



AUSTRALIAN AGRIBUSINESS GROUP

DOES AGRIBUSINESS IMPROVE PORTFOLIO PERFORMANCE? :

An analysis and discussion of the impact of agribusiness in a portfolio

UPDATE

Executive Summary

- Investors in Australia have traditionally overlooked and underinvested in agribusiness because of perceptions of high risk and poor returns. This paper investigates these perceptions and demonstrates that quite the reverse is true.
- 26 years of data for Australian shares, Australian cash, Australian 10-year bonds, Australian listed property trusts, international shares and international bonds were compared against agribusiness as an investment.
- The Top 25% of agribusiness can produce returns better than the All Ordinaries.
- Returns from Top Agribusiness are substantially less volatile than the All Ordinaries.
- Agribusiness is negatively correlated to other asset classes.
- The addition of agribusiness to a portfolio can increase returns and substantially reduce volatility.
- Well managed agribusiness is a sensible choice when considering diversification for a portfolio.

1. Introduction

Diversification is one of the fundamental strategies for risk management in an investment portfolio.

Some examples of common levels of diversification include:

- *Between securities* i.e. between listed equities, bonds or cash;
- *Within securities* i.e. investing in multiple listed equities; and
- *Between industries* i.e. mining and materials.

Most investors would be very familiar with all of these methods of diversification. On the ASX there are indices to measure the performance of listed equities in different industries/sectors such as the Utilities, Energy, Health Care, Materials, Financials and Industrials.

Past media reporting of droughts, floods and natural disasters has produced an overwhelmingly negative attitude towards agribusiness as an investment class.

This paper answers the question: *Does Agribusiness Improve Portfolio Performance?* We will look at how agribusiness performs and the impact of its inclusion in portfolios.

We define Agribusiness as professionally managed, shareholder focused farming operations.

This paper is an update to the paper AAG released in 2004/05 which substantially expanded on a seminal research paper written by Michael Carroll, past General Manager Agribusiness, National Australia Bank ⁵.

AAG's paper uses a longer time series and extends the research into the impact of agribusiness on an investor's portfolio. While in 2004/05 AAG looked at the impact of agribusiness on a portfolio of ASX shares, this paper in 2006/07 goes further and includes an analysis of the impact of agribusiness on a balanced portfolio of mixed assets.

2. Data Sources

AAG accessed data from several sources including:

- Standard and Poor's – historical All Ordinaries Price and Accumulation indices data and Listed Property Trust Price and Accumulation indices data ¹;
- Reserve Bank of Australia – historical cash rates ²;
- Australian Bureau of Agricultural and Resource Economics (ABARE) – farm surveys data for average farms and the Top 25% of farms ³; and
- Wren Research Investment Advisers – Australian 10-Year and USA Treasury Bond data and MSCI World (ex Australia) price and accumulation data ⁴.

The information provided by each of these organisations was time series data. While some of it extended for 29 years, we used the longest time period that was common to all data sets – 1980/81 to 2005/06 – providing 26 years of data.

An issue arose when AAG obtained the ABARE farm surveys data directly from ABARE in that it did not match the data provided for the previous analysis. Despite an extensive search of several weeks, ABARE was unable to find the exact data they had previously provided which AAG used in the 04/05 report. Therefore the data used in this current report is slightly different to that used in the previous report.

The ABARE data used in this paper is for broadacre farming operations such as cropping, dairy and cattle. As there is limited time series data on other industries such as horticulture we have used the data for demonstration of the performance of agribusiness in general.

ABARE splits the data into average farms and top 25% and bottom 25% by financial performance. We have only considered average and top agribusiness in this paper.

Industries like horticulture are likely to deliver greater returns than broadacre farming. For the Top 25% of horticulture operators, volatility of returns would be unlikely to differ substantially from the data used in this paper.

The methodology used is explained throughout this report.

3. How has Agribusiness Performed Over the Period?

Overall returns are derived from two sources – through capital growth and through dividends or operational income.

A price index, such as the All Ordinaries Index, is a measure of changes in the underlying capital value.

An accumulation index is a total returns index, taking into account both capital growth and annual distributions. Accumulation indices assume the dividends are reinvested back into the underlying assets.

Returns from Agribusiness Property reflect the capital growth component of particular agribusiness investments and could be compared to a Price Index. When you add to that the income or dividends from farming operations, an accumulation index or total returns index is created.

Throughout this report the Top 25% of Agribusiness means an accumulation index of the 25% best performing farms as measured by ABARE. Given that there are a substantial number of farms that are not run on commercial lines we have used the Top 25% of performers as a measure of the commercial operations in broadacre agribusiness.

We have also included information on the accumulation index for Average Farms as measured by ABARE.

For the sake of this paper, we have assumed that the dividends from farming operations are reinvested in the underlying capital (property), but in reality this cannot practically occur.

We have used the annual returns data to assess the growth in value of \$1,000 from 1 July 1980 to 30 June 2006 and to produce an index for each asset class. We then calculated a Compound Annual Growth Rate (CAGR) for each asset class. A CAGR is the percent return required to reach the 2006 income figures when the dividends are reinvested. This differs to the average rate of return, which is simply the arithmetic mean of the annual returns.

The growth in the \$1,000 for each asset class is illustrated in Figure 1.

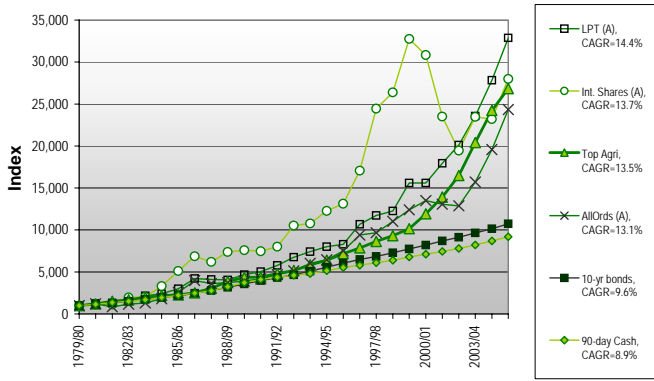


Figure 1 Chart showing the growth of \$1,000 from 1 July 1980 to 30 June 2006 if invested in the various asset classes (CAGR=Compound Annual Growth Rate, (A) = Accumulation Index)

Over the 26 year period listed property (LPT A) would have returned \$32,873, a compound annual return (CAGR) of 14.4%.

International Shares came in second with \$27,989 (CAGR=13.7%).

Top Agribusiness was third with \$26,852 or 13.5%.

Australian shares (\$24,339 or 13.1%) followed next.

Agri property (the capital component of Top Agribusiness) produced \$9,647 representing a CAGR of 9.1%.

By comparison to other major asset classes, Top Agribusiness has certainly performed well.

The other side to the returns equation is at what level of risk or volatility were these returns achieved.

AAG Comment – The Top 25% of agribusiness can produce returns better than the All Ordinaries (accumulation index).

4. What is the Volatility of Agribusiness Compared to Other Assets?

The simple philosophy of “don’t put all your eggs in one basket” is why an investor wouldn’t just invest in the highest returning asset class.

This concept is borne out by the following chart (Figure 2) where we see that each of the three example asset classes has a different level of volatility. While listed property produces a higher return, the chart shows that it is more volatile than Top Agribusiness, and this is why an investor should consider assets other than the highest returning asset classes.

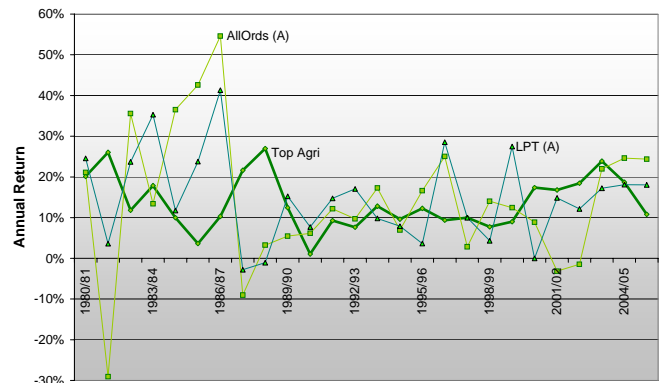


Figure 2 Chart showing the annual returns and volatility of All Ordinaries, LPT and Top Agribusiness accumulation returns

Visually it is evident that top agribusiness is substantially less volatile than the returns from each of listed property trusts and Australian shares (Figure 2).

The *standard deviation* of returns is a measure of “dispersion of a set of data from the mean” ⁶, in other words it is a measure of volatility or risk. It is a way of quantifying the volatility we see in Figure 2.

We have plotted the standard deviation of each asset class against the compound annual returns of each in Figure 3. This chart brings together the concepts of returns and risk as previously discussed. Figure 3 shows that while listed property received slightly higher returns than Top Agribusiness over the period it was with greater volatility.



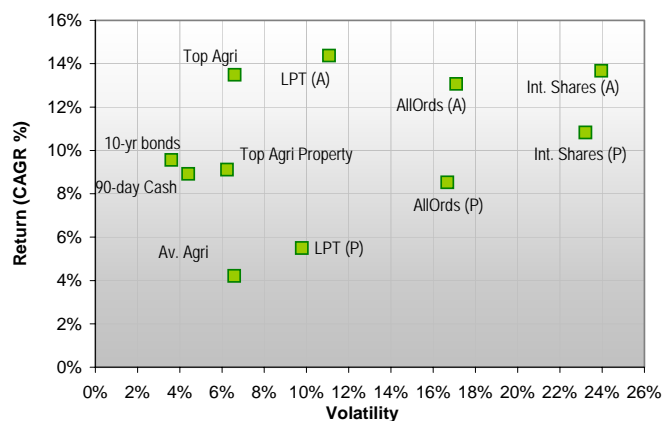


Figure 3 Chart showing the Compound Annual Growth Rate for each asset class versus the risk (standard deviation of returns). Note: (A) = Accumulation Index, (P) = Price Index.

Over this period, an investor may have chosen to forgo some returns for greater certainty of returns and invest in Top Agribusiness. An investor certainly should have considered investing in Top Agribusiness over All Ordinaries shares based on the risk/return profile seen in the chart (Figure 3).

AAG Comment – Returns from Top Agribusiness are substantially less volatile than the Australian listed equities.

5. Is Agribusiness Correlated to Other Asset Classes?

A correlation analysis was performed on the returns data for each asset class. The results are outlined in Table 1.

Correlation analysis assists us to decide which asset classes are related and to what extent.

A correlation value of 1 demonstrates that two particular asset classes are exactly linked – i.e. returns move exactly together – and a value of close to 1 means a strong correlation.

Low correlation between two assets means that the extent of returns from each is weakly related.

A positive correlation value means that when returns for one asset class increases, returns for the other tend to increase, while a negative correlation value means that when returns for one asset class increase, returns for the other tend to decrease. Negatively correlated assets are useful for inclusion in investment portfolios because they help to smooth returns to the portfolio as a whole.

It is not surprising that Top Agribusiness, Average Agribusiness and Agribusiness Property are very strongly correlated. As the All Ordinaries Price Index is a subset of the All Ordinaries Accumulation Index they too show a strong correlation (Table 1). This also holds true for the price and accumulation indices for Listed Property Trusts.

Cash and bonds are also very strongly correlated. The

All Ordinaries Indices show no correlation to cash or bonds. Agribusiness shows negative correlation to the international shares, Australian shares, listed property and international fixed interest. It is very weakly positively correlated to Australian bonds and cash.

The extent to which risks can be diversified depends on the degree to which assets are correlated ⁸.

Incorporating two asset classes into a portfolio that are negatively correlated will help to smooth out returns to the portfolio as a whole.

This smoothing occurs as each asset class has different levels of risk and return and so each behaves differently over time ⁶.

AAG Comment – Agribusiness is negatively correlated to other asset classes.

	Av. Agri	Top Agri	Top Agri Property	AllOrds (P)	AllOrds (A)	10-yr bonds	90-day Cash	LPT (P)	LPT (A)	Int. Shares (P)	Int. Shares (A)	Int (USA) 10 yr Bonds
Av. Agri	1											
Top Agri	0.89	1										
Top Agri Property	0.82	0.97	1									
AllOrds (P)	-0.32	-0.44	-0.41	1								
AllOrds (A)	-0.33	-0.44	-0.40	1.00	1							
10-yr bonds	0.08	0.15	0.14	0.03	0.05	1						
90-day Cash	0.16	0.28	0.27	-0.03	-0.01	0.94	1					
LPT (P)	-0.09	-0.21	-0.21	0.68	0.67	0.04	-0.01	1				
LPT (A)	-0.15	-0.26	-0.24	0.64	0.64	0.09	0.03	0.97	1			
Int. Shares (P)	-0.27	-0.40	-0.35	0.65	0.66	0.25	0.22	0.33	0.37	1		
Int. Shares (A)	-0.25	-0.39	-0.33	0.64	0.66	0.28	0.25	0.34	0.38	1.00	1	
Int (USA) 10 yr Bonds	-0.01	-0.09	-0.07	0.03	0.05	0.39	0.40	-0.02	0.01	0.60	0.61	1

6. How Does Agribusiness Impact on a Portfolio?

To determine the impact of the inclusion of agribusiness assets in a portfolio, we designed a set of very basic portfolios.

The portfolios invested in Top Agribusiness and All Ordinaries shares. We changed the proportion of agribusiness in the portfolio from 0% to 100% and assumed a rebalancing of the portfolio each year to the relevant weighting of agribusiness.

When a negatively correlated asset is included in a portfolio, one could expect the volatility of returns to decrease as outlined in Section 5. This is what occurred in our portfolio analysis (Figure 4).

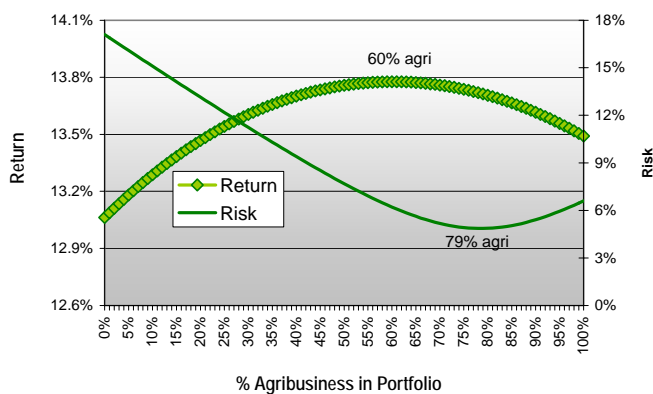


Figure 4 Chart showing the impact on portfolio risk and return with the addition of Top Agribusiness

Over the period of analysis the highest return would have been generated by the inclusion of 60% agribusiness in the portfolio. The lowest risk (volatility) would have been generated with 79% agribusiness in the portfolio (Figure 4).

When each of the portfolios' return and volatility are plotted against each other, rather than in a line (as per Figure 4), we see the same pattern illustrated slightly differently (Figure 5).

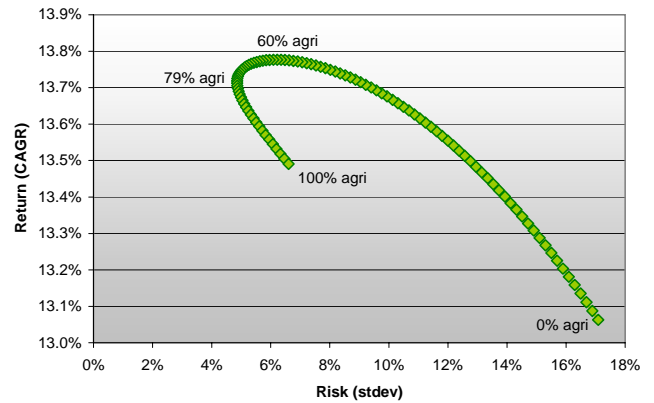


Figure 5 Chart showing the impact of the addition of agribusiness in a portfolio of All Ordinaries shares (note: the y-axis scale is truncated)

Each point plotted in Figure 5 is a portfolio with a relevant percentage of agribusiness included. Note that the scale on the y-axis is much narrower than the x-axis. This was necessary to display the chart clearly and show that the inclusion of agribusiness in a portfolio has a much greater impact on risks than returns. That is, despite the common misconception that agribusiness is risky, the inclusion of Top Agribusiness assets can very quickly help to reduce risks in a portfolio.

The portfolio analysis above is a very simple one for the sake of demonstration. Most portfolios would include more than just All Ordinaries index shares.

To determine the impact of the inclusion of agribusiness assets in a more balanced portfolio, we used the balanced portfolio asset allocations provided by Horwath Financial Services (HFS) as a start point for our analysis (Table 2).

The HFS portfolio included alternatives which is where HFS includes agribusiness. We stripped these out and adjusted the weightings of the other assets for when alternatives were not included. This provided our *base portfolio*.

Table 2 - Base Portfolios Used in the Analysis		
	HFS	Adjusted Base Portfolio
Alternatives	7.5%	
Cash	7.5%	8.1%
Aus Fixed Interest	10.0%	10.8%
Int'l Fixed Interest	5.0%	5.4%
Int'l Equities	25.0%	27.0%
Aus Property	10.0%	10.8%
Aus Equities	35.0%	37.8%

From the *base portfolio* we added top agribusiness investments and then re-weighted the other assets in proportion to the *Base Portfolio*. We assumed a rebalancing of the portfolio each year to the relevant weighting of agribusiness.

The impact of including agribusiness in the portfolio is illustrated in Figure 6 where a very similar pattern to that seen in Figure 4 is achieved. Again it is clear that agribusiness can increase returns and lower risks (to a point).

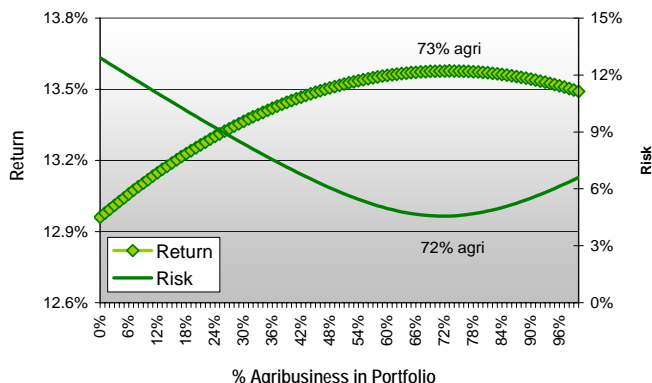


Figure 6 Chart showing the impact on return and risk through the addition of agribusiness to a balanced portfolio.

When each of the portfolios' returns and volatility are plotted against each other, rather than in a line (as per Figure 6), we see a similar pattern emerge in Figure 7 in a balanced portfolio as we did in Figure 5 for the agribusiness and All Ordinaries portfolio alone.

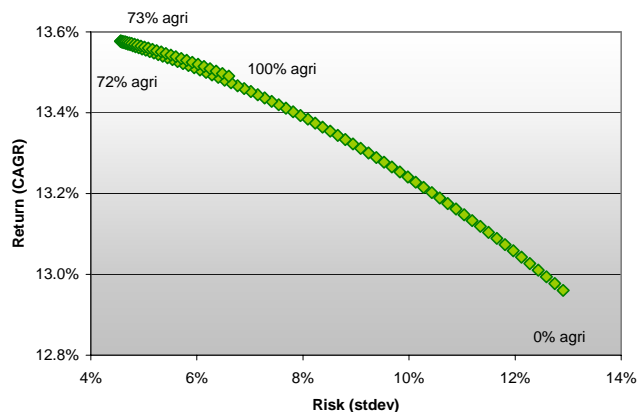


Figure 7 Chart showing the impact of the addition of agribusiness in a portfolio of All Ordinaries shares (note: the y-axis scale is truncated)

The balanced portfolio analysis shows that the addition of agribusiness has a slightly larger impact on returns than it did in the simpler portfolio of just agribusiness and All Ordinaries shares. Again, the most noticeable impact is the substantial reduction in volatility through the addition of agribusiness assets.

An often discussed, agribusiness weighting for portfolios is between 0% and 10%, and while the analysis in this paper is theoretical, it does challenge this limited weighting. While we are not suggesting investors should have 60-70% agribusiness in their portfolio, we are suggesting a heavier weighting of agribusiness should be considered than has been the traditional view.

AAG Comment – The addition of agribusiness to a portfolio can improve returns and significantly reduce risk and contrary to popular opinion, a heavy weighting of agribusiness is where the higher return and lower risk scenario is achieved.

7. Conclusions

Historically agribusiness has often been overlooked as an investment option.

The perception of agribusiness by the general public is that it is risky and does not produce good returns.

Past media reporting of droughts, floods and natural disasters as well as reporting of specific sectors that are struggling to perform has produced an overwhelmingly negative attitude towards agribusiness investments.

The successful performers in agribusiness do not gain nearly as much attention as those that are underperforming. There is a significant differentiation between Average Farms which do not produce attractive returns and the Top 25% of farms which have historically produced higher returns than the All Ordinaries, and with much less volatility.

There is a lack of quality data available on returns for agribusiness assets in Australia and until now, there has been limited analysis of what data is available. This combined with the perceptions about agribusiness have meant that investors have generally overlooked agribusiness.

The fact is that well managed agribusiness can produce returns on a par with the All Ordinaries yet returns from Top Agribusinesses are substantially less volatile.

Agribusiness is negatively correlated to other asset classes and the addition of agribusiness to a portfolio can substantially reduce volatility and improve returns.

Agribusiness does improve portfolio performance and should be considered as part of a well managed and diversified portfolio.

8. References

1. Standard and Poor's – www.standardandpoors.com.au
2. Reserve Bank of Australia – www.rba.gov.au
3. Australian Bureau of Agricultural and Resource Economics (ABARE) – farm surveys data 1980-81 to 2002-2003.
4. Wren Research Investment Advisers – www.wrenresearch.com.au
5. Carroll, M. 2003. *Farm performance from a wealth creation perspective*. (Michael Carroll is Head of Agribusiness, National Australia Bank).
6. Investopedia – www.investopedia.com
7. Elton, J, Gruber, M, Brown, S and Groetzmann, W 2003. *Modern Portfolio Theory & Investment Analysis*. John Wiley & Sons Inc, USA
8. Hunter, J and Coggin, T 1990 "An analysis of the diversification benefit from international equity investment". *Journal of Portfolio Management*, 17:1 pp33.
9. Strong, R 2000. *Portfolio Construction, Management & Protection*. South-Western College Publishing, USA



9. About the Author and Contact Details

The Australian Agribusiness Group was formed in 1997 and provides expertise in research, investment management and agribusiness consulting nationally.

AAG is the leading provider of research into the Managed Investments Sector (MIS) in Australia. It's research is read by over 9,100 financial planners and is distributed by Standard & Poors.

AAG sources and manages investments in the Australian agribusiness sector on behalf of national and international clients.

AAG undertakes research reports, feasibility studies, consulting projects and assists in facilitating funding for private and public clients. It provides the management skills, expertise, staff and office support to develop, incubate and launch new agribusinesses.

AAG focuses on agribusiness and particularly the commercial aspects of this dynamic sector.

For more information about AAG, please visit our website at www.ausagrigrp.com.au.

10. Conditions of Use of this Report

This report is copyright to AAG 2007. It may not be used, distributed or reproduced without the express prior written permission of AAG.

Disclaimer

This document has been prepared for use by Financial Planners. Australian Agribusiness Group (AAG) has received no fee for undertaking this report but we may distribute the report to interested readers for a fee. AAG notes that this report is for information purposes only; it does not constitute stand-alone advice. The user must undertake their own research prior to any investment decision and such investment decision is made entirely on the recognisance of the investor. This report is not a warranty, express or implied, of any outcome. AAG makes every reasonable effort to ensure that this report is accurate and reasonably reflects the facts. Information is sourced from industry experts, private and public sector research, public domain sources and the web, as well as from the substantial in-house resources of AAG. AAG and its employees disclaim any liability for any error, inaccuracy or omission from the information contained in this report and disclaim any liability for direct or consequential loss, damage or injury claimed by any entity relying on this information, or its accuracy, completeness, currency or reliability. AAG point out that this industry and all commercial activity is affected by the passage of time, income, yield and expense factors. In reading this report the user accepts this statement and sole responsibility for the impact of such change on their investment decisions.

