantings were still to come into production. Figure 2.8 illustrates the relative differences between the producing and total areas planted in grapes among the grape growing regions.

**Figure 2.8: Regional Vineyard Areas (1997)**



SOURCE: 1996 New Zealand Vineyard Survey

---

### **3. Direct Impact of the Marlborough Wine Industry**

#### **3.1 Survey of Grape Growers and Wineries**

Primary data upon which many of the estimates presented below were based was gathered through a mail survey of industry participants. Two separate survey instruments were developed for data collection purposes: one which elicited very detailed production, cashflow, investment and employment information, and a shorter version which did not require extensive cashflow and investment information. Both survey instruments contained separate sections for the wine grape, wine and hospitality industries.

The sample list was drawn from mailing lists of the Marlborough Winemakers Association and the New Zealand Wine Producers. Industry participants assisted with the development of mailing lists, in particular the identification of major grape and wine producers who would receive the detailed version of the survey. The final mailing list consisted of a sample of 53 producers for the shorter version, and 32 for the longer version. The survey effort consisted of one complete mailout with follow-up postcards. The response rate was 48 percent, resulting in 41 useable surveys. The 41 growers who responded, however, own or manage nearly 60 percent of Marlborough's productive hectares. Where possible survey estimates have been validated against secondary sources of data such as the Wine Institutes' vintage surveys, annual reports and remuneration surveys, as well as employment and landuse data from Statistics New Zealand.

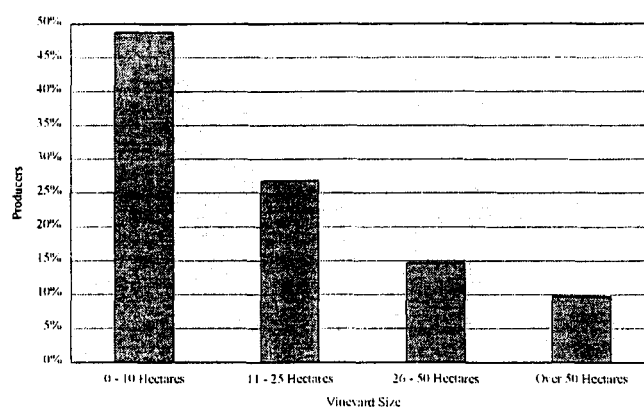
#### **3.2 Wine Grape Production**

##### **3.2.1 Industry Structure**

As of June 1997 there were 185 wine grape growers and 2,655 hectares of producing vineyard area in the Marlborough Region. Survey results suggest that nearly half of the vineyards in Marlborough are 10 hectares or less in size, and 75 percent of the vineyards are smaller than

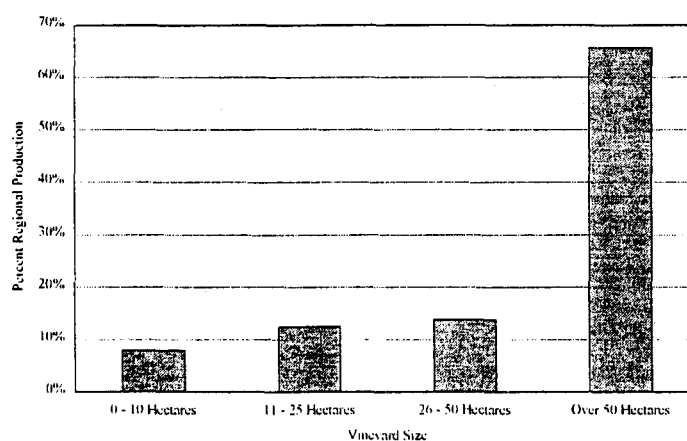
25 hectares. Although less than 10 percent of the respondents reported properties of over 50 hectares, these large producers were responsible for over 65 percent of the grapes produced.

**Figure 3.1: Size Distribution of Marlborough Vineyards**



SOURCE: *Survey Results*

**Figure 3.2: Total Production of Marlborough Vineyards by Vineyard Size**

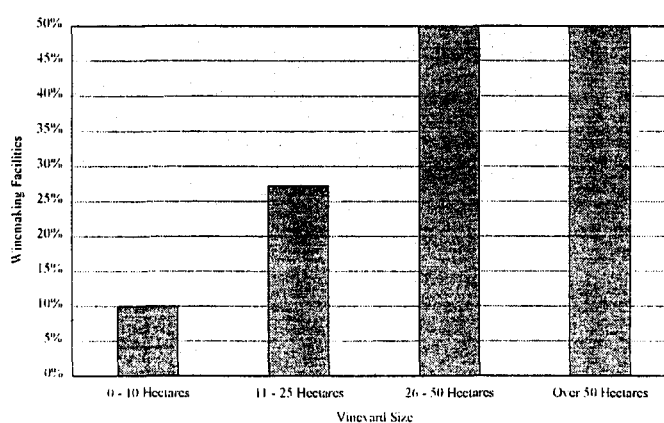


SOURCE: *Survey Results*

The weighted average yield for all producing land surveyed was approximately 8.5 tonnes per hectare. This figure is slightly higher than the estimated national average yield of 8.2 tonnes per hectare for 1997. There is no clear relationship between vineyard size and average yield.

Just under 25 percent of the vineyards reported producing their own wine, with the smaller vineyards being less likely engage in winemaking activities. Many of the vineyards with winemaking facilities also reported having hospitality facilities such as an on-site tasting room. These producers are therefore involved in a highly integrated production system that includes primary production, processing and retail sales.

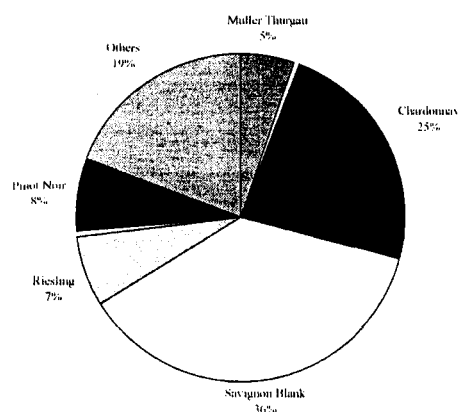
**Figure 3.3: Vineyards with Winemaking Facilities**



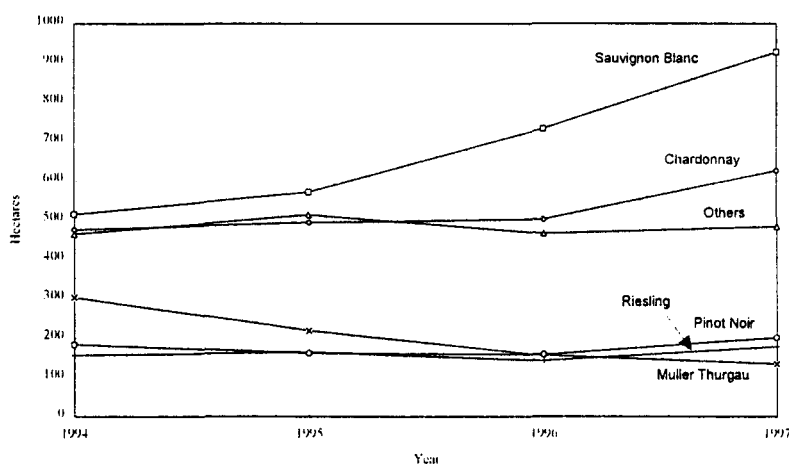
SOURCE: *Survey Results*

### 3.2.2 Grape Varieties in Marlborough

The Marlborough Region is becoming increasingly renown for the production of premium white wines, most particularly Sauvignon Blanc. An estimated 927 hectares of the producing vineyard area in Marlborough is devoted to Sauvignon Blanc. This represents 36 percent of the total grape producing area in Marlborough, and over 66 percent of the area planted in Sauvignon Blanc throughout New Zealand. Recent trends reveal that the area planted in Sauvignon Blanc in Marlborough has nearly doubled since 1994, while total grape producing area in Marlborough has increased by just over 20 percent.

**Figure 3.4: Varieties Planted in Marlborough: 1997**

SOURCE: *New Zealand Vineyard Survey, 1997*

**Figure 3.5: Recent Trends in Marlborough Grape Production by Variety**

SOURCE: *New Zealand Vineyard Survey (various years)*

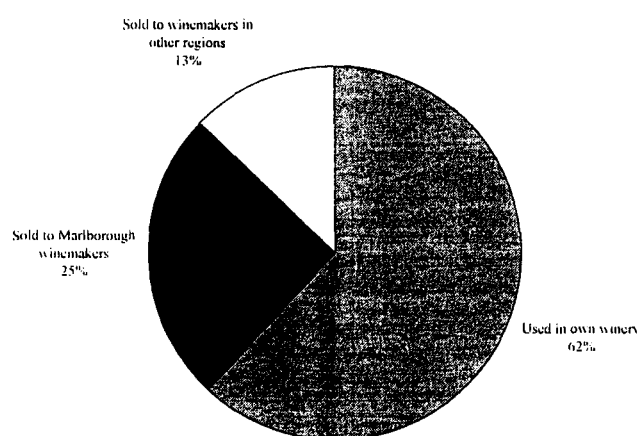
Another variety which has become increasingly important to the Marlborough wine grape industry in the recent past is Chardonnay. The area planted in Chardonnay has increased by over 30 percent since 1994, to an estimated 625 hectares. This represents approximately 25

percent of the grape producing area in Marlborough, and 37 percent of the area planted in Chardonnay throughout New Zealand.

Although by comparison Riesling appears to be a minor variety, the 178 hectares planted in Marlborough represent nearly 55 percent of the total producing vineyard area planted in this variety. The area planted in Muller Thurgau, by contrast, has fallen by over 50 percent, reflecting the overall decline in this variety throughout the country.

Survey results suggest that approximately 87 percent of the wine grapes produced in Marlborough are retained in the region for further processing, providing strong links with other sectors of the regional economy. Because few of the smaller vineyards have winemaking facilities, they are understandably less likely to process the grapes themselves.

**Figure 3.6: Grape Trade Structure**



SOURCE: *Survey results*

---

### 3.2.3 Production Costs

The expenditures made by an industry for productive inputs are an important element of that industry's economic impact. Expenditure in the wine grape industry begins with vineyard establishment costs and continues with annual outlays on labour and materials required to maintain the vines at full productivity. Many of these expenditures are incurred directly in Marlborough, contributing directly and indirectly to the economic activity of the region.

#### *Vineyard Development Costs*

A substantial amount of money is invested by wine grape growers in preparing their land for production. This capital intensive exercise is risky, as it takes approximately four years for new plants to become fully productive. Aside from the purchase and preparation of the land itself, the development of a vineyard requires investment in plants, trellising materials and an irrigation system. The establishment of a vineyard is also extremely labour intensive, requiring skilled individuals to prepare the land for planting, construct the trellising and irrigation system, plant the desired varieties, and then ensure that the new crop is trained, tied, pruned, sprayed and irrigated as required. Not surprisingly, the majority of the expenditure occurs in the first year, when the major investment is made in land, trellising, plants and irrigation equipment.

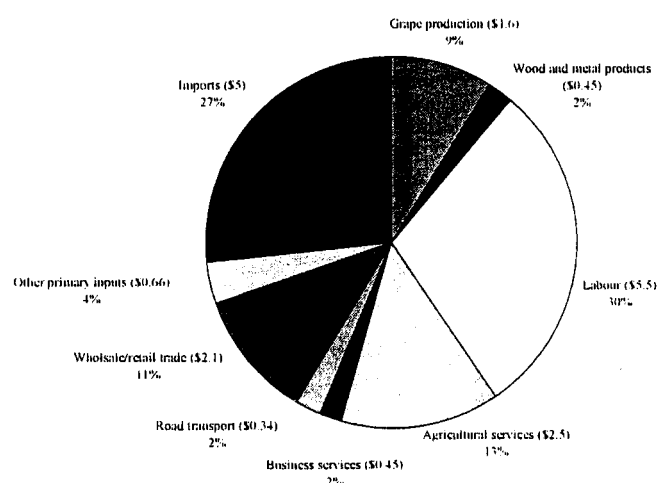
Survey results suggest that first year establishment costs are approximately \$20,200 for every hectare of wine grapes planted, excluding the price of land. On an aggregate basis Marlborough wine grape growers invested approximately \$7.6 million dollars in new vineyard development in 1997. Of the total, approximately 95 percent (or \$7.2 million) is spent on goods and services purchased within the region.

#### *Operating Expenses*

Given the labour intensive nature of premium wine grape production, it is not surprising that operating expenses are dominated by labour costs and contract services. Inter-industry

linkages are strengthened by the fact that both of these costs are incurred within the Marlborough Region. On an industry-wide basis, excluding central government taxes (reported below) and returns to capital and management, Marlborough wine grape growers spent approximately \$18.6 million dollars annually in the operation of their vineyards during the last financial year (Figure 3.7). Of the total, nearly \$13.7 million was spent within the region where it contributed in an important way to the viability of the local economy. The balance was spent on goods or services which are purchased from outside the Marlborough region.

**Figure 3.7: Aggregate Annual Expenditure for Wine Grape Production in Marlborough<sup>a</sup>**



*a Expenditure categories have been constructed to reflect sector definitions for the input-output model described in Chapter 4. Dollar figures are in millions.*

SOURCE: *Survey Results*

### ***Capital Expenditure***

In addition to the yearly operating expenses, many grape producers incur large capital expenditures for items such as buildings and machinery. While these relatively large



investments of capital will not be made every year by every producer, given the large number of producers in the Marlborough Region it is quite likely that some investment will be undertaken within the region each year. Of those surveyed, approximately 27 percent reported purchasing at least one capital item during the last financial year. When these investments are expressed on a per hectare basis and aggregated to a regional industry total, an estimated \$1.6 million dollars was invested by Marlborough wine grape growers in 1997. Over 80 percent of the investment expenditure was incurred within the region, with the majority of the extra-regional investment taking the form of used machinery.

**Table 3.1**  
**Capital Investment by Marlborough Wine Grape Growers (1996/97)**

Capital Item	Incurred in Marlborough	Incurred Outside Region	Imported	Total
New Structures	\$519,000	\$12,000	\$0	\$531,000
New Machinery	\$641,000	\$37,000	\$10,000	\$688,000
Used Machinery	\$141,000	\$29,000	\$233,000	\$403,000
<b>Total</b>	<b>\$1,301,000</b>	<b>\$78,000</b>	<b>\$243,000</b>	<b>\$1,622,000</b>

SOURCE: *Survey Results*

### ***Contribution to the Tax Base***

Wine grape growers make an important contribution to the tax base which helps to fund central and local government activities. Income tax and GST are a critical source of cashflow for the central government, and local rates are used to provide local government services. Survey results suggest that Marlborough grape growers contributed a total of \$714,400 in income tax and \$156,900 in GST. It is important to remember, however, that many of the vineyards responding to the survey were only recently established, and can therefore not be expected to contribute significantly to finances of the central government. In terms of a local contribution, respondents reported paying approximately \$663,750 in local rates.

**Table 3.2**  
**Aggregate Contribution to the Tax Base by Marlborough Wine Grape Growers**

<b>Tax category</b>	<b>Aggregate contribution</b>
Income tax	\$714,400
GST	\$156,900
Local rates	\$663,750

SOURCE: *Survey Results*

### 3.2.4 Grape Sales and Revenue

Survey respondents reported receiving an average of \$1,237 per tonne for grapes sold within the region, and \$1,197 per tonne for grapes exported outside the region. These figures suggest a higher average than that reported in the Wine Institute's Vintage Survey for 1997. The discrepancy between these two sources could be due to non-response bias in our survey, suggesting that the respondents are receiving a higher price on average than those who did not respond.

The aggregate gross revenue for Marlborough wine grape growers was determined by summing the gross revenue from each market. For the local market, the average price for grapes sold within the region (\$1,237) is multiplied by the number of tonnes marketed locally (19,600), for a total of \$24.2 million. For grapes sold to other regions, the figures are \$1,197/tonne and 2,900 tonnes, respectively, for a total revenue of \$3.5 million. In aggregate, therefore, Marlborough wine grape growers earned a total of \$27.7 million in 1997.

### 3.2.5 Employment

Expenditure on labour represents the single largest cost category for all vineyards surveyed. This expenditure translates directly into just under three full time jobs per vineyard surveyed, and approximately 9,200 hours of part time work. Converting these figures into jobs or hours per producing hectare, and multiplying by the number of productive hectares in Marlborough leads to an estimated 156 full time jobs and 280 365 hours of part time work throughout the

---

region in 1997. On a full time equivalent basis this represents 302 jobs throughout the region. Although the number of hours of part time employment provided by vineyards has remained fairly stable over the past five years, the level of full time employment has increased by over 27 percent since 1994.

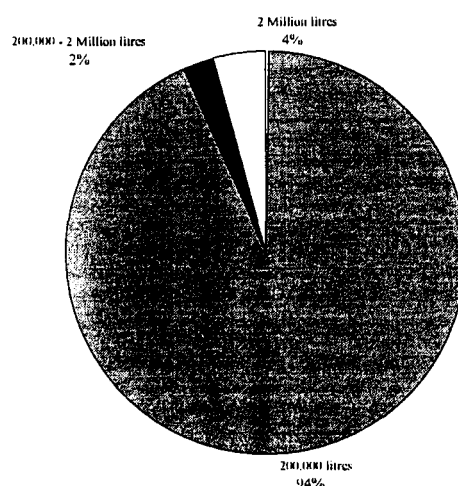
### 3.3 Wine Production

#### 3.3.1 Industry Structure

Forty-seven of the Wine Institute's two hundred and sixty-two members were located in Marlborough in 1996. In that year, 63 percent of the region's wineries crushed less than 250 tonnes of grapes. The large proportion of small scale wineries in the region reflects the expansion of boutique wineries over the last decade. With respect to the larger scale winery operations, only 15 percent of the region's wineries crushed more than 500 tonnes of grapes.

Industry figures on the region's wine output also reflect the preponderance of small wineries. Figure 3.8 illustrates the percentage of wineries in each of three different wine sales volume categories in 1996. By far the greatest percentage of wine producers (94 percent) sold less than 200,000 litres, or approximately 22,200 cases, annually.

**Figure 3.8: Percentage of Wineries Categorised by Quantity of Wine Sold (1996)**



SOURCE: *Wine Institute Membership List 1997*

---

### **3.3.2 Wine Production**

Survey results relating to wine production indicate that producers either source grapes from their own vineyard or other Marlborough grape growers. Grapes were only acquired from other Marlborough growers by wineries crushing in excess of 250 tonnes. One wine producer reported sourcing wine from another New Zealand region to blend and bottle with locally produced wine. The amount used, however, was only a small proportion of the total wine produced by that winemaker. There is a tendency for smaller wine producers to have their wine made off site by contract wine makers. Apart from one exception, producers crushing less than 300 tonnes of grapes contracted their wine making out. Using a contactor permits smaller producers to have some control over the characteristics of the wine being made while avoiding the need to invest significant capital in wine production facilities. The opportunity for contract wine making has lead to the establishment Rapaura Vinters (formerly Vintech), a purposely built contract wine production facility.

### **3.3.3 Annual Expenditure by Winemakers**

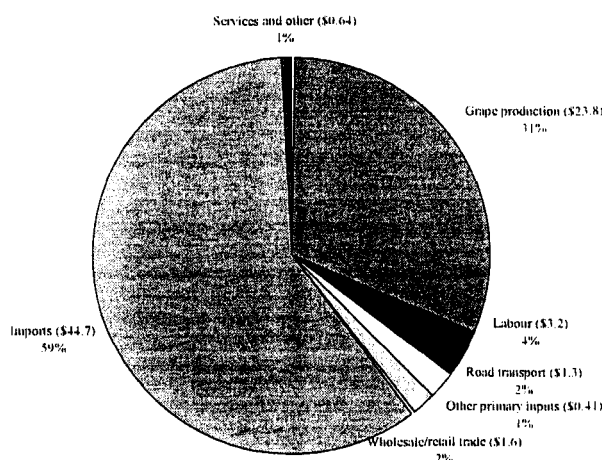
Production costs can be separated into pre-bottling and bottling costs. Most of the inputs for the pre-bottling stage are purchased within the region, providing strong links with other sectors of the economy. The majority of the inputs for the bottling process are purchased from outside the region, which means that expenditures made during the final stage of production do not contribute so heavily to the viability of the local economy. In addition, some of the wine produced in Marlborough is actually shipped in bulk and bottled in Auckland. Sales outlets for Marlborough wine include cellar door or restaurant sales, sales within the Marlborough Region, other New Zealand sales, and exports.

#### ***Operating Expenses***

The weighted average total cost of making wine was \$7.90 per litre for survey respondents. A breakdown of the total costs incurred in winemaking into pre-bottling and bottling costs revealed that pre-bottling costs amounted to \$2.75 or approximately 35 percent of the total.

In terms of impact on the local economy, the majority of the pre-bottling costs are incurred in Marlborough, while most of the inputs into the bottling process are purchased from outside the region.

**Figure 3.9: Aggregate Annual Expenditure for Wine Production in Marlborough<sup>a</sup>**



a. Expenditure categories have been constructed to reflect sector definitions for the input-output model described in Chapter 4. Dollar values are in millions.

SOURCE: *Survey Results*

Data from survey respondents suggests that Marlborough's wine production was approximately 12,853,000 litres in 1997. Extrapolating from the cost per litre figures produces estimates for the total amount spent on winemaking. On an aggregate basis, excluding central government taxes and returns to capital and management, Marlborough winemakers spent approximately \$75.6 million dollars on annual operating expenses in 1997. Of that total, just over \$30.5 million was fed into the local economy. Figure 3.9 provides an overview of aggregate regional expenditures by Marlborough winemakers. Expenditure categories have been constructed to reflect sector definitions for the input-output model described in Chapter 4, and all inputs purchased from outside the region are treated as imports.

### ***Capital Expenditure***

All of the wine producers who made wine on site reported some form of capital investment in their latest financial year. Of the forty seven wineries in the region that belong to the Wine Institute, twenty six produce wine on site. Taking the average capital expenditure for the respondents and extrapolating across all wineries that produce wine on site results in an estimated total capital expenditure of \$22.6 million for 1997. As shown in Table 3.3, approximately 66 percent of all capital expenditure is incurred in Marlborough. Analysing expenditure by capital item reveals that the largest category of expense is new structures, most of which is spent in Marlborough.

**Table 3.3**  
**Capital Investment by Marlborough Wineries (1996/97)**

<b>Capital Item</b>	<b>Incurred in Marlborough</b>	<b>Incurred Outside Region</b>	<b>Imported</b>	<b>Total</b>
New Structures	\$10,193,000	\$1,267,000	\$0	\$11,460,000
New Machinery	\$4,565,000	\$3,646,000	\$2,601,000	\$10,812,000
Used Machinery	\$104,000	\$260,000	\$0	\$364,000
<b>Total</b>	<b>\$14,862,000</b>	<b>\$5,173,000</b>	<b>\$2,601,000</b>	<b>\$22,636,000</b>

SOURCE: *Survey Results*

### ***Contribution to the Tax Base***

Winemakers make an important contribution to the tax base at the central and local levels. In addition to income tax and GST, the winemaking industry faces an excise tax of approximately \$1.91 per litre of wine. According to the survey results, at \$1.91 per litre the excise tax represents a larger component of the retail value of wine than the grapes. Survey results suggest that on an aggregate basis Marlborough wine sales generated approximately \$15.7 million in excise tax. Extrapolation from the survey results suggests that Marlborough winemakers also contributed approximately \$5.65 million in GST, and \$20.9 million in income tax. In terms of a local contribution, respondents reported paying approximately

\$410,000 in local rates. Taken together, this implies a total tax contribution of almost \$37 million dollars, with over 99 percent going to central government (Table 3.4).

**Table 3.4**  
**Aggregate Contribution to the Tax Base by Marlborough Wineries**

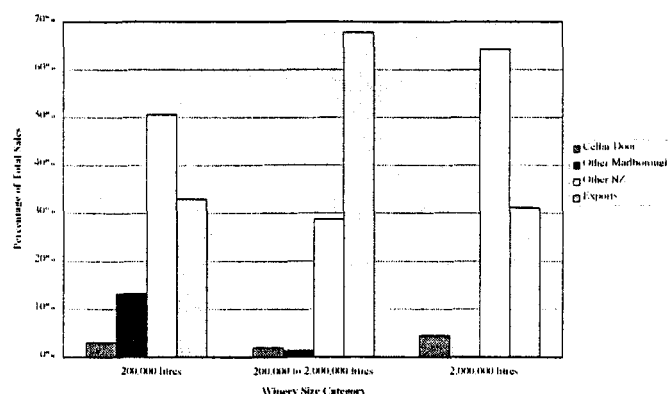
<b>Tax Category</b>	<b>Aggregate Contribution</b>
Excise tax	\$15,700,000
Income tax	\$20,900,000
GST	\$5,653,000
Local rates	\$410,000

SOURCE: *Survey Results*

### 3.3.4 Wine Sales and Revenue

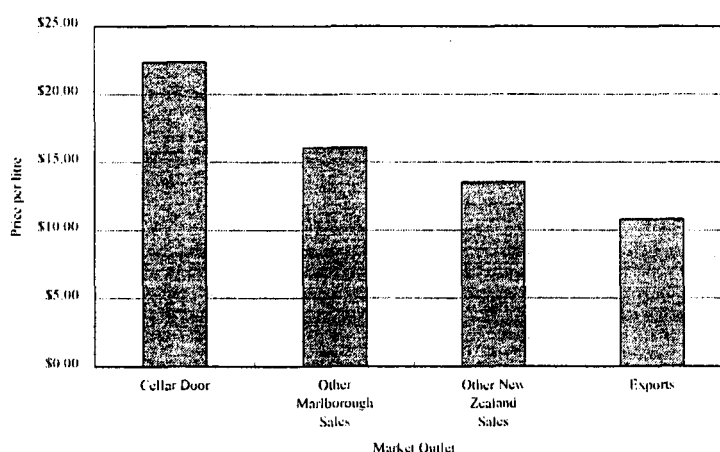
Winery output was analysed after sorting the data by winery size. Only those wineries selling more than two million litres annually reported producing commercial wines. Premium wines, or wines selling for more than \$10.00 per bottle, are therefore the Marlborough Regions primary output. Cellar door and restaurant sales account for only a small percentage of the total quantity sold for all producer categories. Local wine sales are relatively more important to wine producers selling less than two hundred thousand litres than they are for larger wineries, whose major outlet is other regions within New Zealand. A further observation is that export sales are most significant for wineries with sales from 200,000 to two million litres.



**Figure 3.10: Market Outlets for Marlborough Wineries by Size Category**

SOURCE: *Survey Results*

Figure 3.11 shows the average revenue per litre of wine sold in various markets for all winery categories. There is a clear reduction in average revenue as the wine gets sold further from the winery. Explanations for this phenomena include increased selling and distribution costs, and greater competition from other wines as the market being sold into attracts increased numbers of suppliers. Survey results suggest that on an aggregate basis, and considering all sales outlets, Marlborough wineries generated approximately \$165 million in sales in 1997.

**Figure 3.11: Revenue Per Litre for Marlborough Winemakers by Market Outlet**

SOURCE: *Survey Results*

### 3.3.5 Employment

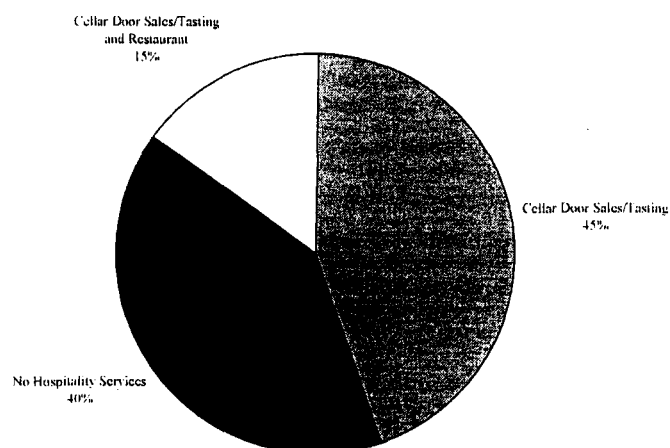
Survey results reveal that there has been a shift in employment between full time and part time jobs in the recent past. In 1994 86 percent of workers employed in the region's wine making were employed on a full time basis while 14 percent were engaged as part time workers. By 1997 full time workers had fallen to 75 percent of total employment and part timers had risen to 25 percent. Extrapolating from the survey data suggests that total employment in wine production has risen from 105 full time equivalent jobs in 1994 to 136 in 1997. These estimates compare favourably with Statistics New Zealand data which shows that 120 full time equivalent jobs were held in beverage and malt manufacturing in Marlborough in 1993. Using the labour cost estimate for wine production above, the average base earnings per full time equivalent employee is just over \$22,400.

### 3.4 Hospitality Services

#### 3.4.1. General Profile

A recent survey of visitors to Marlborough ranked visiting vineyards as the second most common land based activity during their stay in the region (Day, 1996). In 1996, 28 of the 47 wineries in Marlborough reported providing cellar door sales and wine tasting services. Seven of these wineries, or 15 percent of all wineries, also provided restaurant services. Survey results suggest that one in four visitors to wineries with restaurant facilities dine at the restaurant.

**Figure 3.12: Marlborough Wineries Engaged in Hospitality Services**



SOURCE: *Survey Results*

#### 3.4.2 Expenditures on Hospitality Services

##### *Wine tasting service and restaurant costs per visitor*

According to survey results, wineries spend an average of \$2.40 per visitor providing cellar door sales and tasting. A major component of the direct costs of providing these services is labour. According to survey results, labour costs average \$1.04 per visitor with a range

between \$0.55 to \$3.48. The substantial range reflects the decreasing average cost associated with increasing numbers of visitors. "Other" expenses which include costs such as packaging, freight, advertising and overheads amounted to an additional \$1.36 per visitor.

The direct operating expenditures for wineries offering both tasting and restaurant services is presented in Table 3.5. In line with results for wineries offering only cellar door sales and tasting, labour is the most important direct cost component comprising approximately 61 percent of total costs per visitor. All inputs are sourced from Marlborough with an average of \$6.60 being spent in the region per visitor

**Table 3.5**  
**Per Visitor Costs for Wineries Providing Tasting and Restaurant Services**

Expense Item	Costs Incurred in Marlborough (\$/hd)	Costs Incurred Outside Marlborough (\$/hd)	Total Costs (\$/hd)
Labour	4.00	0.00	4.00
Food Products	1.74	0.00	1.74
Beverages	0.28	0.00	0.28
Cleaning/Laundry	0.14	0.00	0.14
Other Expenses	0.45	0.00	0.45
<b>Total</b>	<b>6.60</b>	<b>0.00</b>	<b>6.60</b>

SOURCE: *Survey Results*

Estimates of the aggregate direct costs of providing hospitality services by Marlborough winemakers were based on total visitor numbers to tasting facilities and winery restaurants. According to survey results, the weighted average number of visitors to cellar door sales and tasting facilities was approximately 8,600 per winery in 1997. Extrapolating to the regional industry total of 272,000 visitors involved adjusting for the influence of the region's largest winemakers. The average number of visitors to wineries with a restaurant facility was estimated at 17,800 per winery, where approximately 75 percent of the visitors confine their activities to tasting.

In aggregate, wineries providing cellar door sales and tasting spent an estimated \$652,800 on hospitality services, \$639,200 of which was spent within the Marlborough region. Direct

expenditure for wineries providing additional restaurant services is estimated to be approximately \$822,000. Total expenditure due to winery related hospitality services for the year ending June 1997 is therefore estimated at \$1,474,800 with \$1,461,200 being spent in Marlborough.

### ***Capital Expenditure***

Seventy five percent of survey respondents who provided hospitality services reported investing in new structures or machinery relating specifically to their hospitality enterprise during the last financial year. On average, \$6,170 was invested per property, with approximately 73 percent being spent in Marlborough. Given that twenty eight producers are involved in providing cellar door sales, wine tasting and/or meals it is estimated that \$172,760 of aggregate expenditure on hospitality service capital items was spent by the region's producers in their latest financial year. A breakdown of aggregate expenditure is displayed in Table 3.6.

**Table 3.6**  
**Capital Investment by Marlborough Wineries in Hospitality Services**

Capital Item	Incurred in Marlborough	Incurred Outside Region	Imported	Total
New Structures	\$56,000	\$14,560	\$0	\$70,560
New Machinery	\$70,000	\$32,200	\$0	\$102,200
Used Machinery	\$0	\$0	\$0	\$0
<b>Total</b>	<b>\$126,000</b>	<b>\$46,760</b>	<b>\$0</b>	<b>\$172,760</b>

SOURCE: Survey Results

### **3.4.3 Revenue per Visitor for Wine Tasting and Restaurant Services**

Wineries who responded to the survey earned an average revenue of approximately \$20 per visitor for hospitality services. Per visitor revenues for wineries providing cellar door sales and tasting ranged from \$15.00 to \$29.85. Weighted average revenue per visitor estimates

---

indicate that, excluding wineries providing restaurant services, winery related wine sales and tasting earned the region's wineries approximately \$4,865,000 in gross revenue. The comparative figure for wineries providing restaurant facilities is \$2,133,000.

#### **3.4.4 Employment**

Survey respondents indicate that full time employment in hospitality work has been stable over recent years. There has, however, been a 35 percent increase in part time hours worked between 1994 and 1997. Survey results suggest that the increase in part time hours is due to wineries either adding hospitality services to their winery operations or expanding the existing services in line with the general expansion of their winery businesses. It is estimated that in 1997 there were the equivalent of 29 full time employees engaged in winery sales/wine tasting and winery restaurant services in Marlborough. This estimate represents an increase of eight full time equivalent persons over the corresponding estimate for 1994. Based on Statistics New Zealand regional employment data for 1993 employment in winery hospitality services accounts for approximately four percent of all employment in accommodation, cafes and restaurants in the region.

---

## 4. Indirect Economic Impact

### 4.1 Introduction

A primary objective of this study was to examine the important linkages between the Marlborough wine industry and all other sectors of the local economy. Whenever one sector of an economy experiences a change in activity, not only are the output, receipts and expenditures of that sector directly affected, but there are also corresponding changes in many other sectors of the economy. An increase in demand for Marlborough wine, for example, will stimulate further output in all industries which supply inputs into the winemaking industry. Provided that the input are purchased in Marlborough, this additional economic activity will stimulate further income and employment throughout the region.

Input-output analysis is a method of studying the quantitative interdependence among individual sectors within a region (Leontief, 1986). It relies upon the use of an input-output model, which mathematically describes how all sectors of a regional economy are related. The model is designed to capture the value of products flowing among sectors of the local economy. Of relatively less importance is the value of the output and purchases of inputs of groups other than the region's industrial firms, because they either generate no further economic activity, or they stimulate income and employment in another geographical region.

Input-output models can be used to estimate the total effect on the local economy of changes in the components of final demand for the goods and services produced within the region. What would be the impact, for example, of an increase in export demand for Marlborough wine? Such an increase will set the region's economy in motion, as winemakers purchase more local inputs and hire additional employees to increase production. Clearly an increase in wine production will require a corresponding increase in wine grape production, which will stimulate the purchase of additional inputs such as chemicals and fertiliser, wood and metal products, and contracting services. These relationships mean that the total effect of the increase in exports will exceed the direct change in final demand. The ratio of the total

(direct plus indirect) effect on a regional economy to the initial change is called a regional multiplier.

An output multiplier for a given sector is the total value of sales by all sectors of the regional economy necessary to satisfy a dollar's worth of final demand for that sector's output. Output multipliers therefore capture all of the backward linkages associated with the purchase of inputs by any sector of the economy. The magnitude of an output multiplier will depend on the linkages that the particular industry has with other sectors of the productive economy. If few input purchases are made within the region, then an increase in final demand will not generate very much additional economic activity. The following section details how output multipliers were calculated for Marlborough's wine grape and wine industries.

## **4.2 Methodology**

The construction of a regional input-output model requires information on all of the inter-industry transactions in that region for a particular point in time. These transactions are recorded in a transaction table, which is subsequently manipulated to generate the multipliers. Unfortunately a lack of information on the relationships among producers within a region makes constructing an accurate regional model very difficult. Statistics New Zealand produces a transaction table at the national level at approximately five year intervals, which gives a rough indication of what the inter-industry linkages might be at the regional level. Differences between national and regional transactions arise because of differences in production processes among regions, and because firms within a small region are generally more dependent on inputs from outside the region than the national tables would indicate.

The national tables must be complemented, therefore, by additional information at the regional level. For the purposes of this study we used employment and production information from the Marlborough region to construct a set of location coefficients which could be used to modify the national tables. The location coefficients provide a measure of how important each sector is in the region, relative to its importance nationally. The result is a model which more accurately reflects the economic activity of the region.



An additional decision which must be made is whether to include the household sector as a producing sector or a final demand sector. The separation of households from processing sectors is arbitrary given that households earn their incomes by providing labour services, and spend their incomes as consumers. The decision is an important one, however, as it will influence the size of the multiplier. If an input-output model classifies households as part of final demand, then income received by labour does not contribute to the multiplier effect. If households are classified as a productive sector, on the other hand, then exogenous increases in local demand for wine can not be modelled. Exogenous changes in final demand must come from other regions in New Zealand, or international exports. For the purposes of this study, we included households with the productive sectors, and therefore the resulting multipliers will be 'Type II' multipliers.

The national transaction table which provided a starting point for the regional analysis contains 48 productive sectors (including households). To estimate the total impact of the Marlborough wine industry on the local economy it was necessary to disaggregate the wine grape sector from the horticulture sector, and the winemaking sector from the beverage and malt manufacturing sector. The final regional model therefore includes 50 productive sectors. Survey data was used to estimate the input purchases and total value of output for both the wine grape and the winemaking sectors. Where possible, the survey data was validated with secondary sources of information such as the Wine Institutes Vintage Survey and cost of production studies for vineyards and wineries.

## 4.3 Results

### 4.3.1 Wine Grape Sector

The total output effect of a \$1 increase in final demand for Marlborough wine grapes is \$2.07. This figure suggests that purchase of one tonne of Marlborough wine grapes for \$1 000 would ultimately generate \$2 070 worth of economic activity throughout the region. This figure represents the output effects of an increase in *final demand* for wine grapes on each

sector of the Marlborough economy. It is important to note that final demand for the Marlborough wine grape industry consists of demand from outside the region only, as the demand from Marlborough winemakers is treated as an inter-industry flow.

There are several reasons why the overall industry may be interested in the impact of changes in final demand for grapes as well as wine. As mentioned above, over 10 percent of the wine grapes in Marlborough are exported to other regions. It is therefore of interest to know the overall impact of, say, an increase in the demand for Marlborough wine grapes from Canterbury winemakers. In addition, the sale of wine grapes and the sale of wine may be separated in time by a number of years. The demand for wine grapes may increase despite a relatively stable demand for wine, for example, if winemakers anticipate a future increase in demand for wine. Because input-output analysis is static, a model which did not disaggregate these two sectors could not capture these dynamic effects.

Within the region, labour, agricultural services and wholesale and retail trade are all important providers of inputs to the production of wine grapes. 'Other primary inputs', which includes returns to capital and entrepreneurial skill, is an important input category for both wine grape growers and winemakers.

#### **4.3.2 Winemaking Sector**

The output multiplier for the winemaking sector in Marlborough is 1.75. In other words, the purchase of a \$20 bottle of Marlborough wine will stimulate \$35 worth of economic activity throughout the region. Note that this figure includes the activity generated by the wineries' increase in demand for wine grapes, so it is not appropriate to sum the multipliers to get a 'total wine industry impact'. The smaller multiplier for the winemaking industry reflects the fact that Marlborough winemakers purchase a large proportion of their inputs from outside the region.

The single largest inter-industry payment by the winemakers was made to the wine grape sector. Imports are a much larger percentage of total input expenditure for winemakers than

they are for grape growers, and in fact comprise the single largest expenditure category. Inputs such as bottles, for example, are a major input into the winemaking process but their direct purchase does not appear as flow from within Marlborough's productive sectors because they are imported from another region. The value of the bottle purchases is therefore recorded as an import.

### 4.3.3 Hospitality Sector

Data limitations precluded the calculation of a regional multiplier for the hospitality sector. Results from an earlier study on the tourism industry in New Zealand, however, suggest that a one dollar increase in final demand for tourism in the Bay of Plenty ultimately generates \$1.67 worth of economic activity in the local economy, when labour is treated as a productive sector. Excluding households from the inter-industry transaction table implies a direct plus indirect effect of \$1.37 throughout the regional economy. This result highlights the effect of capturing household responding as opposed to treating it as a 'leakage' from the system. Similar results for the Canterbury region are \$1.91 and \$1.48, respectively. These results suggest that the tourism multipliers for Marlborough are likely to be of the same magnitude as the multipliers reported above for wine and wine grapes.

---

## References

- Folwell, RJ, P Wandschneider and C Kaseberg Brown (1987) "Impact of the Washington Wine Industry on the State's Economy". Research Bulletin 0995, Agricultural Research Center, College of Agriculture and Home Economics, Washington State University.
- Hubbard, LJ and WAN Brown (1981) "Multipliers from Regional Non-Survey Input-Output Tables for New Zealand". Research Report No. 117, Canterbury: Agribusiness & Economics Research Unit, Lincoln University.
- Ibbotson, NR (1992) "Vineyards and the Wine Industry in Marlborough", *New Zealand Valuers' Journal*, September, pp 9 - 13.
- Leontief, W (1986) *Input-output Economics*, 2nd ed. New York: Oxford University Press.
- Lim, E (1991) Regional analysis of tourism : the economic impact of tourism in New Zealand: Auckland, Bay of Plenty and Canterbury regions: summary report. Deloitte Ross Tohmatsu, New Zealand, 149 p.
- Martin, Glenn (1996) "New Zealand Wine Industry Remuneration Survey 1996". Price Waterhouse Urwick Management Consultants, Auckland, New Zealand.
- Pleeter, S (1980) *Economic Impact Analysis: Methodology and Applications*. Studies in Applied Regional Science (v19), Martinus Nijhoff Publishing, Boston.
- Sas, A and Roslyn Hanna (1995) "A budget and management procedures for establishing an vineyard for wine grapes". Information and Media Services, Department of Agriculture, Western Australia.
- Statistics New Zealand (various years) *Agricultural Statistics*, Wellington, New Zealand.
- Statistics New Zealand (1993) *National Input-Output Transaction Table*, Wellington, New Zealand.
- Statistics New Zealand (1993) *Full-time Equivalent Employment for Marlborough and New Zealand* (Provided upon request from the Christchurch Office), New Zealand.
- Wine Institute of New Zealand (1996) *Annual Report, Year End June 1996*, Auckland, New Zealand.
- Wine Institute of New Zealand (1997) *Annual Report, Year End June 1997*, Auckland, New Zealand.
- Wine Institute of New Zealand (1997) *1997 Vintage Survey Results*, Auckland, New Zealand.