

## THE JOB MARKET IN AGRICULTURE IN AUSTRALIA

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### Abstract

**Demand by employers in the agriculture sector has been variously estimated. However there has been no systematic comprehensive analysis of the job market based on actual advertisements. This paper addresses that deficiency.**

**Advertisements have been monitored over the period April 2006 to March 2009 inclusive on the internet, national newspapers, metropolitan daily newspapers and state agricultural papers. Some 50,800 advertisements were assessed and categorised into production (on-farm) and a range of occupations in agribusiness. Overlap of internet and print advertisements was assessed by sub-sampling and figures adjusted accordingly.**

**Data show that the demand for employees in agriculture has been consistently around 15,000 per year, being in the ratio of 3:2 for production: agribusiness. The print media remains the main vehicle for production jobs (>80%) whereas the internet is more important for the agribusiness positions (about 50:50). Over the period of study, there was a general growth in the use of the internet for job advertisements, probably reflecting its lower cost and longer exposure time than is provided for newspaper advertisements. State agricultural newspapers contained around 87% of the newspaper component of the advertisement pool.**

**Analysis of the data suggests that the job market in agriculture has been substantially underestimated and previous estimates of the demand for graduates have been exceedingly low.**

### Introduction

The role of agriculture in Australia is confusing in the minds of the community. Its history is strong being the cornerstone of the national economy for the first century and a half of European occupation. This weakened proportionally as the other sectors of the economy built up in the latter half of the 20<sup>th</sup> Century and its reputation changed as the environmental movement gained strength, government support weakened and the urbanisation of the nation reduced the links between rural and city. In recent decades the industry has not been well served by industry spokespeople 'talking the industry down' and its leadership failed in the most part to promote the industry, to build its reputation and to embrace education for the challenges ahead as other sectors have successfully done. As a consequence, the emerging workforce has not been attracted to a career in agriculture and critical shortages of appropriately qualified personnel have eventuated at all levels.

The shortage of labour in agriculture has been raised regularly by the National Farmers Federation and agribusiness and the shortage of agricultural graduates has been highlighted by the Australian Council of Deans of Agriculture (ACDA). Universities have experienced declines in enrolment in agriculture programs for more than a decade to 2008 and the ACDA estimated that the number of graduates to be much less than half that needed to satisfy the job market for new graduates (Pratley and Copeland, 2008). The job market in that study was based on the estimate in the Productivity Commission Report (2005) of some 624,000 employed in the industry where an estimated 7% have university qualifications. Based on an average 20 year career, these estimates suggest that there would be around 32,000 jobs annually of which around 2,200 would need a degree. A separate study by the Australian Farm Institute (Econotech, 2007) estimated that the farm dependant economy was much larger than that indicated by the Productivity Commission, being of the order of 1.5 million people or 17% of the Australian workforce.

Despite these estimations and the anecdotes from employers about the lack of availability of potential suitably qualified employees, the job market in agriculture remains somewhat nebulous in the absence of concrete evidence of the vacancies and the areas of demand. Such data would provide the confidence to develop policy, promote careers and substantiate the position of the industry to the community and to the industry itself.

In order to address this issue, Rimfire Resources<sup>®</sup> undertook a comprehensive documentation of the mainstream advertisements for positions in agriculture over a 3 year period. In combination with ACDA, an analysis was undertaken to ascertain the trends in employment vacancies and to establish a benchmark value for prospects in the job market in agriculture. It is recognised that many jobs are advertised only locally, by word of mouth or targeted by employers and thus would not be included in the following analysis.

### Materials and methods

In order to provide a comprehensive coverage of the media, mainstream and agricultural newspapers and the internet were incorporated into the study. Table 1 provides the individual papers and websites used. Newspapers and journals were counted on a weekly basis and compiled for each calendar month. Internet jobs on all sites were counted once each month on the same date. The difference in frequency relates to the cost of paper advertising usually limiting an advertisement to a single date whereas internet sites usually list the position for 30 days at a small proportion of the cost of paper advertisements. The assumption was taken that a monthly sampling of the internet would pick up the 30 day cycle but minimise the counting of the same job advertisement more than once. Data from print media were kept separate from web-based data to enable the identification of any trends to be discerned. Multiple positions in any one advertisement were counted as separate advertisements for this exercise. Agribusiness jobs in all organisations were included, not just those in agribusinesses. The period of study was April 2006 to March 2009 with data arranged for quarters of the calendar year, thereby providing a 3 year data set.

**Table 1** The newspapers and websites used to collate job advertisements in agriculture

STATE/NATIONAL	NEWSPAPER/WEBSITE
Queensland	North Queensland Register Queensland Country Life Courier Mail

New South Wales	The Land Sydney Morning Herald
Victoria	Stock and Land Weekly Times The Age
Tasmania	Tasmanian Country Hobart Mercury Launceston Examiner
South Australia	Stock Journal The Advertiser
Western Australia	West Australian Farm Weekly Countryman
National	<i>Newspapers</i> The Australian Australian Farm Journal Rural Business <i>Websites</i> AgCareers.com AgBiz Careers.com Seek Career One AgAppointments AgPeople Rimfire

To ensure consistency in category classification, the counting process was required to be undertaken by the same personnel in the same location every month. At no time was counting undertaken where there were no personnel with previous counting experience. The categories chosen were as follows: Animal Health/Nutrition; Feedlot; Dairy; Livestock - Sheep and Beef; Crop Protection; Seed/Biotech; Fertilizer; Commodity Trading; Rural Finance; Rural Merchandise; Distribution; Farm Machinery; Processing/Manufacturing; Industry grower groups; Government; and Production (Permanent).

As might be expected there were advertisements that did not clearly fit into a category or fitted into more than one category. The following guidelines were used to guide consistent decisions:

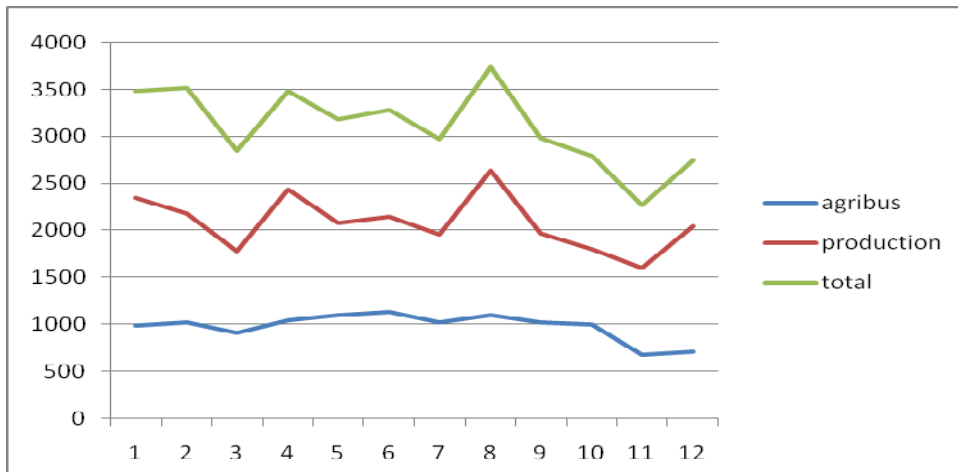
- A livestock position with a rural distribution / services company like Landmark or Elders was counted as Livestock;

- A merchandise role with the above organisations was counted as Distribution;
- A sales role with organisations that predominantly provide materials into the merchandise sector for retail sale, like Tru Test or Gallagher, was classified Rural Merchandise;
- Feedlot roles were classified as either Production or Agribusiness. For example, a feedlot farm worker was classified as Feedlot, whereas a farm worker was classified as Production. A feedlot specialist in a large agribusiness like Bayer would be classified as Feedlot;
- Rural finance roles regardless of organisation e.g. Landmark / Elders / Rural Finance or one of the banks were all classified as Rural Finance;
- A diesel mechanic for a tractor dealer was classified as Farm Machinery, whereas a diesel mechanic employed on a farm was classified as Production;
- Food processing companies that directly process primary production (for example, cheese manufacturing, dairy product manufacturing directly from farm, meat production direct from farm) were included as either Processing and Manufacturing whereas manufacturing and processing that is one further step removed from farm production (eg semi processed primary products) were not included;
- Dairy specific roles in organisations like Landmark and Elders were classified as Dairy, whereas dairy farmer or dairy hand roles were classified as Production given they are on farm;
- A farm manager was classified as Production unless it involved processing of the primary product (eg wool scouring) where it was classified as Processing;
- Trading of commodities were classified as Commodity Trading whereas physical sales of product (eg wool), livestock and area specific sales roles with organisations like Landmark or Elders were classified as Distribution;
- Roles advertised for industry representative groups, grower bodies, consultants and advisers, positions at rural or agribusiness education institutions and non-sector specific roles were classified as industry grower groups; and
- Where there was uncertainty, the final classification decision was made by a Director of Rimfire and the classification noted for future reference.

## Results

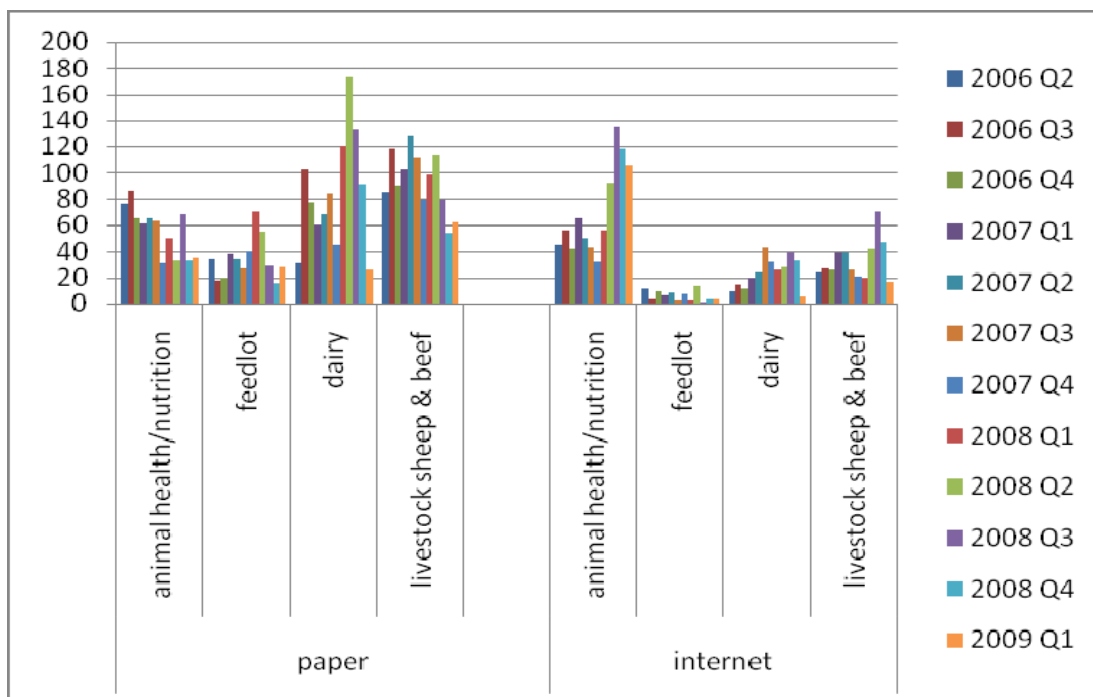
The total number of discrete job advertisements in agriculture for the three year period exceeded 50,000, or an average of more than 16,000 per year (Figure 1). It was assumed that there would be duplication of advertisements between print and web and so the number of unique job advertisements occurred between 37,000 and 50,000 being the range between total duplication and no duplication. Sub-sampling at the end of the study period for duplication showed a maximum of 25% crossover of paper and internet advertising. Given that the influence of the internet is greatest at the end of the study period this 25% estimate has been used to adjust the number of discrete advertisements to a minimum of 47,400 for the 3 years of study.

Across the years, the adjusted numbers of discrete advertisements to the nearest 100 advertisements were 16,000 in Year 1, 16,700 in Year 2 and 14,600 in Year 3 (Figure 1). The drop-off in Year 3 was most likely due to drought conditions in 2008-9, together with the influence of the global economic downturn. This decline was more noticeable in the production (ie on-farm) area, being nearly 15% in Year 3 relative to Year 1 but only about 3-4% in the agribusiness (ie off-farm) area for the same comparison. In 2006-7 production jobs comprised over 62% of the advertisements whilst in 2008-9 this had declined to 55% reflecting the greater drop-off in production jobs. In Year 1 there were some 9900 advertisements for production jobs with 9900 in Year 2 and 8400 in Year 3. Corresponding agribusiness advertisement numbers were 6100, 6800 and 6200 for the three years. Thus there were around 3 production jobs for every 2 agribusiness positions.



**Figure 1** The job market in agriculture based on advertisements in newspapers for the period April 2006 to March 2009 expressed in quarters of the calendar year

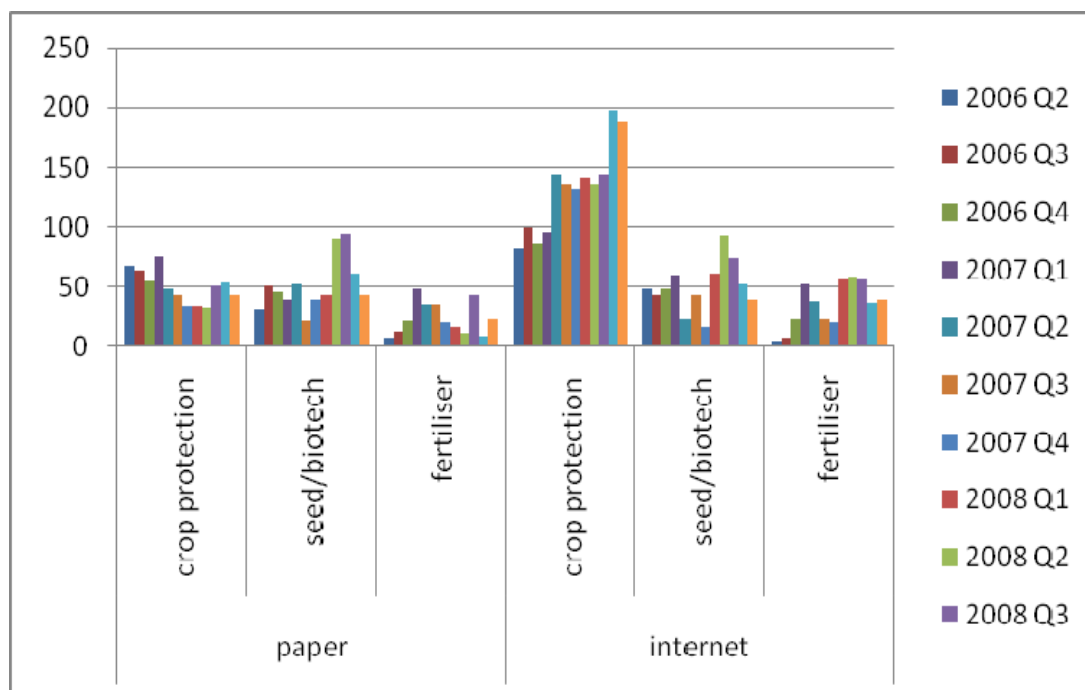
For the animal industries in agribusiness, the job market was stable over the three year period. In Year 1 the numbers of advertisements, adjusted for overlap, were about 1200, 1270 in Year 2 and 1530 in Year 3. The pattern for these job categories is shown in Figure 2. There was a minimum of 20 jobs per quarter consistently in each of the subcategories used over the period of study.



**Figure 2** Number of jobs advertised in the animal industries in print and on the internet for the period April 2006 to March 2009 expressed in quarters of the calendar year

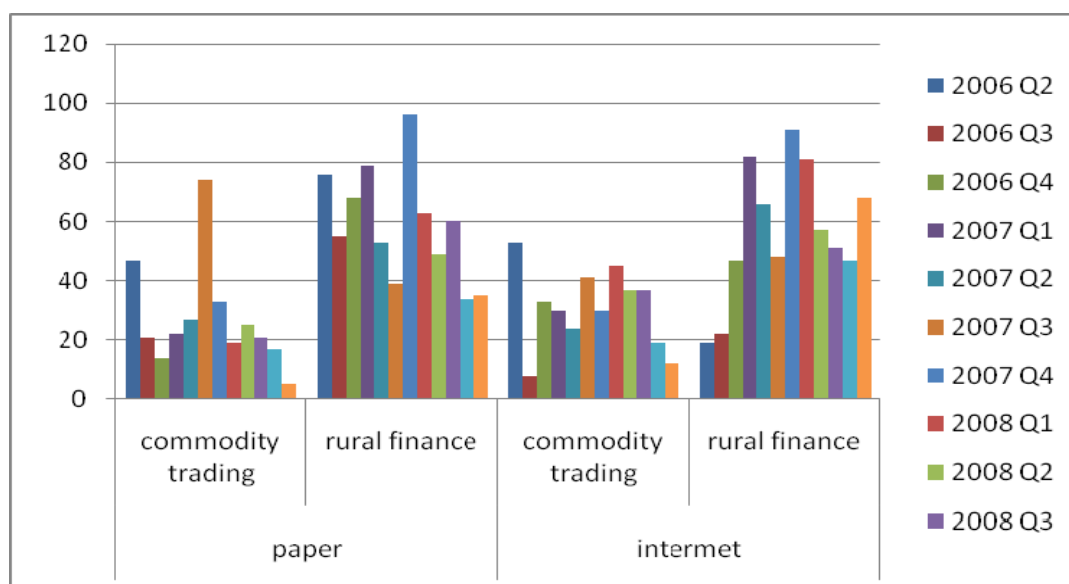
In the plant industries, the job market was also buoyant with there being consistently 100 or more vacancies per quarter in the crop protection field. Demand was strong for employees in the fertiliser and seed/biotech areas as well. There appeared to be an increase in advertisements over the period

of study. The numbers of advertisements, adjusted for overlap, were around 1010 for Year 1, 1050 for Year 2 and 1400 in Year 3. Figure 3 shows the patterns of demand in this area.



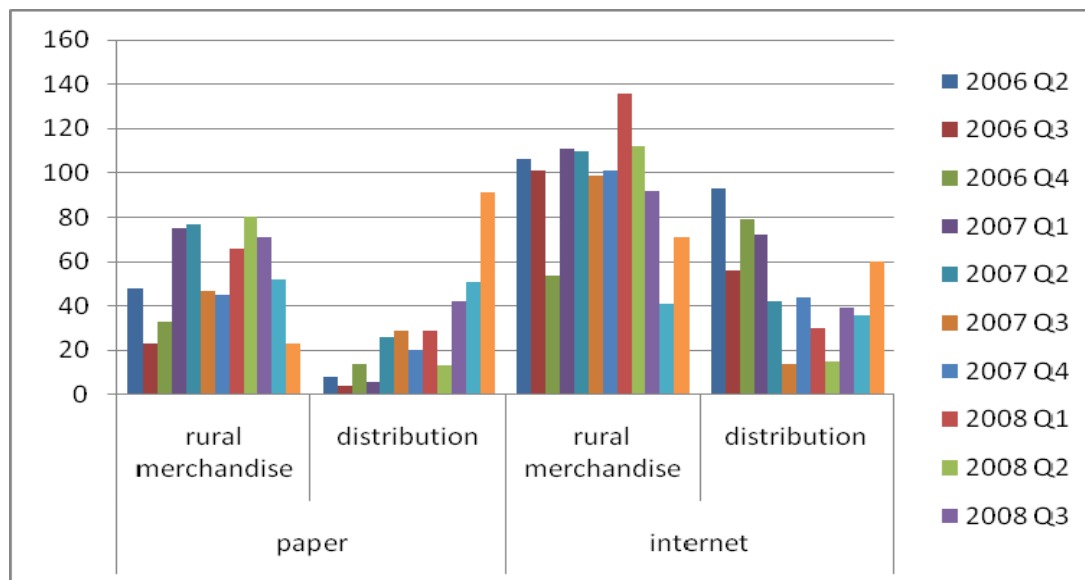
**Figure 3** Number of jobs advertised in the plant industries in print and on the internet for the period April 2006 to March 2009 expressed in quarters of the calendar year

Demand remained strong in the rural finance and commodity trading sector although there was a discernible reduction towards the end of the period of study, particularly in the commodity trading arena. The numbers of advertisements, adjusted for overlap, were 580 (Year 1), 720 (Year 2) and 490 (Year 3). Indications are that there are at least 40 advertisements per quarter for rural finance and at least 20 in commodity trading. Figure 4 shows the trends for the period of study.



**Figure 4** Number of jobs advertised in the finance sector in print and on the internet for the period April 2006 to March 2009 expressed in quarters of the calendar year

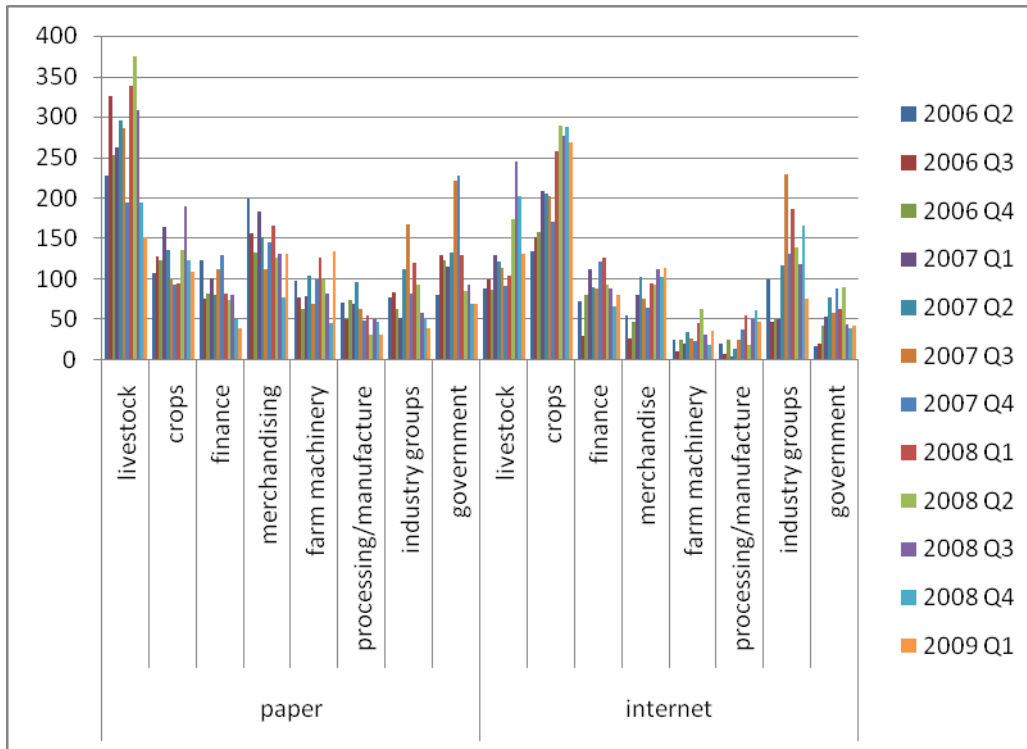
In the rural merchandise and distribution categories demand remained strong with a decline towards the end of the period of study in merchandising and an increase in distribution advertisements (Figure 5). The numbers of advertisements, adjusted for overlap, for this combined category were around 720 (Year 1), 770 (Year 2), and 770 (Year 3). Potential employees could expect at least 80 advertisements in merchandising per quarter and at least 20 in distribution.



**Figure 5** Number of jobs in the merchandising and distribution sector in print and on the internet for the period April 2006 to March 2009 expressed in quarters of the calendar year

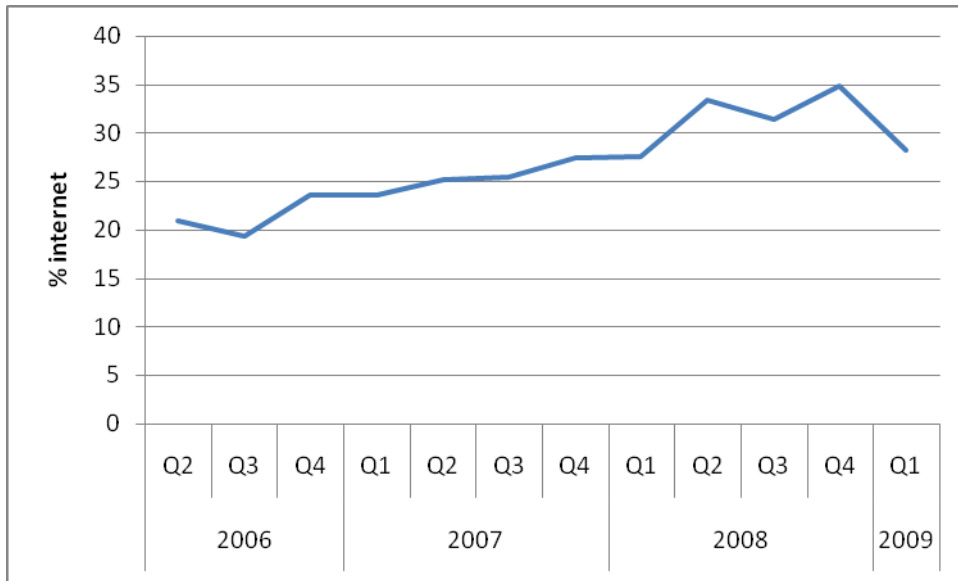
In the Farm Machinery category, the numbers of advertisements, adjusted for overlap, were 320 (Year 1), 430 (Year 2) and 420 (Year 3) with at least 60 jobs per quarter being available (Figure 6). The Processing/Manufacture category was somewhat smaller in number being 260 (Year 1), 340 (Year 2) and 300 in Year 3. There appeared to be at least 40 jobs per quarter in Processing/Manufacture (Figure 6).

In the Industry group the numbers of distinct advertisements were 460, 980 and 620 over the three years whilst the government category numbers were 470, 820 and 450. The industry groups were advertising a minimum of 60 jobs per quarter whilst governments were providing a minimum per quarter of around 60 advertisements as well. There was a noticeable decline in advertisements for both the industry groups and government towards the end of the period of study as seen in Figure 6.



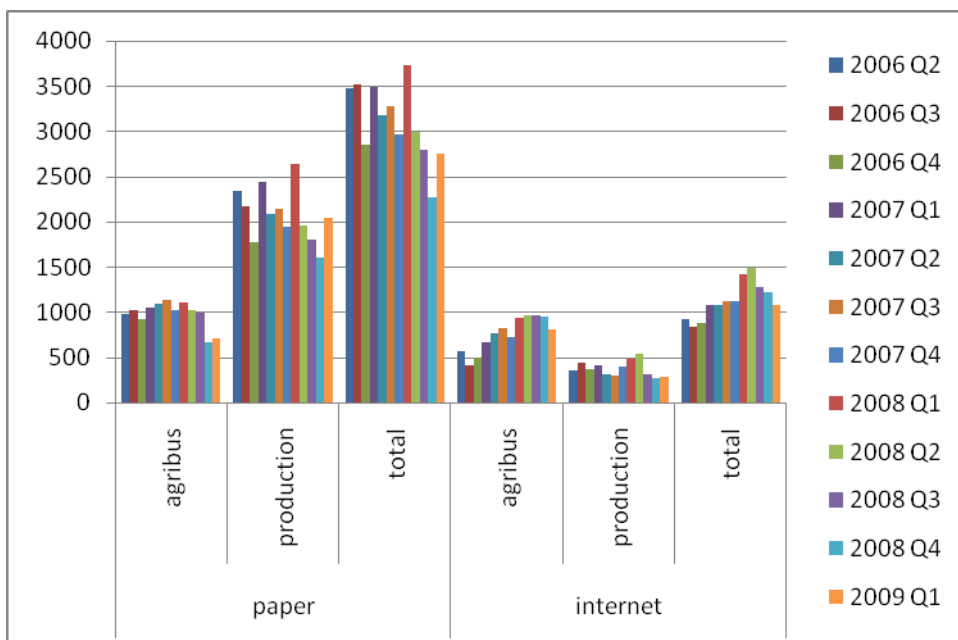
**Figure 6** A comparison of the number of job advertisements across the spectrum of agriculture in print and on the web for the period April 2006 to March 2009 expressed in quarters of the calendar year

**Impact of the internet** The role of the internet is worth particular consideration because of the trends noted in this study. Overall, the proportion of advertisements available via the internet was around 26% for the 3 year period. For the production sector this amounts to only 15% over the 3 years, whereas for the agribusiness sector the proportion is more than 43% for the same period. There is a clear trend towards electronic advertising with an increase from 21% in year 1 to 32% in year 3 (Figure 7).



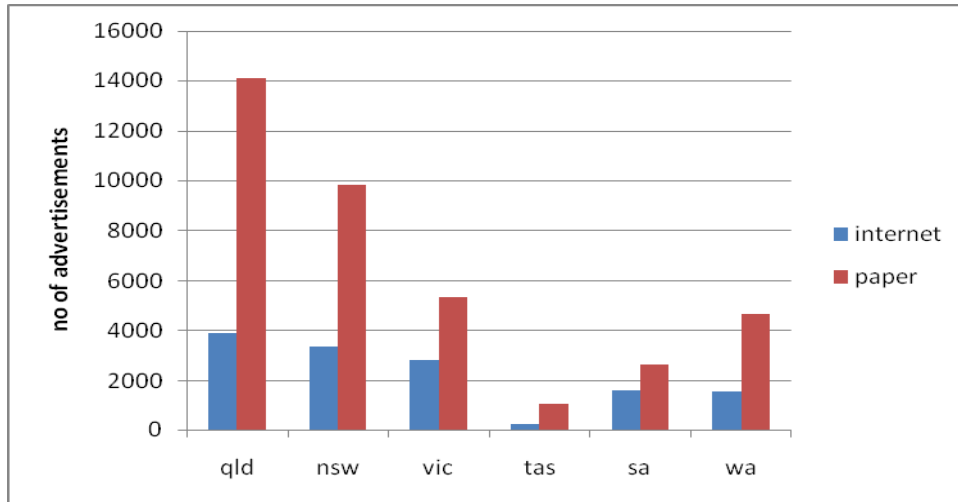
**Figure 7** The percentage of agricultural job advertisements across Australia using the internet for the period April 2006 to March 2009 expressed in quarters of the calendar year

Figure 8 shows the overall trends for the location of advertisements. There is a clear trend for professional jobs in agribusiness to be advertised through the internet (about 50:50 for internet:print towards the end of the study period) but a large majority of production jobs continued to be advertised in the print media (>80%)



**Figure 8** The job market in agriculture based on both newspaper and internet advertisements for the period April 2006 to March 2009 expressed in quarters of the calendar year

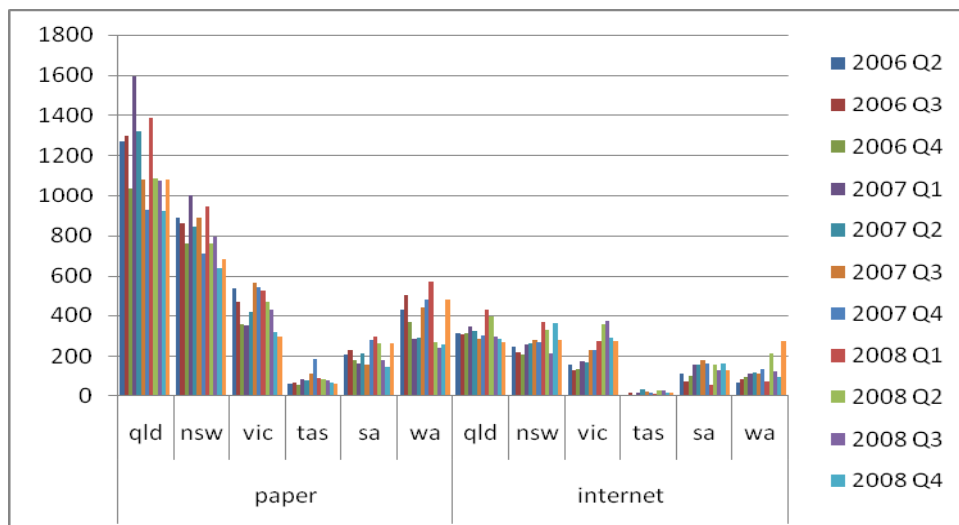
The use of the internet varied between Australian states, being proportionally high for South Australia (58%) and relatively low for Tasmania (20%) and Queensland (21.6%), with the remaining states being in the 25-35% range. Such proportions are shown in Figure 9.



**Figure 9** The proportion of job advertisements in agriculture for Australian states from the internet and newspapers for the period April 2006 to March 2009

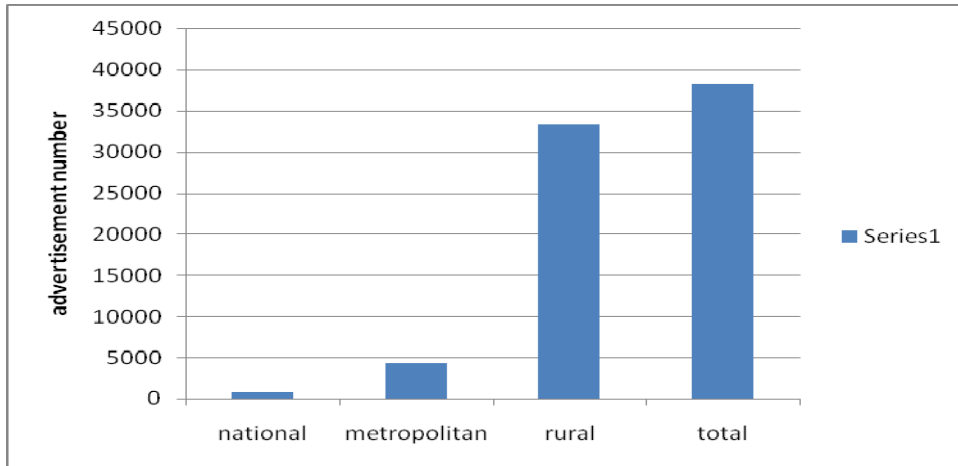
The states of Queensland and NSW dominated the job market over the period of study. There were around 4800 jobs per year available in Queensland and 3500 per year in NSW. Comparable figures in other states were Victoria (2300), Western Australia (1600), South Australia (1200) and Tasmania (330).

There were distinct signs of a decline in paper advertising in Queensland, NSW and Victoria and a trend of increasing internet advertising in Victoria and perhaps Western Australia (Figure 10). South Australia had the highest proportion of internet advertisements.



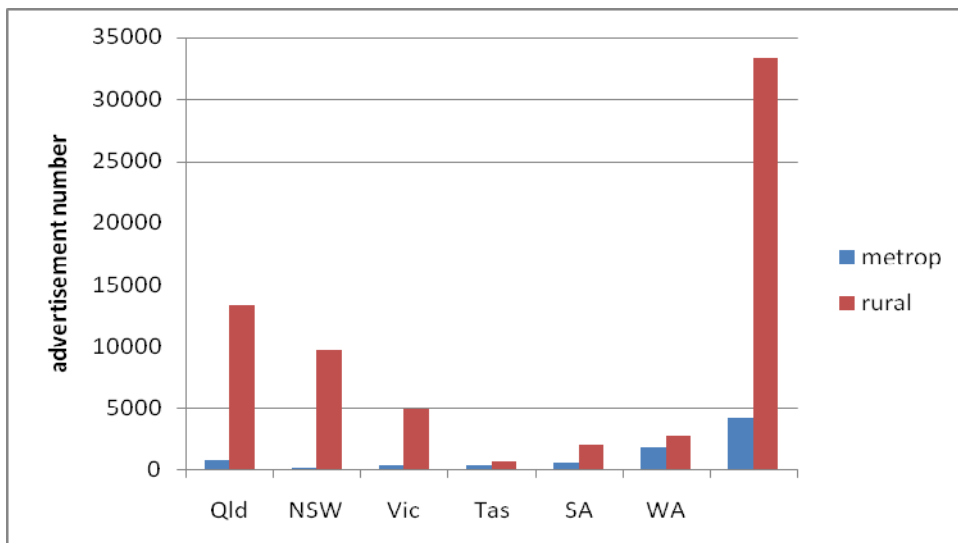
**Figure 10** The job market in the Australian states advertised on the internet and in newspapers for the period April 2006 to March 2009 expressed in quarters of the calendar year

**Newspaper advertisements** The print media continued to be a strong source of advertisements for agricultural jobs despite the increase in importance of the internet. However this importance is relative to the category of newspaper. National newspapers represented only about 2% of the newspaper advertisements and state metropolitan papers carried only 11% of the advertisements. The overwhelming majority were placed in the state-based agricultural newspapers (Figure 11)



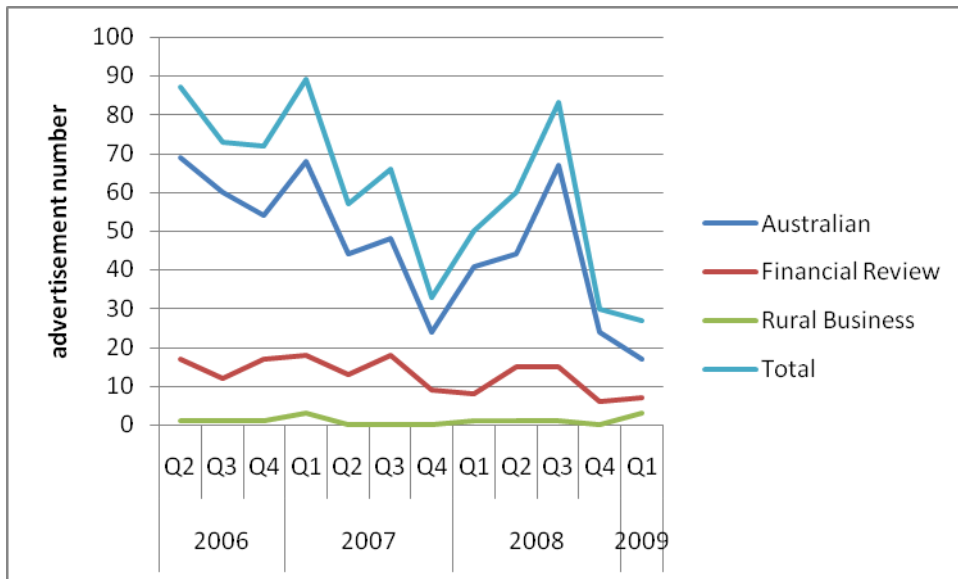
**Figure 11** The number of job advertisements in agriculture in the national, state metropolitan and state rural newspapers for the period 2006-2009

This pattern was consistent among the states (Figure 12) although the metropolitan press was relatively more important in Western Australia (40%), Tasmania (33% or 71% if the Hobart Mercury and Launceston Examiner are considered together as the non-agricultural papers)) and South Australia (23%). In NSW (2%), Queensland (5%) and Victoria (8%) the metropolitan papers were almost irrelevant for the agriculture job market.



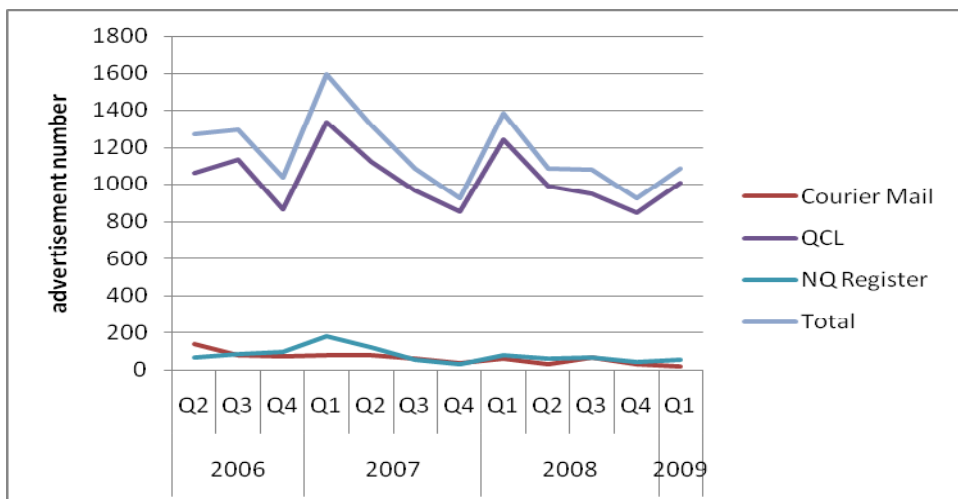
**Figure 12** The number of job advertisements in agriculture in metropolitan and rural newspapers for each state over the period 2006-2009

At the national level, where only 11% of the agriculture newspaper advertisements were placed, The Australian contained around 88% of those advertisements in that category with the Financial Review containing the other 12% of advertisements



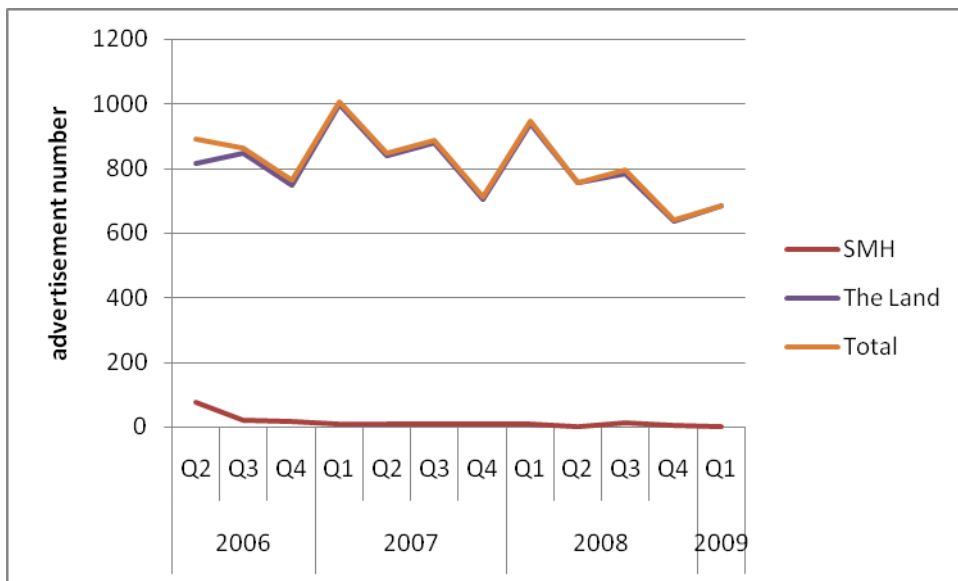
**Figure 13** The number of job advertisements in agriculture in national newspapers over the period 2006-2009

In Queensland, the agricultural newspapers contained over 94% of the agricultural advertisements. The North Queensland Register contained about 7% whilst Queensland Country Life published the vast majority of 88% (Figure 14).



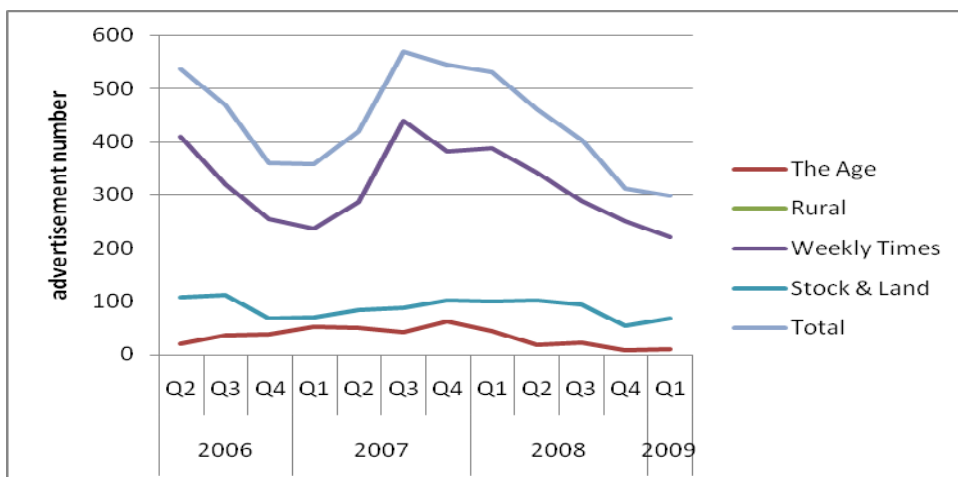
**Figure 14** The number of job advertisements in agriculture in metropolitan (Courier Mail) and rural newspapers in Queensland for the period 2006-2009

In NSW, The Land was the dominant source of newspaper advertisements with 98% of the market. The Sydney Morning Herald was insignificant in providing less than 2%.



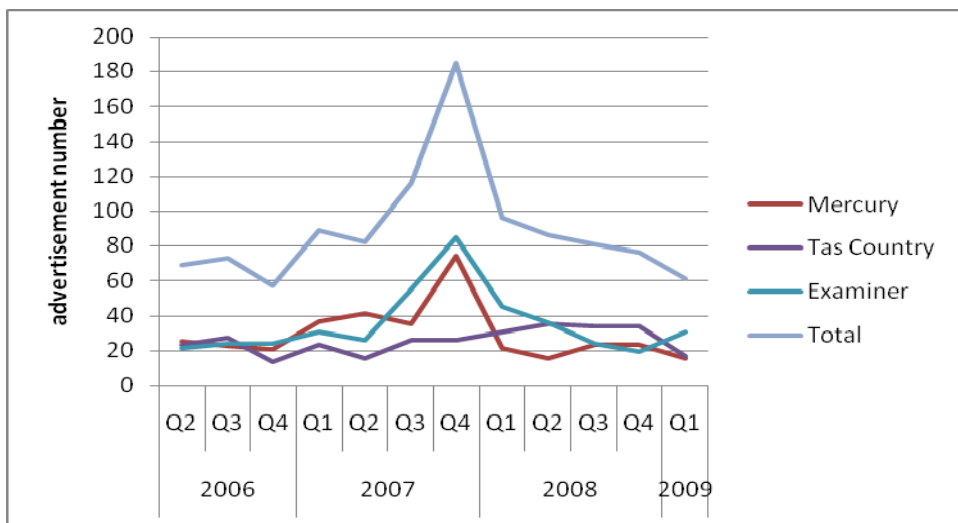
**Figure 15** The number of job advertisements in agriculture in metropolitan (Sydney Morning Herald) and rural newspapers in NSW for the period 2006-2009

In Victoria there are two agricultural newspapers providing job advertisements for the agricultural industry. The Weekly Times provided 73% of the advertisements compared with Stock and Land with 20% (Figure 16). Together they have over 92% of the market making The Age (<8%) was largely irrelevant for this industry.



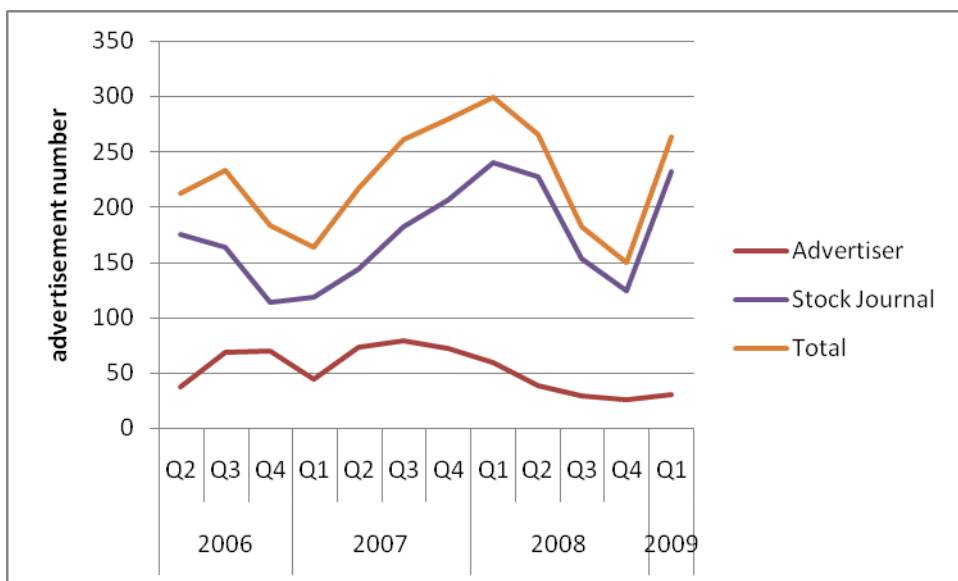
**Figure 16** The number of job advertisements in agriculture in metropolitan (The Age) and rural newspapers in Victoria for the period 2006-2009

In Tasmania three papers share relatively equally the advertising market for agricultural jobs. The Hobart Mercury (33%) as the metropolitan representative has one third of the market whilst the Launceston Examiner has 39%. The agricultural newspaper Tasmanian Country has 28% of the advertisements (Figure 17).



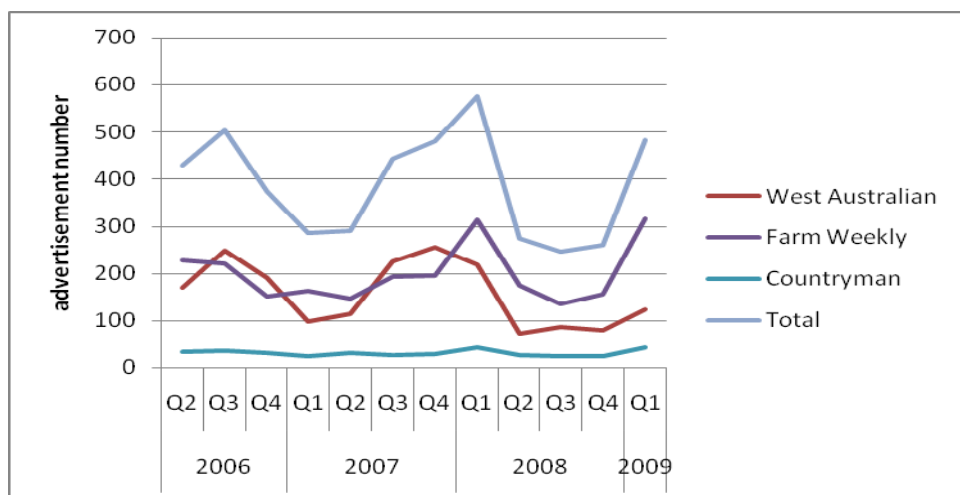
**Figure 17** The number of job advertisements in agriculture in metropolitan (The Mercury) and rural newspapers in Tasmania for the period 2006-2009

In South Australia, the metropolitan press, The Advertiser, provided a relatively high proportion (23%) of the advertisements in that state with 77% being located in the Stock Journal (Figure 18).



**Figure 18** The number of job advertisements in agriculture in metropolitan (Advertiser) and rural newspapers in South Australia for the period 2006-2009

In Western Australia, the West Australian published 40% of the agricultural jobs for the period of study. The most important publisher was the Farm Weekly (52%) with Countryman providing a modest 8% (Figure 19).



**Figure 19** The number of job advertisements in agriculture in metropolitan (West Australian) and rural newspapers in Western Australia for the period 2006-2009

## Discussion

The above analysis represents a study in time of the advertised job market in agriculture during which there was a protracted drought and, towards the end, a global recession. Thus these were not the best of times but there was a robustness about the employment prospects for the industry. After allowing for possible overlap between internet and print advertisements the data indicate that there were around 15,000 discrete jobs available per year during the three year period. A ratio of 3:2 for on-farm jobs to those in agribusiness indicates around 9,000 on-farm and about 6000 jobs in agribusiness. It is recognised that there are many jobs that do not make it to the advertising sources observed in this project. Many are advertised in local newspapers, by word of mouth or are targeted by one company on another's employees. Thus the study represents a conservative estimate of the agricultural job market.

The Productivity Commission (2005) estimated that there were about 320,000 jobs (or about 3% of the workforce) directly involved in production agriculture. If we assume that the average working career in this sector is 20 years, that suggests some 16,000 jobs annually if all are replaced. However many work longer than that and so an average working life on farm of 30 years would deliver around 10,000 to 11,000 jobs which approximates the number of advertisements measured in this study.

Also estimated by the Productivity Commission was the agribusiness component of the employment market at around 300,000. A similar calculation of a 20 year career would suggest around 15,000 available jobs per year. In this case however the career span is likely to be shorter than longer as such people are more likely to have several careers in their lifetime. The estimate is thus well above the 6000 or so shown in this survey.

It would be increasingly expected that some formal qualifications would be an advantage for appointment for agribusiness positions. Thus VET qualifications would probably suffice for farm machinery, some merchandise positions and perhaps dairy and feedlot employment, whereas most of the remainder would most likely indicate the requirement, or at least the desirability, of a degree.

Based on the data in this study this would represent a potential of around 4200 (or 70% of agribusiness jobs) where tertiary qualifications might be encouraged. To this would be added the proportion of production jobs which require managerial expertise. If these were 20% of the advertisements then a further 1800 might be advantaged by having a degree making a potential demand of around 6000 graduates per year. The study by the Australian Council of Deans of Agriculture (ACDA) in 2008 indicated that at best the Australian universities were graduating fewer than 800 per year in agriculture and related courses for an estimated job market of more than 2200 per year (Pratley and Copeland, 2008). This was based on 7% of the workforce having a degree, a situation way below the rest of the population at 22%. The estimate of 6000 in this study is nearly thrice that of the ACDA and would bring the graduate percentage much closer to the community standard but still significantly below it.

This study provides clear evidence that the internet is increasing in importance as a vehicle for advertising jobs. This is facilitated by the widespread availability of computers in Australian society, the number of specialised websites for agricultural jobs, the timeliness of advertising on the web and the relatively cheaper cost of advertising including over an extended time period. It is intriguing that on-farm jobs continue to be concentrated in print media, suggesting that the targeted demographic are not considered to be computer literate and/or do not have ready access to computers or that the employers are not comfortable with use of the technology at this time. The discrepancies between states in their use of the internet are also interesting. The high rate of internet usage in South Australia relative to other states is difficult to explain although unlike other states, a high proportion of positions are likely to be based in Adelaide and surrounds where computer coverage is not problematic. This is reinforced by the relatively high proportion of newspaper advertisements in the metropolitan press, a trend also evident in Western Australia and Tasmania.

Government workforce projections have been largely based on the level of advertisements in the metropolitan press, particularly the Sydney Morning Herald and The Age. This study shows that such an approach has little relevance to the job market as represented by the pattern of advertisements. Clearly the state-based agriculture papers are much more likely to contain advertisements for agricultural jobs except in South Australia and Western Australia where the job market is much more closely aligned with the capital city in those states. In Tasmania the influence of the capital city is diluted by the influence of Launceston and the relatively small distances involved.

The data overall show that the opportunities for a career on agriculture are strong, both in agribusiness and in production and are substantially in excess of most workforce projections. Such opportunities are greater in Queensland, NSW and Victoria probably reflecting the greater diversity of employment and the greater concentration of agribusiness headquarters in these states.

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Productivity Commission 2005, 'Trends in Australian Agriculture', Research Paper, Canberra.

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