

A decadal assessment of farm performance: any learnings?

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KEY MESSAGES

The financial and productivity performance of a group of 242 farms over the period 2002 to 2011 has been analysed. All farms increased their wealth, yet most eroded their percentage equity and now carry more debt. We devised a classification for the businesses that accounted for the volatility of their performance over the decade. Most farms were classed as 'growing' or 'strong'. Only 13% of farms were 'less secure'. In spite of the period being warmer and drier, it was not the high rainfall region that recorded the highest proportion of farms that are growing. Rather the northern moderate rainfall zone, comprised mostly of crop specialists, displayed the highest proportion of farms that are 'growing'. On average the farms in all performance categories increased their crop area from 2002 to 2011. The downside to increased cropping, however, is the increase in profit volatility which can increase risk exposure. 'Growing' farms when compared to the less secure farms tend to have the following key differences. 'Growing' farms are larger, generate a higher rate of return to capital and equity, carry less debt per hectare, are slightly more crop dominant, have higher personal and machinery replacement expenses yet similar debt repayments, have a much lower debt to income ratio, have slightly higher equity in percentage terms, generate similar livestock income per hectare but much higher crop income per hectare and overall generate much higher profits. Growing farms have on average (i) adopted more cropping management innovations over the last decade and continue to use them, (ii) made greater use of leasing, contractors, superannuation funds, succession planning, Farm Management Deposits and off-farm assets, (iii) adopted and made greater use of farm business software, marketing strategies, decision support tools, precision ag technology, electronic paddock recording and GPS technology, (iv) have a greater quality of commitment to the maintenance of their cropping gear, and (v), have greater involvement in their local community and express more care regarding their work-life balance.

INTRODUCTION

Gaining a deeper understanding of farm performance is not a simple task. A range of metrics is available, yet variation in seasons, prices and costs when combined with the wide array of technologies, enterprise options and family-settings makes discerning useful strategies and tactics often a difficult task. Yet improving farm business performance is obviously a desirable goal if growth and survival of farm businesses are viewed as important.

Developing business strategies is potentially useful to guide thinking and farm management, but usually the correct decisions are only known in hindsight. Farm management consultants and technical advisers operate in challenging environments where future seasonal conditions and future market prices of main commodities are not known, yet advice over many production decisions still needs to be provided. In the uncertain and changeable environment that WA farm businesses operate in, how have they fared over the last decade?

AIMS

This paper reports research that has aimed to deepen our understanding about farm business performance in a period of warming and drying. Are there particular trends and strategies in farm management that have served farmers well or poorly? Do successful farm businesses display particular management traits? These are the sorts of questions addressed in this research.

METHOD

Data describing the farm businesses in WA agricultural region were supplied by three agricultural consulting firms. Farm business records of 249 farms were obtained for the period 2002 to 2011, with farms being selected from a majority of the region's agro-ecological zones. The longitudinal datasets described the farm production and financial records of each farm over the decade. Because each consultancy firm provided different sets of physical and financial variables, and some variables are measured differently by each firm, care was

taken to form a consistent unified dataset that resulted in 242 usable farm business records. The sample size in the main zones represents around 15 percent of the farm population in those zones. However, since the data come from farms sufficiently viable to afford agricultural consultants, they may not necessarily be truly representative of the wider farming community in each zone. The data may be upwardly biased if only above average farmers use consulting firms. Farms that exited during the period did not form part of the decadal sample.

Following a methodology outlined by O'Donnell (2010, 2011&2012) we estimated each farm's annual productivity and also decomposed that productivity into its various components. The productivity findings are not reported here. However, an analysis of farm profitability is reported. We formed five categories of farm business performance, based on Blackburn and Ashby (1995), that caused farms to be classed as growing, strong, secure, less secure and non-viable.

The derivation of these categories is shown in Table 1. The operating surplus/deficit is calculated as gross farm income (GFI) minus variable costs and fixed costs. Profit for each year is calculated by subtracting the cost of finance (interest), personal expenses of the business and depreciation (calculated as 10% of total machinery value for the year), from the operating surplus. The change in equity was calculated as the difference between value of net assets in 2002 versus their value in 2011, using constant land values based on the values in the first year, 2002. A business which achieved a profit at least seven years in ten and showed an increase in equity from 2002 to 2011 was classified as a growing business. The distinction between a growing and strong business was that the strong business only maintained equity and achieved a profit in six of the ten years. Secure businesses could pay for their personal expenses, finance costs and depreciation but they made minimal profit and their equity was either maintained at a constant level or decreased over the period. Less secure businesses failed to achieve a profit after allowing for their finance cost, depreciation and unpaid family labour; and their equity declined as a consequence.

Table 1. Categories of farm performance

	Growing	Strong	Secure	Less Secure	Non viable
Operating surplus	✓	✓	✓	✓	
MINUS					
Finance (interest)	✓	✓	✓	✓	
Personal expenses	✓	✓	✓	✓	
Depreciation	✓	✓	✓		
EQUALs Profit	+ve	+ve	-ve	-ve	-ve
EQUITY	Increasing	Maintaining	Maintaining or Declining	Declining	Declining

Complementing the physical and financial datasets of farm businesses were socio-economic and managerial data. These were client questionnaire assessments provided by the consultants. Many different aspects of farm management were examined through a range of questions. The questionnaire was pilot-tested. In order to preserve client confidentiality this socio-managerial data is not available for public release and only some initial aggregated findings are provided.

RESULTS

The sample of farms comprised farms with the following enterprise configurations (Figure 1). Crop specialists had more than 80% of the farm used for cropping. Mixed enterprise farms had from 40 to 80% of their farm used for cropping, and livestock specialists had less than 40% of their farm area used for crop. The majority of the sample population were mixed enterprise farms (72%).

When all farms were categorised using the five categories outlined in Table 1, 64% of the sample farms were classed as growing or strong (Figure 2). There were 23% classified as secure and only 13% were in the less secure category. Although some farms experienced bad years during the period where they did not achieve an operating surplus, none of the farms in the sample was categorised as non-viable. This last result is an artefact of the data source where we

required a decade's worth of observations on each farm business, and so necessarily excluded businesses that were unviable and who left farming during the study period.

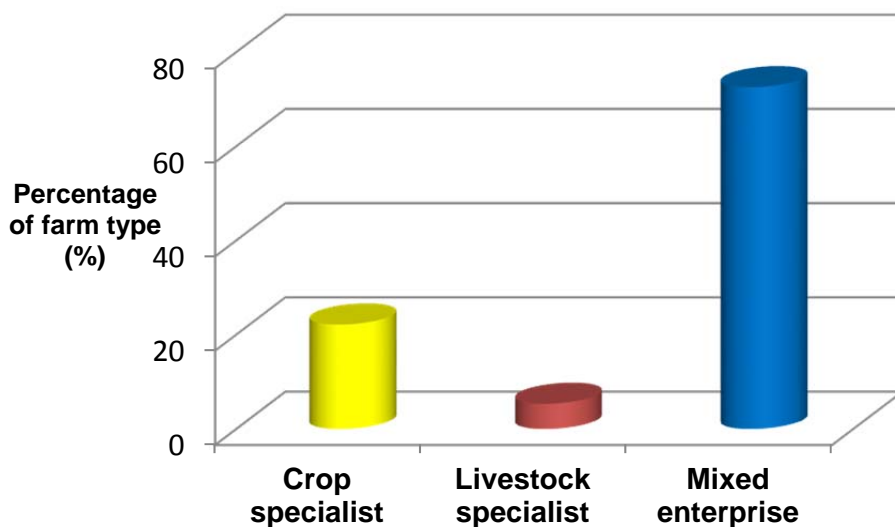


Figure 1. Proportion of farms by enterprise dominance

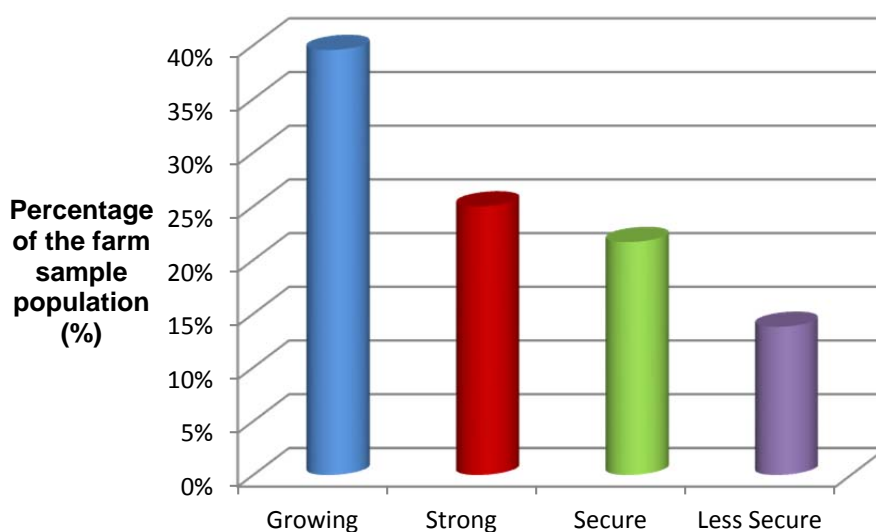


Figure 2. Farms by performance category

When farms were further categorised on the basis of farm type and performance category we found that all three types of farms contained growing businesses but a higher proportion of crop specialists were growing and a higher proportion of farms in this enterprise category were also less secure. This indicates there is additional risk in specialising in a crop dominant production system.

Livestock specialists were more likely to be categorised in a secure financial position (38%), and less of them were categorised as either less secure (8%) or growing or strong. By contrast, 70% of the crop specialists and 63% of the mixed farms were classed as strong or growing. These findings reflect the lower average profitability but also the lower volatility of a livestock dominant production system.

The mixed farms were the largest group (72%) of the sample population and had the highest proportion of less secure businesses (16%) than either the crop specialists (10%) or the livestock specialists (8%). However, the majority of these businesses (63%) were either growing or strong and 37% were categorised as secure or less secure. Only 8% of livestock specialists were classified as less secure but a large proportion are only managing to maintain their equity levels and so are considered to be secure.

Interestingly, in spite of the period 2002 to 2011 being a period of warmer and drier climate, it was not the high rainfall region that recorded the highest proportions of farms that were growing. Rather it was the northern moderate rainfall zone comprising mostly of crop specialists which displayed the highest proportions of farms that have grown, suggesting that the farm managers who increased crop area were also able to grow their business. Further investigation of the data shows this to be the case. On average the farms in all four performance groups increased their crop area from 2002 to 2012. Farm averages over the period for each performance group are listed in Table 2.

Table 2. Characteristics of farms in the four categories of farm performance.

		Growing	Strong	Secure	Less secure
	Unit				
Gross farm income	\$	1,577,486	1,204,430	1,070,855	791,490
Operating costs	\$	996,072	808,160	730,798	594,360
Operating surplus	\$	581,414	396,270	340,057	197,130
Profit	\$	273,090	138,128	114,573	- 43,983
Personal Expenses	\$	111,752	105,847	83,202	84,701
Interest payments	\$	81,477	52,699	58,261	81,524
Machinery replacement	\$	115,259	99,596	84,021	74,439
Debt to income ratio	no.	0.99	1.05	1.35	1.64
Operating expenses as a % of gross farm income	%	69.5	73.1	79.3	91.9
Land owned	ha	3,875	3,422	3,093	2,739
Land operated	ha	3,935	3,502	3,269	2,660
Land value	\$	4,685,816	4,496,043	3,557,352	3,276,747
Farm assets	\$	6,987,197	6,202,225	4,864,321	4,608,275
Business assets	\$	7,717,971	7,048,667	5,356,378	4,985,611
Liability	\$	1,417,091	1,193,862	1,389,985	1,213,838
Equity	\$	6,431,107	5,743,213	3,963,110	3,749,779
Equity as a %	%	82.4	82.2	75.6	76.7
Crop area	ha	2,826	2,313	2,188	1,770
Pasture area	ha	1,110	1,190	1,081	890
Crop Income as % of farm income	%	80	77	76	74
Crop income per ha	\$/ha	464	427	403	379
Livestock income per ha	\$/ha	250	201	295	255
Farm asset value per ha	\$/ha	1,853	1,963	1,646	2,040
Business asset value per ha	\$/ha	2,054	2,194	1,815	2,200
Debt per ha	\$/ha	375	393	429	515
Equity per ha	\$/ha	1,709	1,768	1,376	1,677
Return on capital	%	5	3	4	-1
Return on equity	%	11	8	10	6
Growing season rainfall	mm	253	249	242	240

There is little difference in the mean values of growing season rainfall between the farm performance groups. The growing farms when compared to the less secure farms tend to have the following key differences. Growing farms are larger, generate a higher rate of return to capital and equity, carry less debt per hectare, are slightly more crop dominant, have higher personal and machinery replacement expenses yet similar debt repayments, have a much lower debt to income ratio, have slightly higher equity in percentage terms, generate similar livestock income per hectare but much higher crop income per hectare and overall generate much higher profits. There are other managerial differences between the farm performance groups as shown in Table 3.

Table 3. Management characteristics of farms grouped by performance

	Unit	Growing	Strong	Secure	Less Secure
No. of cropping innovations continuing to be used if adopted during the last 10 years	no.	8.2	7.7	7.5	7.4
Use of leasing, contractors, super funds, succession planning, FMDs, off-farm assets ¹	no.	4.0	3.6	3.4	3.0
Use of farm business software, marketing strategies, decision support tools, precision ag technology, electronic paddock recording, GPS technology ¹	no.	3.7	3.5	3.5	3.3
Current average age of primary male	yr	50.5	50.8	45.0	50.5
Quality of care for cropping gear ¹	no.	22.4	20.6	20.7	19.3
Community involvement and personal care ¹	no.	20.7	20.1	19.0	18.2

¹ The unit of measurement was the average score for farms in each performance group. A Likert scale (1 to 5) was used to assess the frequency of use of each particular aspect of farm management (e.g. use of leasing, use of GPS technology) by each farm business. Scores were summed and then averaged across the group of farms in each performance category.

An assessment of the statistical significance of the differences between the farm performance groups in Table 3 is not presented here to economise on space. However, the key statistically significant differences for growing farms compared to less secure farms are as follows. Growing farms have on average:

- (i) adopted more cropping management innovations over the last decade and continued to use them.
- (ii) made greater use of leasing, contractors, superannuation funds, succession planning, Farm Management Deposits and off-farm assets.
- (iii) adopted and made greater use of farm business software, marketing strategies, decision support tools, precision ag technology, electronic paddock recording and GPS technology.
- (v) a greater quality of commitment to the maintenance of their cropping gear.
- (vii) expressed greater involvement in their local community and expressed more care regarding their work-life balance.

CONCLUSION

This study of the performance of 242 broadacre farms in WA from 2002 to 2011 found that the majority of these farms reduced their equity in percentage terms over the 10 years, but farm equity in dollar terms improved. Most farms had starting equities greater than 80 per cent. In short, in spite of the drying and warming trend experienced across WA's agricultural region, overlain with weather-year and market volatility, most farmers improved their farm business wealth yet also increased their debt.

Farmers' increased dependence on wheat-growing as a principal source of farm income appears to have been a sensible and profitable adaptation strategy in many cases. Moreover, the biological prospects for wheat yield in the study region generally appear very sound in the face of projected climate change (Potgieter et al., 2012). Most farm businesses, especially growing and strong businesses, expanded the size of their farm operations through land purchase or lease and increased the crop dominance of their farming systems. These farmers, and most particularly those responsible for growing farm businesses, displayed a range of managerial and social characteristics that have enhanced the productivity and profitability of their farm businesses during a period of challenging environmental and market conditions.

KEY WORDS

Farm performance, management

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