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NSW RURAL LAND PERFORMANCE: 1990-2005

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Key words

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Abstract

The annual income return for rural property is based on two major factors being commodity prices and production yields. Commodity prices paid to rural producers can vary depending on the agricultural policies of their respective countries. Free trade countries, such as Australia and New Zealand are subject to the volatility of the world commodity markets to a greater extent than those farmers in protected or subsidised markets.

In countries where rural production is protected or subsidised the annual income received by rural producers has been relatively stable. However, the high cost of agricultural protection is now being questioned, particularly in relation to the increasing economic costs of government services such as health, education and housing.

When combined with the agricultural production limitations of climate, topography, chemical residues and disease issues, the impact of commodity prices on rural property income is crucial in the ability of rural producers to enter into or expand their holdings in agricultural land. These problems are then reflected in the volatility of the rural land capital returns and the investment performance of this property class.

This paper will address the capital return performance of a major agricultural area and compare these returns on the basis of both location of land and land use. The comparison will be used to determine if location or actual land use has a greater influence on rural property capital returns. This performance analysis is based on over 35,000 rural sales transactions. These transactions cover all market based rural property transactions in New South Wales, Australia for the period January 1990 to December 2005. Correlation analysis and investment performance analysis has also been carried out to determine the possible relationships between location and land use and subsequent changes in rural land capital values.

INTRODUCTION

Despite the overall size of the rural property market and the continued importance of agricultural land to the Australian economy, rural property markets in Australia have received minimal attention by property researchers in comparison to the extensive research attention given to Australian commercial and residential property markets (e.g.: Newell, 1996; Newell and Higgins, 1996; Newell and MacFarlane, 1996; Newell, 1998). In recent years, only Eves (1998, 2004, and 2005) has critically investigated the investment performance of Australian rural property, however this investigation has been limited to New South Wales.

Similar rural property research trends are also evident in the USA, with only Kaplan (1985), Lins et al (1992), Rubens and Webb (1995) and Eves and Newell (2000) investigating the performance of US farmland in an investment context. The analysis of the UK rural land market, from an investment performance perspective is also limited, with studies by Eves and Newell (2006) and the RICS currently providing data on rural land prices with the RICS Farmland Prices Index, however this index base date is only 1995.

The main reasons for this lack of critical research into Australian and international rural property are:

- (i) The declining significance of the rural sector, in comparison to the emergence of the resources and services sectors (USDA, 1999; ABARE, 1998).
- (ii) The low level of institutional ownership of agricultural property. In Australia this is currently only 0.8% of the total institutional property portfolio. This compares with institutional exposure to the office (45%), retail (42%), industrial (8%) and hotel/leisure (2%) property sectors (Property Council of Australia, 1998).
- (iii) The lack of reliable investment performance indices for rural property. No rural property indices are currently available for Australia. There are several rural land capital value indices available in the US. The NCREIF US farmland performance index (NCREIF, 1998) is the only internationally available valuation based corporate rural property performance series in the major developed countries. The United States Department of Agriculture also compiles an annual rural land index based on sales transactions, as do several US land based Universities such as Texas A&M University and Iowa State University. These indices are state based and account for limited areas of agricultural production. In the UK IPD provide a timberland index and RICS have commenced a farmland index, which is transaction based. In comparison, institutional-standard office, retail and industrial property performance indices are readily available for USA, UK, Canada, South Africa, Australia and New Zealand (Property Council of Australia, 1998).

Reliable property investment performance indices are essential for informed investment decision-making by institutional investors. The lack of such an investment performance index for rural property in Australia has been one of the major impediments to the critical examination of the investment performance of Australian rural property by potential investors, including institutional investors. This problem in Australia is similar to most countries, with the exception of the US where the

availability of the USDA index and the NCREIF index has encouraged a greater degree of institutional ownership of rural property.

RESEARCH PURPOSES AND OBJECTIVES

With the development and on-going update of this NSW Rural Land Investment Performance Index it is now possible to:

- Rigorously and objectively assess the capital return investment performance of NSW rural property.
- Compare the performance of rural land on both a regional location basis and on a land use basis

RESEARCH METHODOLOGY

Rural land sales database: 1990-2005

This NSW rural property investment performance index and regional sub-indices have been constructed from data provided by the commercially available RP Data computer database. RP Data is a commercial computer database of all sales transactions and land title transfers that occur throughout NSW, with all sales recorded on an LGA basis. The computer database information is provided from completed notices of transfer which have to be provided to the Valuer Generals Department, the respective LGAs and Land Titles Office whenever land is transferred, sold or resumed. This computer database allows sales and transfers to be sorted on a land use basis, area, zoning, price and date of transfer.

The NSW rural property component within the RP Data database has expanded considerably since 1990. From 1985-89, rural sales are available for 21 NSW rural LGAs; since 1990, all 113 rural LGAs in NSW reported all rural sales into the RP Data computer database.

For the period 1990-2005, over 35,000 NSW rural property sales are available for analysis. The integrity and quality of the RP Data database compares favorably with the equivalent US NCREIF farmland database, annually involving 1,500 US rural properties valued at US\$4 billion

Rural property database: quality control/audit

Three computer and manual sorts have been conducted to audit and improve the integrity and data quality of the RP Data database information; namely:

- Rural sales within and between government departments have been removed.

- “Same name” property transfers were examined, and eliminated if the price per hectare was significantly below the average price per hectare for that particular period.
- All family sales, no value sales and transfers initiated by the Family Law Court were excluded.

All of the above quality control audits ensure the continued integrity and reliability of this rural property database.

Rural property investment performance indices: 1990-2005

Based on these 35,000 rural property sales from 113 NSW LGAs over the period 1990-2005, a rural property investment performance index for NSW has been developed. Using \$ per hectare as the benchmarking investment performance criteria and December 1990 benchmarked to an index value of 100, a semi annual and annual rural property investment performance index has been established.

Regional

- North Coast
- Hunter
- South Coast
- Northern tablelands
- Central West/Central Tablelands
- Southern Tablelands
- Murray
- Riverina
- South West
- North West Slopes and Plains
- Far West

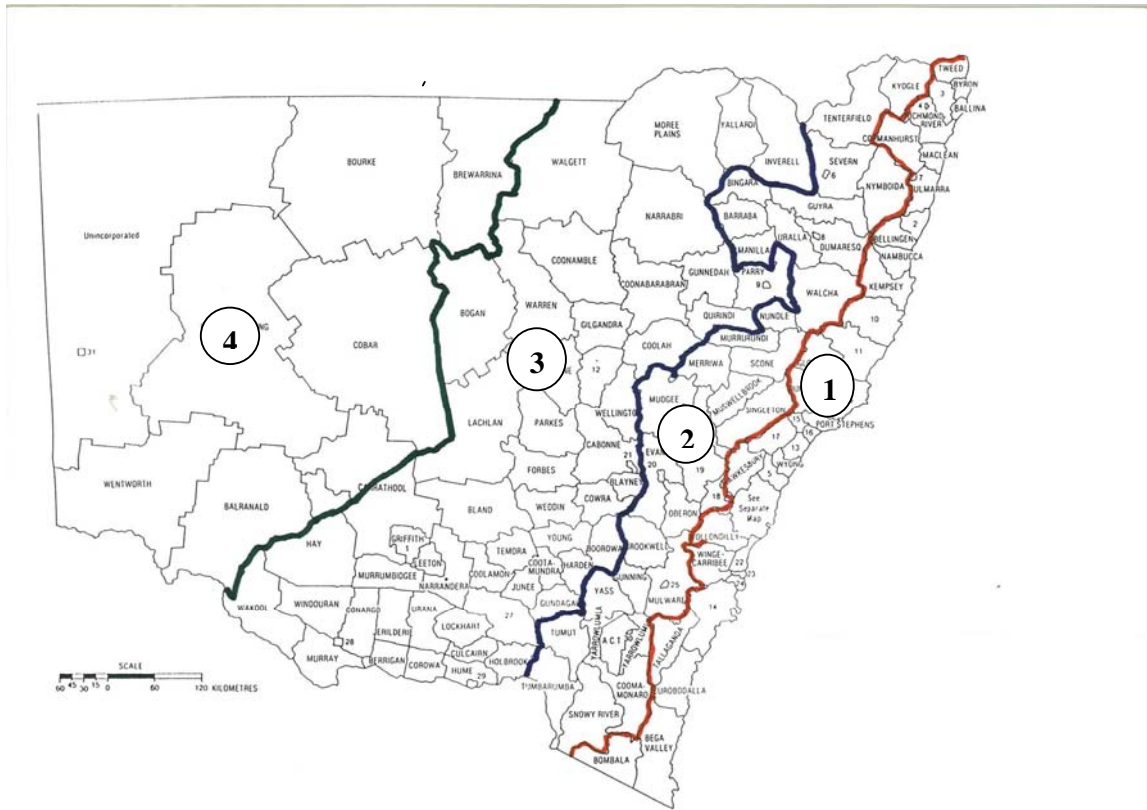
Land Use

- Coastal grazing ; based on 21 LGAs (1)
- Tableland grazing: based on 24 LGAs (2)
- Mixed farming: based on 59 LGAs (3)
- Pastoral Grazing based on 9 LGAs.(4)

Database Characteristics

This rural property database is substantial, accounting for the following percentages of total Australian agricultural production over the period 1990-2005: wheat (36%), wool (34%), coarse grains (25%), cattle (24%), milk (12%) and oilseeds (58%) (ABARE, 1998). This further reflects the overall integrity, importance and quality of this NSW rural property database.

Figure 1: NSW Rural Property Investment Index: Land Use Regions



RESULTS AND DISCUSSION

These research results focus on the analysis of the rural land transaction data for the 11 regions of NSW. These regions are based on the classifications for the State of New South Wales by NSW Department of Primary Industries. However, there are some slight deviations in boundaries, as the sales data is based on Local Government Areas. This paper focuses on the capital returns for the 11 regions, as well as the average and weighted average annual capital returns for rural property in NSW

NSW Average and Weighted Average Capital Returns

Table 1 shows both the annual and average annual capital returns for rural land in NSW and the weighted annual and weighted average annual capital returns for NSW rural land based on the sales volume for each of the individual regions.

From this table, it can be seen that on a simple average basis the average annual capital return for NSW rural land has been 5.4%, with volatility of 6.01%. During the period 1990-2005, there have been three years when the capital return for rural land was negative (1993, 1996 and 2001). However, on a weighted basis there has only been one year when rural land has shown a negative capital return (2001) and the average annual capital return has been higher at 6.2%, with a slightly reduced volatility of 5.03%.

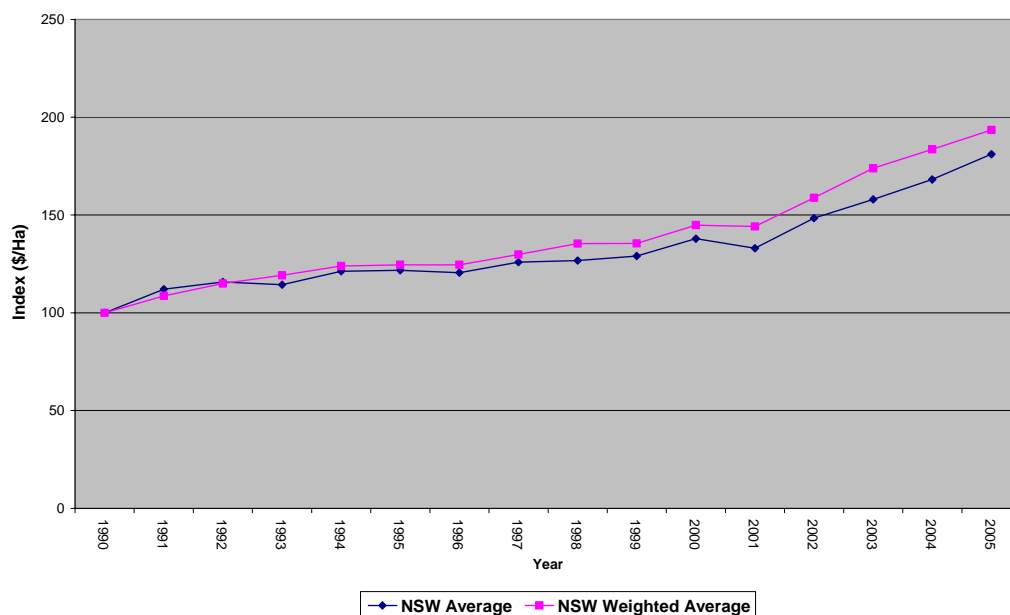
On a weighted basis the highest one year capital return was 2003 (15.1%), with the lowest positive capital return being in 1995 (0.06%), with no change in land prices in 1996

Table 1: NSW Rural Land Capital Returns: 1990-2005

Year	NSW (Average)	NSW (Weighted Average)
1991	12.0	8.7
1992	3.8	6.3
1993	-1.4	4.2
1994	6.8	4.7
1995	0.5	0.6
1996	-1.2	0.0
1997	5.3	5.3
1998	0.8	5.6
1999	2.4	0.1
2000	8.9	9.4
2001	-4.9	-0.7
2002	15.3	14.7
2003	9.6	15.1
2004	10.2	9.7
2005	12.9	9.9
Average Annual Return (%)	5.4	6.2
Risk (%)	6.01	5.03

Figure 2 represents the investment performance of NSW rural land on an index basis and also shows the variation in average annual capital returns based on the NSW average and weighted average analysis. The variation in the capital returns has been greater in the period 2001-2005, compared to the results for the period 1990-2000.

Figure 2: NSW Rural Land Capital Return Index: 1990-2005



New South Wales Geographic Rural Land Performance

Table 2 (attached) shows the average annual returns for rural land in each of the major geographic areas of NSW for the period 1990-2005. From this table it can be seen that there is considerable variation in the capital return for rural land based on geographic location. This variation in change in rural land prices from year to year in the 11 rural regions can be attributed to prevailing seasonal conditions, major commodity prices and the demand for rural land by alternate property markets such as the rural lifestyle and “Tree Change” markets (Eves, 1998).

An analysis of the average annual capital returns based on the last 12 months, last three, five, ten and 15 years is shown in table 2. Again, this table shows the significant variation in rural land capital returns for the geographic areas at various time periods since 1990. Although the North West region has the highest average annual capital return for the study period of 10.3%, this region has not had the highest capital returns over the periods 2003-2005, 2001-2005 and 1999-2005. This indicates that the high average annual capital returns for the period 1990-2005, was due to rapid increases in land prices over the period 1990-1995, with the value per hectare for rural land in other rural regions in NSW catching up to the prices paid for land in the north west during the early 1990s.

Table 3: NSW Geographic Region: Capital Returns: 1990-2005

Return %	Last 12 Months	Last 3 Years	Last 5 Years	Last 10 Years	Last 15 Years
North Coast	12.9	13.6	11.2	6.2	5.7
Hunter	15.1	11.4	9.2	5.8	TBA
Northern Tablelands	23.9	12.6	11.4	7.2	5.4
North West	-0.3	8.1	8.9	8.2	10.3
Central West	5.6	14.3	13.6	9.4	7.4
Far West	29.3	6.5	3.6	8.9	4.7
Murray	23.1	16.1	12.5	9.6	9.1
Riverina	-6.7	8.3	5.3	5.5	6.9
South West	11.2	15.5	13.9	8.8	6.3
Southern Tablelands	5.7	10.8	11.7	6.4	8.4
South Coast	10.8	8.7	6.8	6.8	6.7

During the period 1990-2000, the price per hectare for rural land in the North West of NSW increased from \$386 to \$1179; however the average price per hectare for rural land in this region to the end of 2005 was \$1552, reflecting a decrease in the average annual capital return for the last five years compared to the period 1990-2000. The ten year period from 1990-2000 saw strong interest in this region due to the ability of farmers to purchase irrigation blocks and grow high value irrigated crops such as cotton. However, with the prolonged droughts in this area of NSW and the reduced water allocations for irrigation the demand for rural land in this region is not as strong as other areas of NSW, compared to the 1990s.

Since 2001, the two regions showing the highest average annual capital returns have been the Central West and South West regions of NSW being 13.9% and 13.6% respectively. However, the Central West region has shown one of the lowest capital returns for 2005 (last 12 months), at only 5.6%, well below that achieved by the same region for the last three years (14.3%) and the last five years (13.6%). Both these regions suffered significantly during the 1990-1995 rural recession but since 1996 both areas have seen significant increases in rural land prices showing a rise in the average price of rural land per hectare in the Central West region from \$1047 per ha in 1996 to \$2194 in 2005. During the same period the average price per hectare for rural land in the South West region increased from \$1049 per ha in 1996 to \$2461 in 2005.

Over the past ten years there has been an increasing trend for people to move from the major cities of NSW to coastal and inland location, particularly for retirement and lifestyle change (ABS, 2006). This trend is also being represented in the change in price and subsequent increases in capital returns for rural land in the coastal areas of NSW. The Hunter, North Coast and South Coast regions of NSW have seen significant increases in average annual capital returns over the past 5 years compared to average annual capital returns for the past 15 years, with Hunter region showing a 15 year average annual capital return of 4.7%, but the average annual capital returns for the past three and five years being 11.4% and 9.2% respectively.

Correlation Analysis: NSW Geographic Regions

A correlation analysis has been carried out to analyse the association between the changes in rural land capital returns from one rural region in NSW to another. This analysis was carried out to determine if the rate of decline or increase in rural land prices was general throughout the State or influenced by factors other than location.

The results of the correlation analysis (annexed in Table 4) show that there are limited significant positive correlations across the rural regions of NSW. When compared to the previous study of NSW rural land prices by Eves (2002) for the period 1990-2000, the number of significant correlations across these regions has decreased. The current analysis shows the following significant positive correlations:

- Hunter and North Coast ($r = 0.54$)
- North Coast and North West ($r = 0.60$)
- Hunter and South West ($r = 0.55$)
- South West and Central West ($r = 0.49$)

Table 4 also shows that there are a number of negative correlations across the region, with some of these results being slightly significant (Riverina and Northern Tablelands $r = -0.44$; Far West and Southern Tablelands $r = -0.44$). This table also shows that the Far West region has a negative correlation with eight of the NSW regions, ranging from $r = -0.44$ to $r = -0.02$. The North West and Murray regions also had negative correlations with 6 other rural regions in NSW.

North Coast ($r = 0.57$), Hunter ($r = 0.80$), Riverina ($r = 0.56$) and South West ($r = 0.55$) regions show a significant positive correlation to the NSW weighted rural market, with only the Far West region having a negative correlation with the NSW weighted returns ($r = -0.13$).

Land Use Analysis

The above analysis has been based on the geographic location of the various regions of NSW. This analysis has shown that there is often no significant correlation between the changes in land price from one location to another. Limited correlation could be linked to the economic factors influencing the rural land market.

To test this scenario the various regions in the study have been grouped as either grazing regions or farming regions.

The grazing regions have then been divided into:

- Coastal grazing
- Tableland grazing
- Mixed farming
- Pastoral Grazing

Table 5: NSW Rural Land Capital Returns: Rural Land Use: 1990-2005

	Coastal Grazing	Tableland Grazing	Mixed Farming	Pastoral Grazing
1991	12.0	5.5	6.8	-28.1
1992	3.8	3.0	11.2	-26.8
1993	-1.4	1.0	11.2	25.6
1994	6.8	13.8	0.5	-21.2
1995	0.5	4.8	-0.9	31.5
1996	-1.2	-1.2	1.1	41.0
1997	5.3	5.1	5.9	-20.6
1998	0.8	4.0	10.9	22.9
1999	2.4	-7.8	0.2	3.1
2000	8.9	12.6	8.7	24.7
2001	-4.9	14.2	-0.5	-10.1
2002	15.3	8.9	16.0	8.6
2003	9.6	11.5	21.5	4.5
2004	10.2	14.9	8.3	-14.2
2005	12.9	10.3	6.9	29.3

Table 5 shows that the annual capital returns and the average annual capital returns for rural land in NSW has also varied based on land use, as well as geographic location. This table shows that the annual return, based on rural land use, with each individual land use showing years of negative capital returns (Coastal Grazing 1993, 1996, and 2001; Tableland Grazing 1996 and 1999; Mixed Farming 1995, and 2001). In the Pastoral Grazing land use areas there have been 6 years of negative capital returns. This land use has also had the highest capital return in any given year (41% in

1996) and the highest negative return of -28.1% in 1991. Only the Mixed Farming land use had an annual capital return in excess of 20% (2003) during the period 1990-2005.

Table 6 breaks down the annual returns into the last, three, five and ten year periods, to show the trend in capital return performance for each of the rural lands uses.

Table 6: Rural Land Use Returns: 1996-2005

Return %	Last 3 Years	Last 5 Years	Last 10 Years
Coastal Grazing	10.9	8.6	5.9
Tableland Grazing	12.2	11.9	7.2
Mixed Farming	12.2	10.4	7.9
Pastoral Grazing	6.5	3.6	8.9

This table shows that Tableland Grazing and Mixed Farming areas of NSW have had very similar capital returns over the period 1990-2005, with the same average annual capital return (12.2%) for the past three years. However, the average annual capital return for the pastoral grazing areas has been significantly lower for the past 3 and 5 years (6.5% and 3.6% respectively), but at 8.9% for the past 10 years, which is greater than the other three rural land uses for the same period.

Table 7 represents the volatility of the capital returns for the four rural land use sectors over the past three, five and ten years. This table shows that capital returns from the Tableland Grazing areas of NSW have been less volatile than the other rural land use areas, particularly over the past three to five years (2.40% and 2.56% respectively).

Despite the lower average annual capital returns generated by rural land in the Pastoral Grazing areas of NSW, the volatility of these returns still remains higher than the other rural land uses.

Table 7: Rural Land Use: Volatility: 1996-2005

Risk %	Last 3 Years	Last 5 Years	Last 10 Years
Coastal Grazing	1.73	7.90	6.54
Tableland Grazing	2.40	2.56	7.28
Mixed Farming	8.05	8.52	7.00
Pastoral Grazing	21.82	17.26	20.31

Figures 3 and 4 compare the capital return investment performance of the four rural land uses on an index basis since 1990. Both figures also include the NSW rural land weighted average index for the same period.

From Figure 3, it can be seen that Tableland grazing has performed better than coastal grazing over the period 1990-2005, with these indices at 201 and 181 respectively as at December 2005. However, this figure also shows that from 1990-1994, these rural land use areas were performing at or below the NSW weighted average. Since 2000, only Tableland grazing has been outperforming the NSW weighted average capital returns for rural land.

Figure 3: NSW Rural Land Capital Return Index: Coastal Grazing/Tableland: 1990-2005

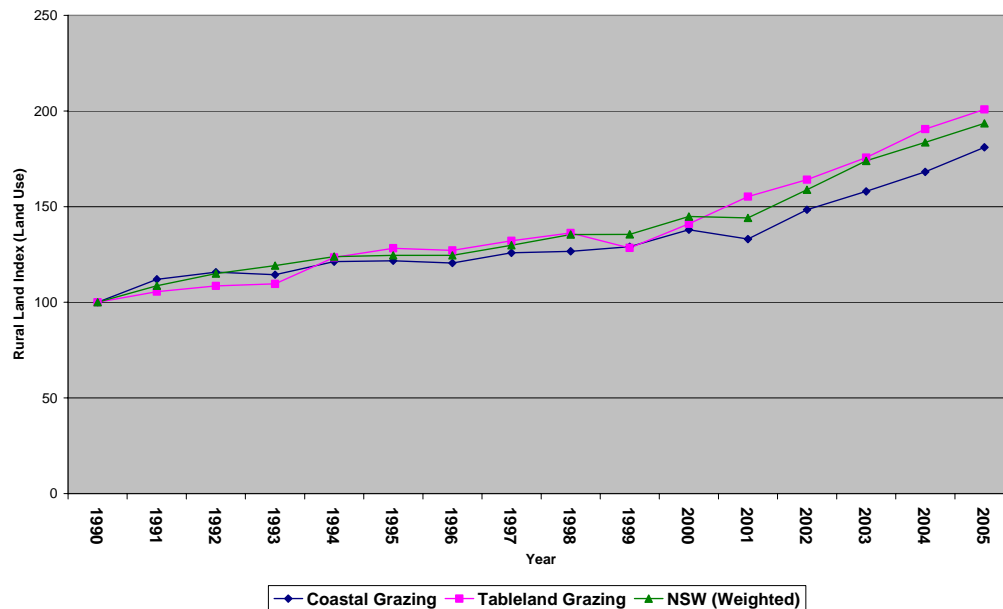


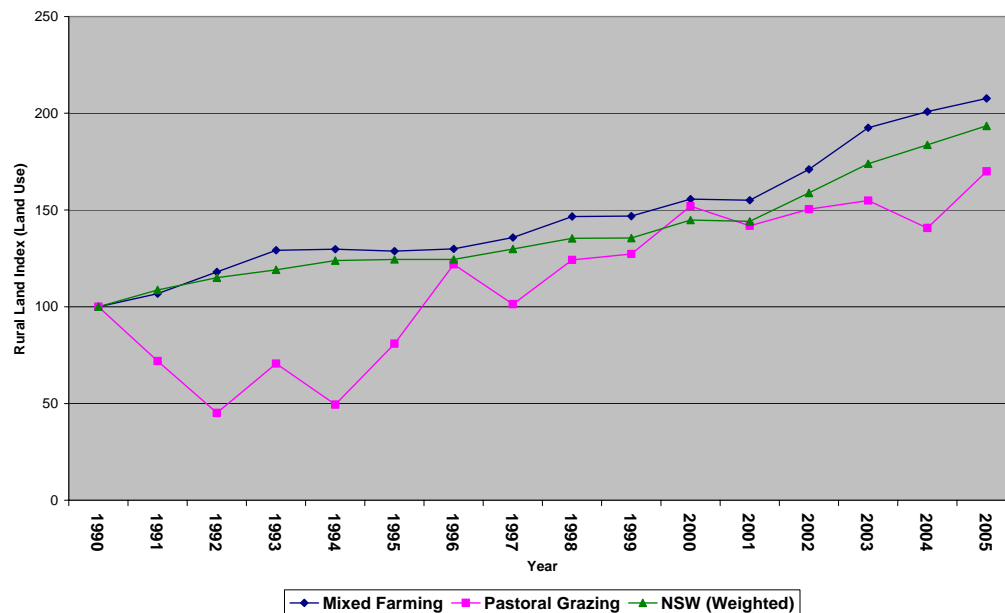
Figure 4 compares the capital return investment performance of Mixed Farming and Pastoral Grazing areas of NSW to the NSW weighted capital return for the period 1990-2005.

From this figure, it can be seen that rural land in the Mixed Farming areas of NSW have outperformed both the NSW rural land weighted average and rural land in the Pastoral regions of NSW. During the period 1990-2005, the capital return investment performance index for mixed farming has increased from the base of 100 to 208, which is also slightly higher than the next best performing rural land use (Tableland Grazing at 201).

The pastoral grazing areas of NSW showed negative capital returns for 6 of the 15 years in the study; however, the region also experienced significant annual increases in capital returns over the same period. This has resulted in the capital investment return index for Pastoral grazing to be only slightly less than Coastal Grazing as at December 2005 (170 and 181 respectively).

The Mixed farming areas show the most similar trend in relation rural land price movement to the NSW weighted average. This is mainly due to Mixed farming making up 55% of the NSW rural property sales volume over the period of the study.

Figure 4: NSW Rural Land Capital Return Index: Mixed Farming/Pastoral Grazing: 1990-2005



Correlation Analysis

Table 8 shows very significant correlation between the Coastal Grazing and Mixed farming regions and the NSW weighted average returns ($r = 0.86$ and $r = 0.85$ respectively). This table also shows a significant correlation between Tableland Grazing and the NSW weighted returns ($r = 0.48$). However, there was only one significant correlation between the actual land use regions (Coastal Grazing and Mixed Farming $r = 0.50$).

It is important to note that there was some less significant negative correlation in the analysis, again showing the limited relationship between the various rural land uses in NSW. This was particularly the case with Pastoral grazing that had a negative correlation with all other rural land uses in NSW

Table 8: Correlation Analysis: Rural Land Use: 1990-2005

	<i>Coastal Grazing</i>	<i>Tableland Grazing</i>	<i>Mixed Farming</i>	<i>Pastoral Grazing</i>	<i>NSW Weighted</i>
Coastal Grazing	1.00				
Tableland Grazing	0.40	1.00			
Mixed Farming	*0.50	0.20	1.00		
Pastoral Grazing	-0.22	-0.25	-0.02	1.00	
NSW Weighted	*0.86	*0.48	*0.85	-0.13	1.00

* Significant at the 5% level

CONCLUSIONS

Since 1990 the average annual capital return for all rural land in NSW has been 5.4% (6.1% weighted). Although this return appears modest it is from a historical low base following the significant fall in rural land prices in 1989-1990. This period of rural recession followed record rural land prices set in the period 1985-1988.

Although the average price of rural land in NSW has been 5.4%, there have been rural regions of the State that have performed significantly better than the State average. Areas such as the North West, Southern Tablelands and Riverina have returned average annual increases in rural land values significantly higher than the State average but at higher levels of risk.

There is some significant correlation between the increase and decrease in rural land prices in adjoining regions and regions where agricultural production is very similar. There is also significant negative correlation in changing rural land prices in areas of differing and opposing rural land use. This result is expected on the basis that when the income levels in one specific rural land use is high compared to another rural land use that is in a low income regime the change in rural land prices should be opposite.

The return for higher value agricultural land uses such as mixed farming exceed the traditional grazing enterprises but with a higher risk. Land returns are less volatile on a land use basis compared to a regional basis.

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Table 2: NSW Rural Regions: Annual Capital Returns: 1990-2005

Year	North Coast	Hunter	Northern Tablelands	North West	Central West	Far West	Murray	Riverina	South West	Southern Tablelands	South Coast
1991	21.6	6.8	8.6	43.5	-19.3	-28.1	23.0	25.3	-11.9	25.9	5.9
1992	-2.4	-1.1	-15.9	15.0	26.5	-26.8	4.3	21.1	-6.6	6.6	18.9
1993	3.4	-0.7	4.0	8.0	0.7	25.6	23.0	12.7	8.9	-0.9	-8.0
1994	8.7	10.6	3.0	6.8	16.7	-21.2	-22.9	3.1	6.3	20.3	0.0
1995	-7.1	-3.1	9.6	-0.3	-6.6	31.5	14.1	-13.8	9.5	10.0	16.3
1996	-1.7	1.5	-9.2	5.2	11.3	41.0	5.0	-8.0	-3.5	-3.4	-3.2
1997	3.9	1.5	17.9	-6.0	2.8	-20.6	17.4	6.7	5.0	-1.3	11.2
1998	-10.7	10.9	-8.8	11.9	10.7	22.9	-4.6	28.7	8.7	8.8	3.8
1999	11.5	-6.6	2.4	14.5	-13.3	3.1	3.1	2.2	-1.8	-10.1	2.8
2000	3.2	4.4	12.9	11.5	14.1	24.7	12.5	-0.4	10.2	11.2	19.0
2001	-14.9	-6.4	18.5	0.5	1.3	-10.1	9.4	-13.3	2.1	20.6	5.4
2002	29.8	18.1	0.3	19.7	23.7	8.6	4.6	14.6	21.0	5.8	2.6
2003	0.5	10.2	4.3	1.2	15.4	4.5	32.0	36.6	17.2	13.7	17.8
2004	27.5	8.8	9.7	23.4	21.9	-14.2	-6.8	-4.9	18.1	13.0	-2.6
2005	12.9	15.1	23.9	-0.3	5.6	29.3	23.1	-6.7	11.2	5.7	10.8
Average Annual Return (%)	5.7	4.67	5.41	10.32	7.43	4.67	9.14	6.92	6.28	8.37	6.73
Risk (%)	13.15	7.60	10.99	12.30	13.38	23.58	14.08	15.72	9.31	9.77	8.61

Table 4: Correlation Matrix: NSW Rural Regions

	<i>North Coast</i>	<i>Hunter</i>	<i>Northern Tablelands</i>	<i>North West</i>	<i>Central West</i>	<i>Far West</i>	<i>Murray</i>	<i>Riverina</i>	<i>South West</i>	<i>Southern Tablelands</i>	<i>South Coast</i>	<i>NSW (average)</i>
North Coast	1.00											
Hunter	*0.54	1.00										
Northern Tablelands	0.14	0.03	1.00									
North West	*0.60	0.21	-0.26	1.00								
Central West	0.09	0.46	-0.37	-0.15	1.00							
Far West	-0.26	0.05	-0.02	-0.38	-0.04	1.00						
Murray	-0.08	-0.09	0.38	-0.12	-0.39	0.22	1.00					
Riverina	0.09	0.36	-0.46	0.36	0.13	-0.28	0.22	1.00				
South West	0.25	*0.55	0.26	-0.30	*0.49	0.32	-0.01	-0.02	1.00			
Southern Tablelands	0.03	0.28	0.23	0.34	0.03	-0.44	-0.07	0.14	-0.01	1.00		
South Coast	-0.29	-0.05	0.14	-0.22	0.09	-0.08	0.38	0.15	-0.01	0.18	1.00	
NSW (average)	0.37	*0.81	0.14	0.05	0.46	0.19	0.08	0.22	*0.58	0.29	0.35	1.00

* Significant at 5% level