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DEVELOPING A NSW RURAL PROPERTY INVESTMENT INDEX

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Abstract

Rural property in Australia is the most extensive property type based on total area occupied. Agricultural land use currently accounts for over 60% of the total land area in Australia; in comparison, residential, commercial and industrial property account for less than 1% of total land area (ABARE, 1998). Agricultural production also currently accounts for 27% of exports, 3% of GDP and 5% of the Australian workforce (ABARE, 1998).

Despite the overall size of the rural property market and the continued importance of agricultural land to the Australian economy, rural property in Australia has received minimal attention by property researchers in comparison to the extensive research attention given to Australian commercial and residential property markets.

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 paper will review the available rural investment indices in Australia and background the requirements to develop a comprehensive transaction based rural investment index (1990-1999).

Initial rural land performance data will also be addressed in the paper.

INTRODUCTION

Rural property in Australia is the most extensive property type based on total area occupied. Agricultural land use currently accounts for over 60% of the total land area in Australia; in comparison, residential, commercial and industrial property account for less than 1% of total land area (ABARE, 1998). Agricultural production also currently accounts for 27% of exports, 3% of GDP and 5% of the Australian workforce (ABARE, 1998).

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 (eg: Newell, 1996; Newell and Higgins, 1996; Newell and MacFarlane, 1996; Newell, 1998). In recent years, only Eves (1997, 1998a, 1998b) has critically investigated the investment performance of Australian rural property, however this investigation has been limited to a small area of New South Wales. Similar property research trends are also evident in the USA, with only Kaplan (1985), Lins et al (1992), and Rubens and Webb (1995) investigating the performance of US farmland in an investment context.

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

- (i) the declining significance of the Australian rural sector, in comparison to the emergence of the resources and services sectors (ABARE, 1998).
- (ii) the low level of institutional ownership of Australian agricultural property; 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 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.

Previous attempts to develop such rural property indices for NSW (Collins, 1958; MacPhillamy, 1972) were very limited in that they used limited transaction data, relied on “typical” properties, and covered small and now dated time periods. As a result, they were not readily applicable as NSW rural property performance benchmarks. The NSW Valuer General’s Department provided an annual report of price movement for all real estate markets in NSW. This report included most rural land use classifications and covered specific locations throughout the state. These indices were valuation based, with a benchmark property being valued annually. A limitation of this index was the numerous times there was no recorded annual change in the value of the specific rural land classifications, despite the fact that rural land markets are volatile (Eves, 1998). In addition to this major limitation, the index has also not been published since 1997.

RESEARCH PURPOSES AND OBJECTIVES

As such, the purpose of this research is to:

- (i) utilise an extensive computer database of NSW rural property sales over 1990-99 to develop a rigorous and reliable NSW rural property investment performance index and regional sub-indices.
- (ii) rigorously and objectively assess the investment performance of NSW rural property.
- (iii) critically examine the role of rural property in investment portfolios; in particular, the potential risk-reduction and portfolio diversification benefits of rural property in mixed-asset portfolios.
- (iv) assess the strategic investment significance of rural property for Australian institutional investors.

Significance and expected outcomes

- (i) Establishment of institutional-standard rural property investment performance index, regional sub-indices and land use indices for NSW.
- (ii) More informed and objective investment decision-making regarding the role of rural property in investment portfolios.

RESEARCH PLAN

Rural property sales database: 1990-99

To develop this NSW rural property investment performance index and regional sub-indices, the commercially available RP Data computer database will be utilised over 1990-99. RP Data is a commercial computer database of all sales transactions and land title transfers that occur through 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 LGA 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 1990-98, over 30,000 NSW rural property sales are available for analysis. In recent years, over 3,000 rural property sales accounting for over \$1 billion are available annually. The integrity and quality of the RP Data database compares favourably 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 ensures the integrity and reliability of this rural property database.

Rural property investment performance indices: 1990-99

Based on these 30,000 rural property sales from 113 NSW LGAs over the period 1990-99, a rural property investment performance index for NSW is being developed. Using \$ per hectare as the benchmarking investment performance criteria and June 1990 benchmarked to an index value of 100, a semi annual and quarterly rural property investment performance index will be established over 1990-99. The corresponding benchmark PCA office, retail and industrial property indices are also available over 1990-99 (Property Council of Australia, 1998).

Equivalent regional rural sub-indices (13) and land use indices (4) will be established for:

Regional

- Far North Coast (1)
- North Coast (2)
- Hunter (3)
- South Coast (4)
- New England (5)
- Central West (6)
- South East (7)
- Murray (8)

- Riverina (9)
- South West (10)
- Orana (11)
- North West Slopes and Plains (12)
- Far West (13)

Land Use

- Tableland grazing: based on 24 LGAs
- Central West mixed farming: based on 55 LGAs
- Western grazing marginal Farming: based on 13 LGAs.
- Coastal grazing ; based on 21 LGAs

Database Characteristics

This rural property database is substantial, accounting for the following percentages of total Australian agricultural production over the period 1990-98: 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: Index Regions

Related investment performance indicators

To enable mixed-asset portfolio analysis, the following asset performance series will be assessed over 1990-99 on an equivalent six-monthly basis (Property Council of Australia, 1998):

- direct property: PCA office, retail, industrial
- shares: All Ordinaries
- bonds: 10-year bonds
- cash: 90-day bills.

All of this related investment performance data is currently available.

Statistical analysis using rural index: 1990-99

Using this rural property investment performance index, a range of statistical analyses will be conducted to examine the role of rural property in an investment portfolio; particularly relating to the risk reduction and portfolio diversification benefits of rural property in an investment portfolio. All statistical analyses will be carried out using the statistical package EViews and the “Solver” routine within Excel.

RESULTS AND DISCUSSION

This research is an ongoing project, which will result in a full analysis of the NSW rural land market and a comparison with the other investment and property markets in Australia. These initial research results focus on the preliminary analysis of the rural land transaction data for the 13 regions of NSW. These regions are based on the classifications of the State of New South Wales by NSW Department of Agriculture and Fisheries. However, there are some slight deviations in boundaries, as the sales data is based on Local Government Areas.

These 13 regions are shown in Figure 1, it can also be seen in this figure that the rural areas including and directly adjacent to Sydney, Newcastle and Wollongong have not always been included in the data base. These areas were considered to be more influenced by the residential property market factors rather than rural land market factors.

For comparison purposes, within this paper these regions have been grouped into subsets based on geographic location. These sub-sets are:

- Coastal Region(Far North Coast, North Coast, Hunter and South Coast)
- Tablelands Region(New England, Central West and South East)
- Southern Region(Murray, Riverina and South West)
- Northern/Western Region (North West, Orana and Far West)

New South Wales Rural Land Performance

Table 1 shows the average annual return for rural land in NSW for the period 1990-1999. From this table it can be seen that over this period the average annual return for rural land has been 5.3% per annum. The highest annual return for rural land in NSW was the period 1990-1991 where the average return for the State was 13.6% with a risk of 16.7% for the average annual return of the thirteen regions in that year. The lowest annual return was the period 1991-1992 when the State average annual return was only 1.6%, with a volatility throughout the thirteen regions of 15.70%.

Table 1: Average Annual Returns: NSW 1990-1999

Year	Average Annual Return %	Volatility %
1991	13.6	16.7
1992	1.6	15.7
1993	6.8	9.6
1994	1.8	12.4
1995	6.0	11.4
1996	3.5	12.7
1997	5.5	10.9
1998	4.4	15.7
1999	4.2	11.6
(1990-1999)	5.3	

Price trends and Performance (Regions)

A) Coastal Regions

Although the price trend for the majority of coastal regions was similar for the period 1990-1999, the trend for the north Coast differed to the other regions, particularly since 1994.

Figure 2: Price/ha (\$) Coastal Region

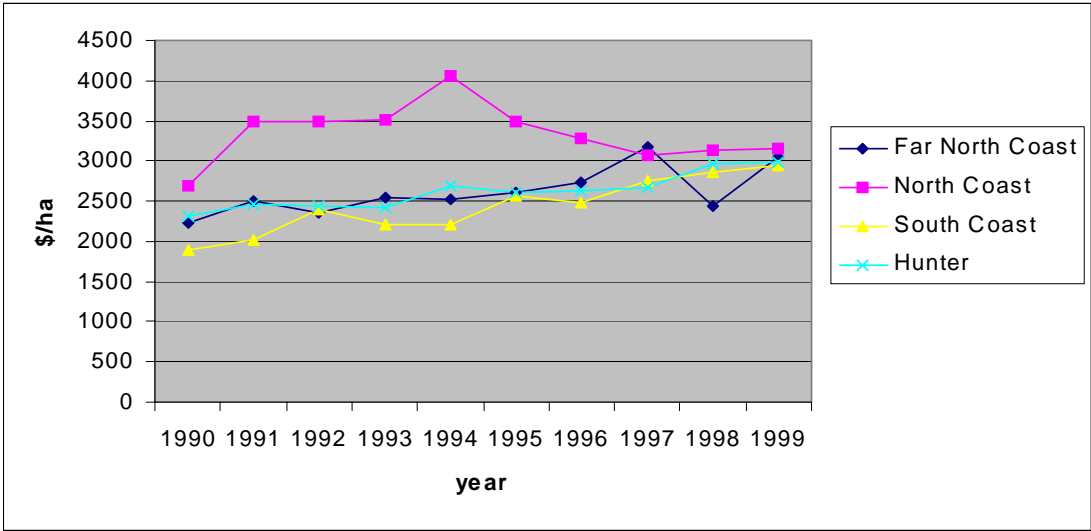


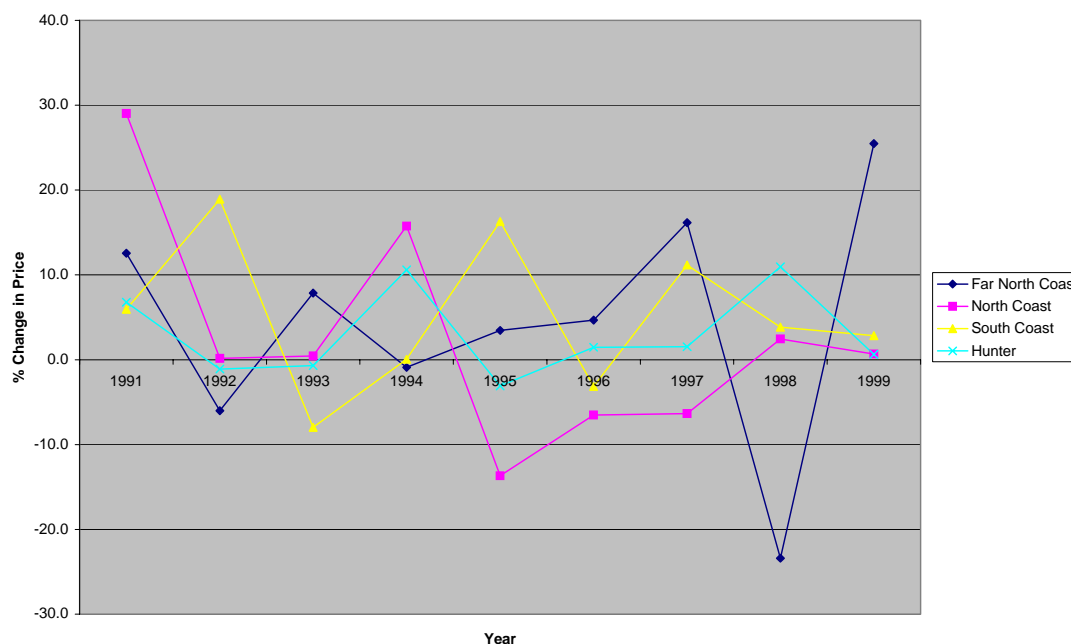
Table 2: Average Annual Return, Coastal and Tableland Regions

	Far Nth Coast	North Coast	Hunter	South Coast	New England	Central West	South East
Average Annual Return (%)	4.4	2.4	3.0	5.3	3.3	3.3	6.2
Volatility (%)	14.02	12.81	5.16	8.83	10.71	14.70	14.58

Table 3: Average Annual Return, Southern and Northern Regions

	Murray	Riverina	South West	North West	Orana	Far West
Average Annual Return (%)	6.9	8.7	1.6	11.0	3.1	9.8
Volatility (%)	14.69	14.60	7.80	19.97	7.46	26.15

Figure 3: Annual % Change in Rural Land Prices: Coastal regions



Figures 2 and 3 show that since 1994 rural land prices in the North Coast region have tended to decline and remain stable, whereas in the other three coastal regions (Far North Coast, South Coast and Hunter) rural land price trends have been increasing. However, the annual movement in rural land prices has not been consistent across these four coastal regions. As can be seen in Figure 3 and Table 2 the volatility of rural land price movement has been considerably less in the Hunter and South Coast regions (5.16% and 8.83% respectively) compared to the North Coast and Far North Coast (12.81% and 14.02% respectively). This volatility in the North Coast region tended to be greater in the period from 1990 to 1995, with the greater volatility of the Far North Coast occurring after 1996.

The average annual returns for these coastal regions have ranged from a low of 2.4% for the North Coast to a high of 5.3% per annum for the South Coast

B) Tableland Regions

As shown in Table 2 and Figures 4 and 5 the South East area of NSW has performed far better than the other tableland areas of the State. During the period 1990-1999 this region has shown an average annual return of 6.2% compared to the lower returns for New England and the Central West at 1.3% and 3.3% respectively.

Average annual returns for New England is lower than the other regions but the volatility is also less at 10.71%.

Since 1992, both New England and the Central West have demonstrated similar price trends on a per hectare basis. The 1999 price per hectare figure being at a very similar levels (\$953 and \$1028 respectively) despite the difference at the commencement of the study in 1990 (Central West \$917 and New England \$731).

Figure 4: Price/ha (\$) Tableland Regions

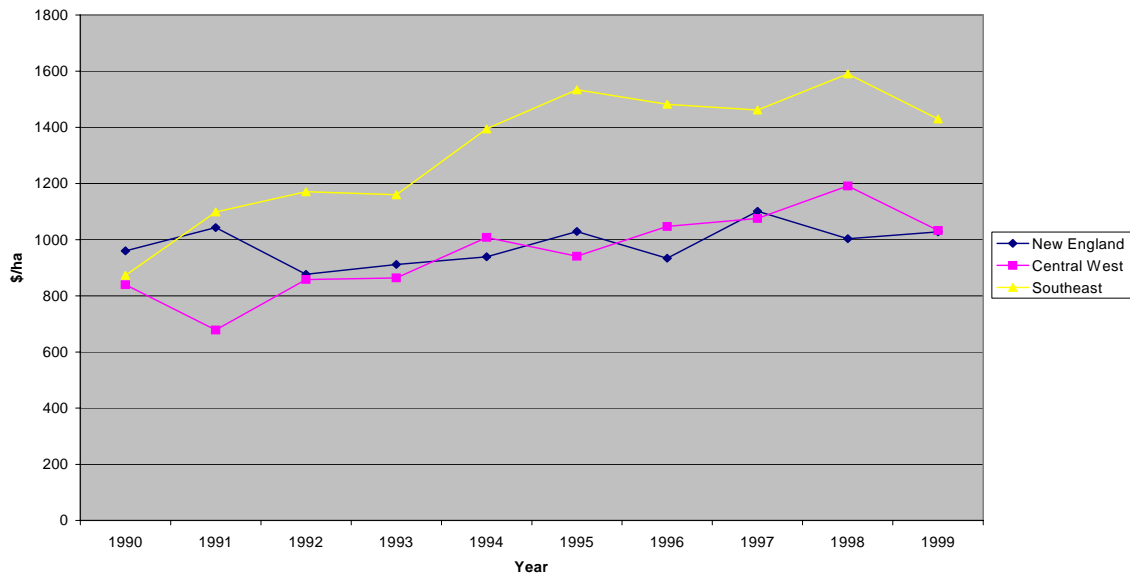
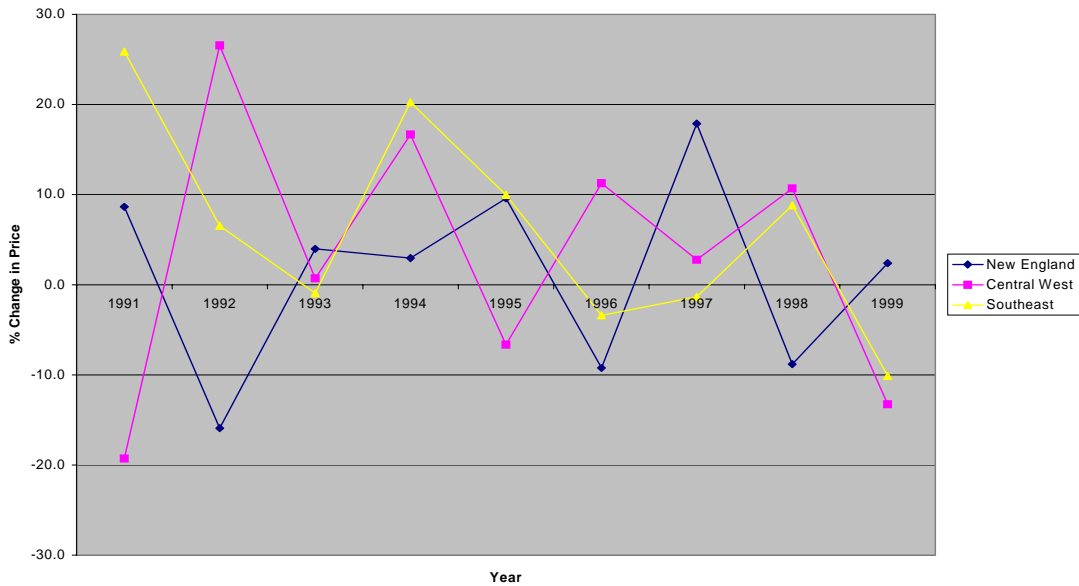


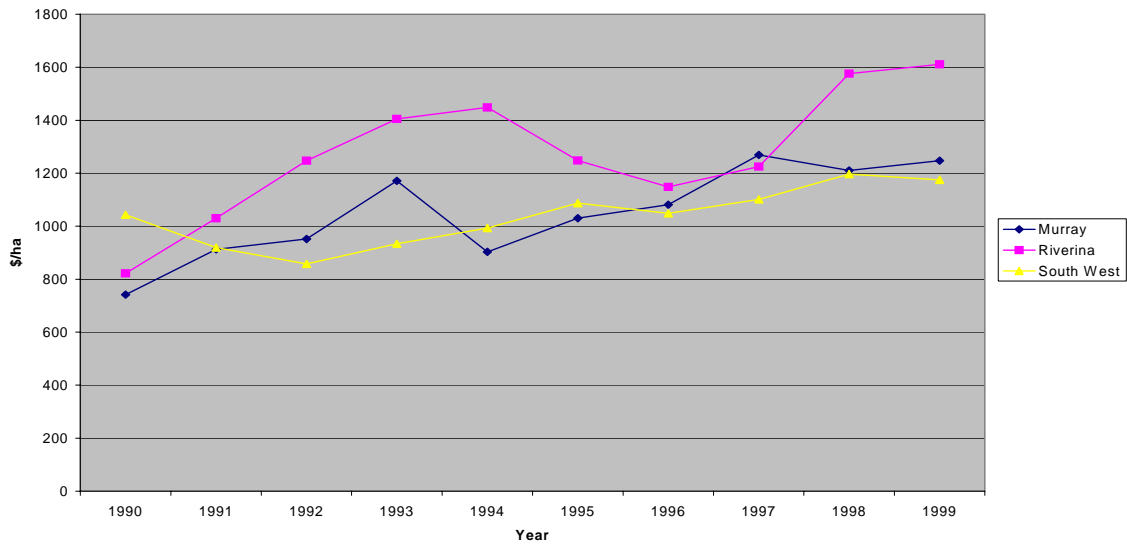
Figure 5: Annual % Change in Rural Land Prices: Tableland regions



C) Southern Regions

Although the Murray and Riverina regions showed similar average price per hectare trends from 1990 to 1993, after this date the movement in the average price per hectare varied considerably. Figures 6 and 7 highlight the variation in prices, between these two regions from 1993 to 1999.

Figure 6: Price/ha (\$) Southern Regions



These regions had their highest negative and positive price change percentage in differing years (Murray 1993, 1994 and Riverina 1995 and 1998). Despite the relatively close proximity of the South West region to both Murray and Riverina both the price per hectare trend and price movement per annum differs considerably. This difference is also reflected in both the average annual return and price volatility of these three adjoining regions (refer to Table 3).

Figure 7: Annual % Change in Rural Land Prices: Southern regions

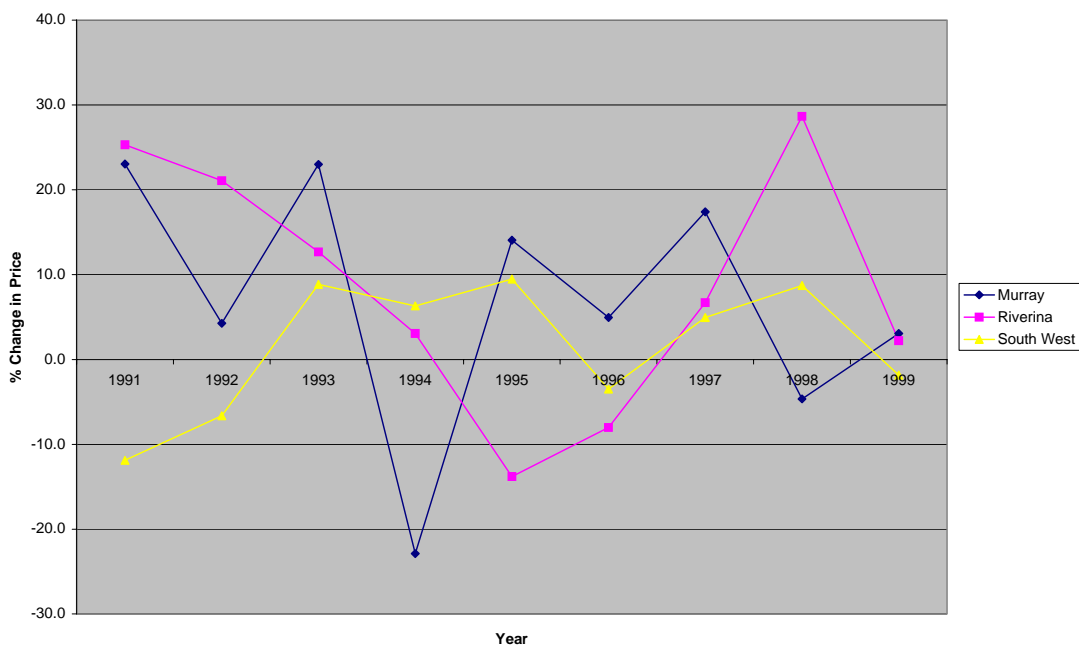


Table 3 shows that the average annual return for these three regions ranged from 1.6% for the South West region to 8.7% for the Riverina region, with the Murray region showing an average annual return of 6.9%. The lower return for the South West region also resulted in the lower volatility at 7.80% compared to both Murray at 14.69% and Riverina 14.60%. The volatility for the two other regions in this grouping were considerably higher at 14.69% for Murray and 14.60% for Riverina.

D) Northern/Western Region

As can be seen in Figure 8, the North West region has shown an increasing price trend from 1990 to 1999, with only one year where the average annual price of rural land fell. This region has seen the most significant increase in the price of rural land, rising from a rate of \$340 per hectare in 1990 to \$929 per hectare in 1999. During the same period the adjoining region of Orana commenced in 1990 at a rate per hectare of \$487 but only increased to \$735 per hectare by 1999.

The trend for the Far West region is similar to Orana in the fact that it started from a high base in 1990 declined or remained relatively steady until 1994, when rural land prices started to increase.

Figure 8: Price/ha (\$) Northern/Western Regions

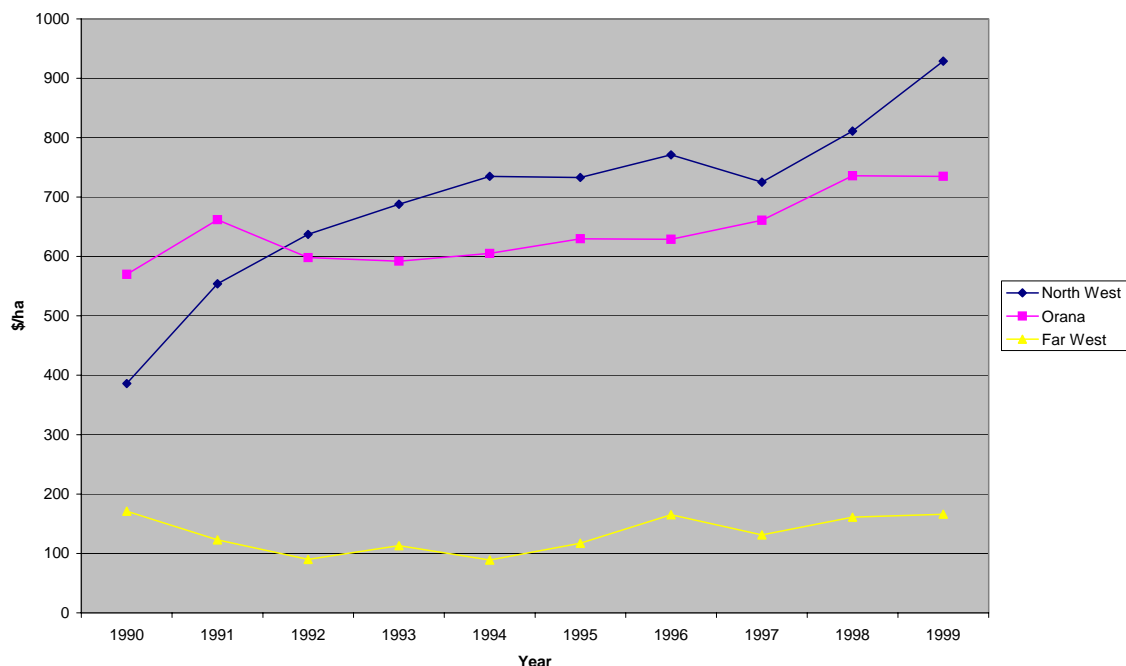
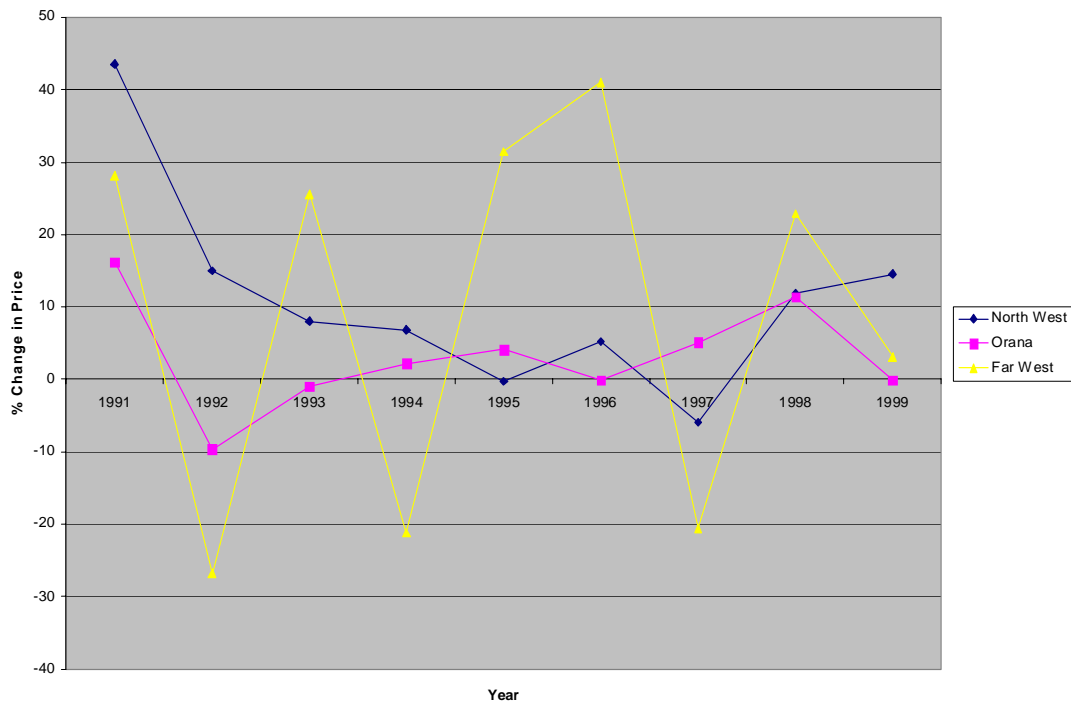


Figure 9 highlights the volatility of the rural land market for the Far West region. From Table 3 it can be seen that this region showed an average annual return of 9.3% with a volatility of 26.15%. This was one of the higher returns for all of the rural areas of NSW but at the highest level of risk. Although the Orana region had only a modest average annual return of 3.1% the volatility was low at 7.46%.

Figure 9: Annual % Change in Rural Land Prices: Northern/Western regions



Results for the North West region are unusual compared to the other rural regions, with one of the higher rural land returns for the period 1990-1999 at 11.0% but a relatively high-risk percentage of 13.97% being equal to or less than several of the other regions, which showed an average annual return considerably less than 11.0%.

Correlation Analysis

A correlation analysis has been carried out to analyse the association between the change in rural land prices 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 other factors other than location.

The results of the correlation analysis (annexed in Table 4) show that although there are some significant correlations between several regions, it is not consistent throughout the entire study area.

It was expected that there would be significant correlation between adjoining regions of similar production characteristics, but this only occurred North Coast/New England ($r=0.61$), North Coast/North West ($r=0.81$), North Coast/Hunter ($r=0.66$), North West/Orana ($r=0.43$) and Orana/Far West ($r=0.42$).

There were some significant negative correlations in the study period 1990-1999. These included North West/South West ($r=-0.73$), Central West/Far North Coast ($r=-0.64$), New England/Central West ($r=-0.65$) and Murray/Hunter ($r=-0.58$).

CONCLUSIONS

Since 1990 the average annual return for all rural land in NSW has been 5.3%. 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 prices of rural land in NSW has been 5.3% there have been areas of the State that have performed significantly better than the State average. Areas such as the Far West, North West 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 or 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.

As stated in the introduction this is the first analysis of a larger research project. Future research of this data will further analyse the NSW rural land market as well as compare this property sector to other property and investment markets

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