

THE AGRICULTURAL BOOM – A REAL OPPORTUNITY TO BENEFIT YOUR PORTFOLIO

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Abstract

The recent price rises in agricultural commodities have been a result of the cumulative effect of population growth, a dietary shift towards protein and high value foods in developing nations, and the increasing competitiveness of biofuels. Both the historical experience and current situation suggest that the drivers of the commodity boom, and therefore high agricultural prices, will endure for some time. High food and energy prices are creating a wave of high inflation, with substantial consequences for investment performance. Many traditional assets not only have their real returns reduced by high inflation as a result of simple mathematics, but also face decreasing profit margins as a result of high input costs that cannot be easily passed onto consumers. On the other hand, agricultural assets are expected to benefit from strong prices and capital growth, as well as increasing profit margins, thanks to the absence of key inputs from the business cycle. As such, an investment in agricultural commodities currently benefitting from the global boom may well outperform many traditional investments for the duration of the current inflation wave. In addition to this, adding agriculture to a broader portfolio can not only have a positive impact on returns, it can reduce volatility, due to the weak negative correlation present between a diversified agribusiness fund and traditional investments.

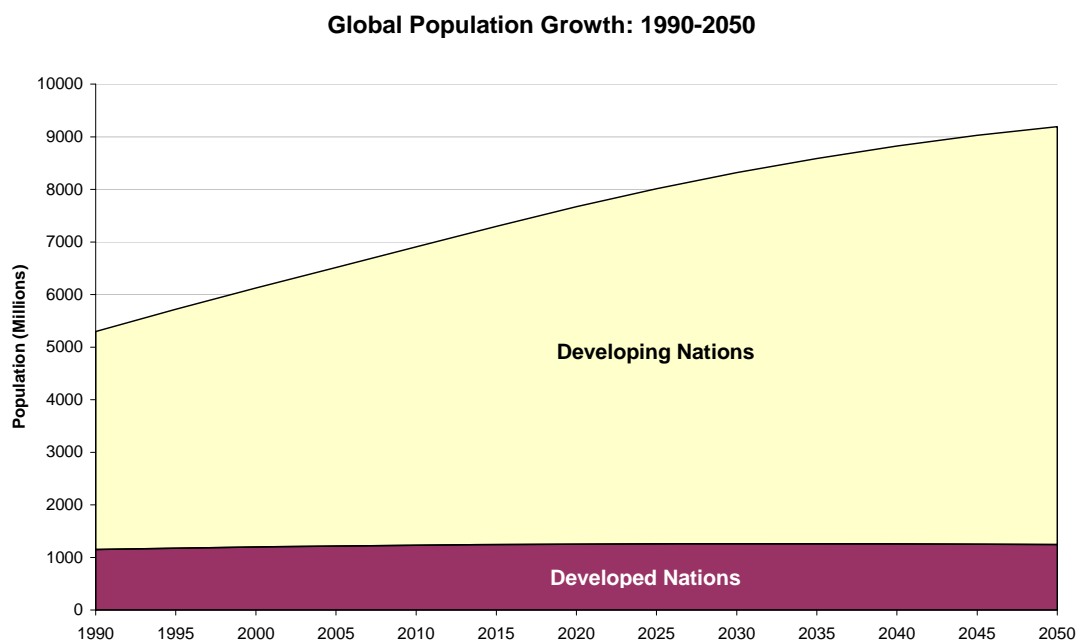
Drivers of the Agricultural Commodities Boom

Agricultural commodity prices bottomed in 2001, as shown below, and have been rising strongly since 2006. This well-documented trend has been driven by three factors: population growth, dietary changes stemming from economic development, and the rise of the biofuel industry.

Population growth and movement

The world population is currently 6.7 billion, and expected to rise to 9.2 billion by 2050 (UN, 2006). This growth will be focused almost exclusively in developing nations (see Figure 1), and set to place extra strain on food supplies as demand increases.

Figure 1: Global growth is set to continue and occur almost exclusively in developing nations



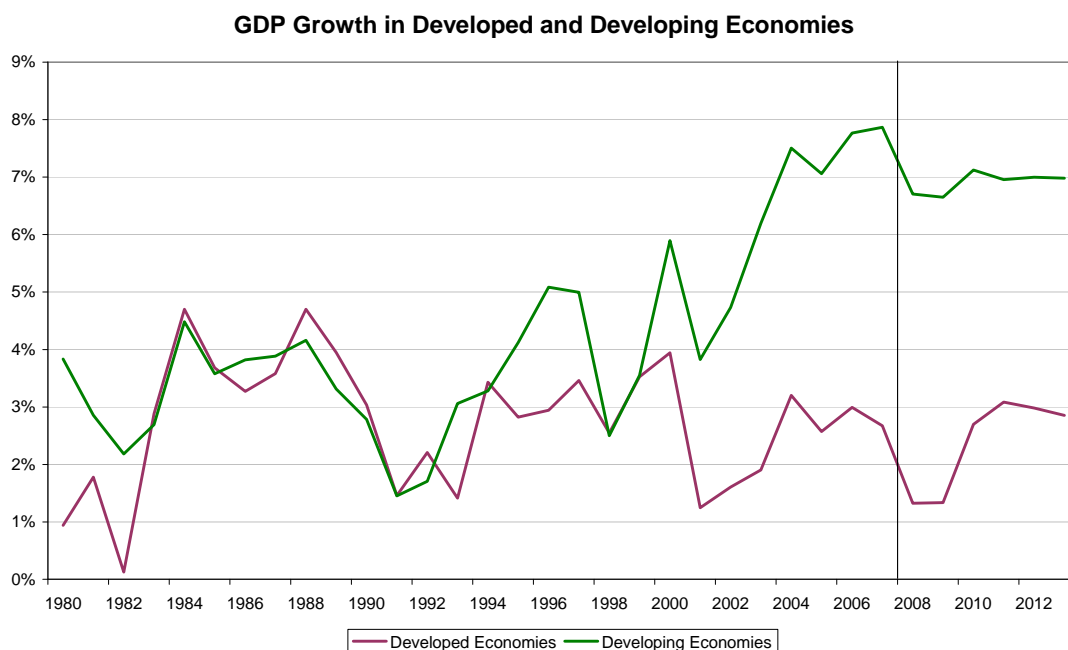
Source: UN 2006

Furthermore, the largest developing countries face significant barriers to increasing agricultural production to meet their growing demand. China and India, who comprise one third of the world's population, have just 7% of global arable land (Liu, 2006) and 4% of the world's water resources (OECD, 2007) respectively. China is facing an increasing desertification problem that threatens the viability of large amounts of farmland (FAO, 1997), while India's limited water supplies are demanded by both agriculture and industry. The fact that these two nations are expected to still comprise almost one third of the global populous in 2050 (UN, 2006) highlights the magnitude of these problems, as well as the fact that world may struggle to meet the extra demand for food created by substantial population growth over the next 40 years

Global economic and income growth and the middle classes

Over the past 15 years, the average rate of GDP growth in developing nations is close to twice that of developed nations (See Figure 2). Current predictions indicate that average real incomes in developing nations (at 2001 prices) will increase from \$1300 in 2001 to over \$4000 by 2030. As a result, 1.9 billion people will join the middle or rich classes – an average of 173,000 individuals per day (World Bank, 2008).

Figure 2: GDP growth has been strong in developing nations – a trend that is expected to continue



Source: IMF 2008

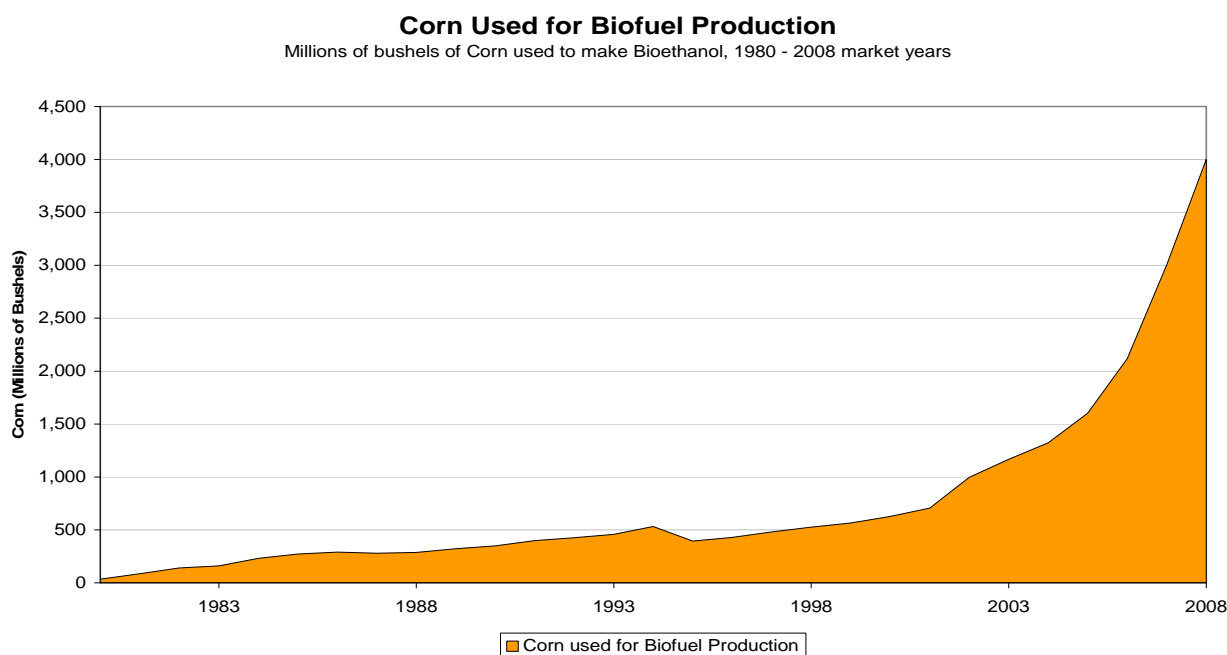
As a household's income passes the "middle class" threshold, it spends significantly more on high value foods, such as fresh fruits and vegetables, and high protein products, such as red meat and poultry. As a result, predictions that per capita beef consumption will rise by 74% from 2000 to 2030 (FAO, 2002) are generally consistent with expectations relating to income growth in developing nations.

Increasing demand for high-protein foods has implications for the entire agricultural sector. While consumption of grain as food is fairly uniform across the globe, when indirect uses, such as the grain required to produce meat, are considered, developed countries consume six times as much grain per capita as their developing counterparts. This is largely due to the large grain requirements for meat production. For instance, it takes seven kilograms of grain to produce one kilogram of beef (Green, 2003). Therefore, dietary shifts towards protein will have a substantial impact on the grain market through increased feed demand, which will in turn have flow-on effects to other agricultural commodities, thereby causing general upward pressure on prices.

Biofuels

High energy costs and a range of government incentive programs have caused the biofuels industry to expand dramatically. In the United States, the amount of corn used for the production of ethanol rose almost six-fold from 2000 to 2007 (see Figure 3, USDA (2008)). Shifts of this nature are contributing marginal additional demand for energy rich foods on an unprecedented scale, restricting the supply available for both human consumption and livestock feed. This has implications for the entire sector, as farmers shift production to take advantage of the biofuels boom, resulting in price rises for a range of commodities.

Figure 3: The amount of corn used in biofuel production has increased rapidly, thanks in part to US Government policy and oil prices



Source: US Department of Agriculture 2008

The impact of biofuels and biomass are set to continue. Biomass from agriculture and forestry is now the world's fourth largest source of energy after oil, coal and gas (IEA, 2006), and with crude oil reaching record prices in 2008, it is becoming increasingly competitive. In addition, as initial research indicates that biofuels offer a cleaner alternative to fossil fuels, many governments, such as the USA and European Union, are establishing mandatory minimums for biofuel use. The International Energy Agency (2006) estimates that based on policies already under consideration, biofuel consumption will grow more than seven-fold between 2004 and 2030, with global arable land devoted to biofuel production increasing from 13.8 million ha to 52.8 million ha over the same period. Biofuel is emerging as another competitor for land and grain usage in the increasingly constricted market, the result of which will be higher prices across the agricultural commodity sector.

While recent food price inflation has led to calls for governments to reverse policies for the mandatory use of ethanol, a combination of political and economic factors will continue to drive biofuel consumption. Firstly, research indicates that given the parabolic rise in oil prices in the past year, biofuels are now in many cases a cheaper transport fuel than petroleum based products (IEA, 2006). The IEA also expects biofuel production costs will fall by 2030, due to economies of scale and technological improvements. Thirdly, the biofuels industries in the US, Brazil and other nations have become large and politically influential. Finally, the chemical nature of biofuels enables significant reduction in fine particle emissions at relatively low blending ratios with petroleum, thereby providing an environmental imperative for mandatory biofuel consumption.

Given the combination of the three factors driving the commodities boom, and the fact that economic and social forces will continue to drive them for decades, it appears likely that strong commodity price growth will continue for some time. However, this finding does not automatically

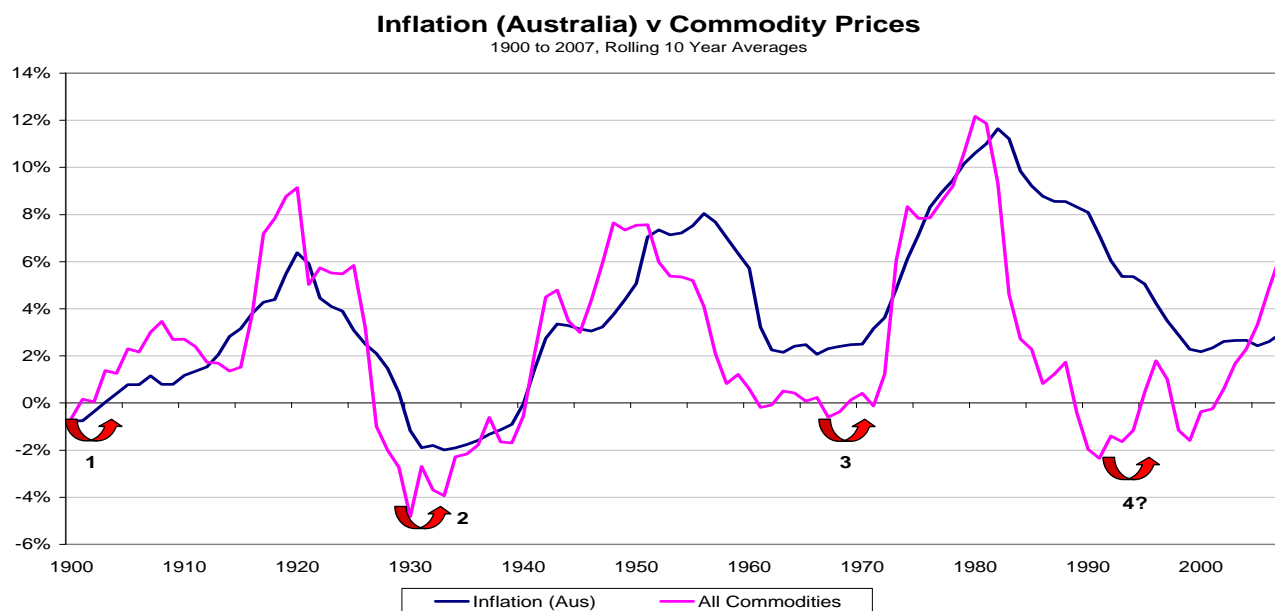
lead to any conclusions about agricultural investments. The following examination of historical trends, and the past performance of various sectors under comparable conditions, will allow those conclusions to be reached.

Historical price trends – inflationary waves and price growth

One hundred years of data suggests that there is a strong correlation between inflation and the growth rate in commodity prices. This is unsurprising, given the necessary impact of rising commodity prices on the cost of goods purchased by consumers. Figure 4 shows that during the last century we have experienced three waves of high inflation, peaking in 1920, 1956 and 1980 respectively, each of which was preceded by a period of rising commodity prices. A glance at recent developments shows that commodity prices have been rising since 1999, with significant inflationary pressure appearing in only the last twelve months.

While inflation in developed countries is still relatively low compared to past cycles, inflation has certainly bottomed and is on the rise. However in developing countries inflation rates are significantly higher, with rates as high as 30% in Ukraine, Venezuela 29%, Vietnam 25%, Russia 14% (GloomBoomDoom.com, 2008) and China 9% (BBC, 2008). Global weighted inflation is now at 5% (GloomBoomDoom.com, 2008), and given continuing commodity price rises, it is apparent the globe is ascending a fourth wave of commodity and consumer price inflation.

Figure 4: High inflation and strong commodity price growth are cyclical and move together



Source: Barry Bannister, Stifel Nicolaus, ABS, Brown, HP (1964) 'Three Aspects of the Australian Retail Price Indexes' Economic Record, KR-CRB Commodity Indices

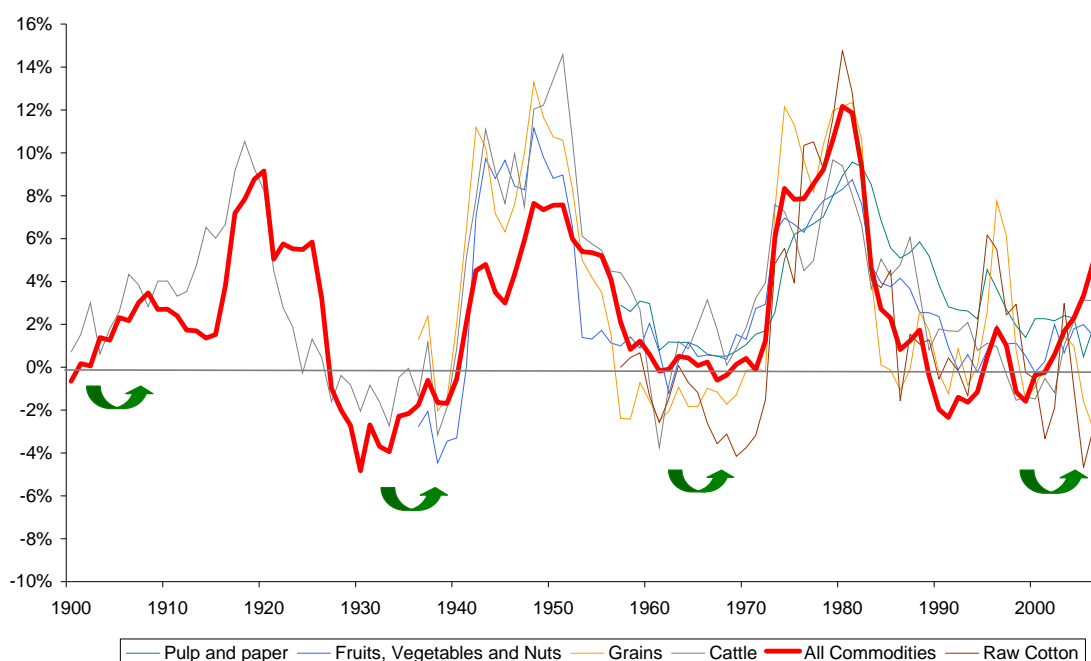
The prices of individual commodities, including agricultural goods, have historically moved in unison with the general commodities index. Figure 5 shows the movement of prices of a number of commodities, namely grains, cattle, cotton, forestry products (pulp and paper), and fruit, vegetables

and nuts. The chart demonstrates that although individual commodities may lag or overshoot movements in the general index, all of these goods have increased in line with the broader index during previous cycles.

Figure 5: Individual agricultural commodity prices follow the broader index, suggesting that WRIF's investment targets should benefit from strong commodity price growth over the medium term

Commodity prices are cyclical and move in unison

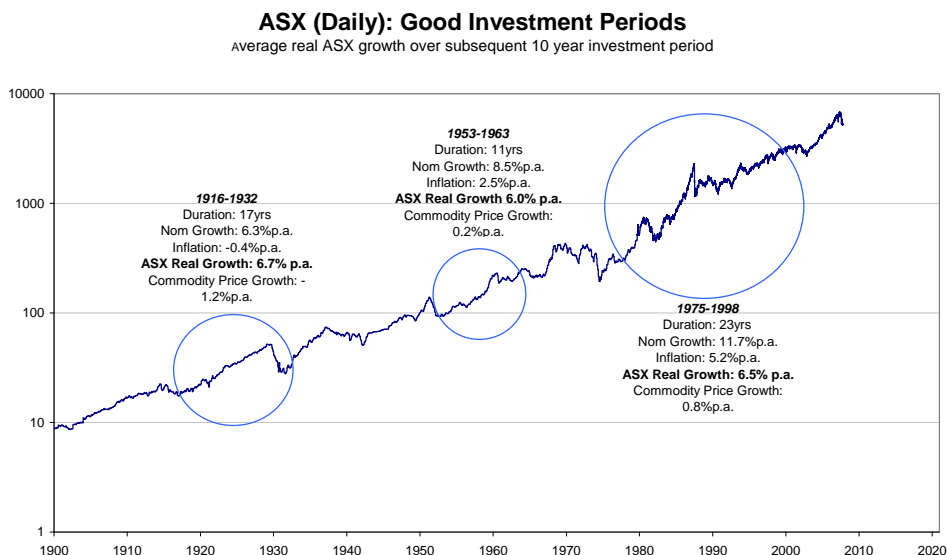
Commodities by category: 1900 to 2007, 10 year moving average of percentage price change.



Source: Commodity Data to 1957 BLS, afterward KR-CRB Futures Barry Bannister, Stifel, Nicolaus & Co.

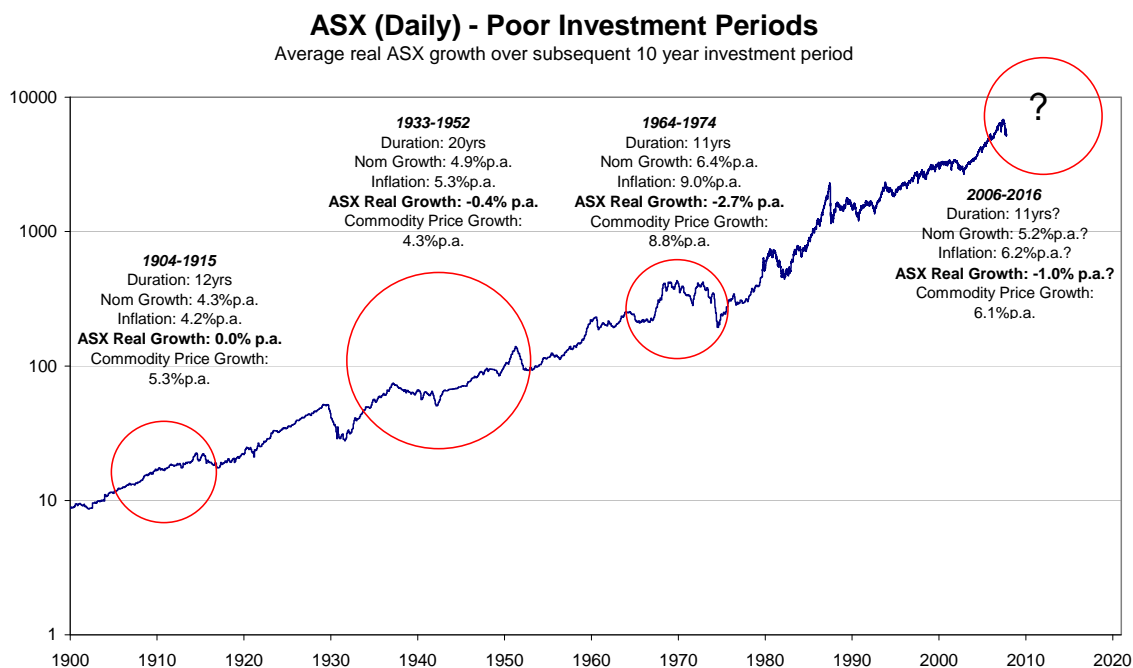
Given that Australia and many other nations may be about to experience the next long term inflation cycle, investors should consider the implications this may have on investment portfolios. Figure 6 shows good periods to start a share portfolio – namely ones where the average real ASX growth is greater than 6%p.a. over the subsequent decade. This captures periods where a share investment, held for ten years, produces sizeable returns over the rate of inflation. These periods are shaded blue on Figure 8, and tend to correspond to periods of falling commodity price growth and inflation. Conversely, Figure 7 shows poor periods to establish a share portfolio, where the average real return is less than 0.1%p.a over the next decade. These periods are shaded red on Figure 8, and correspond to the first half of each inflationary wave. A potential fourth cycle is shown on Figure 8, suggesting that we may be entering another period of poor share market returns.

Figure 6: Good periods for share investment. In each of the three periods, real ASX Growth is greater than 6%, while commodity price growth is less than 1%.



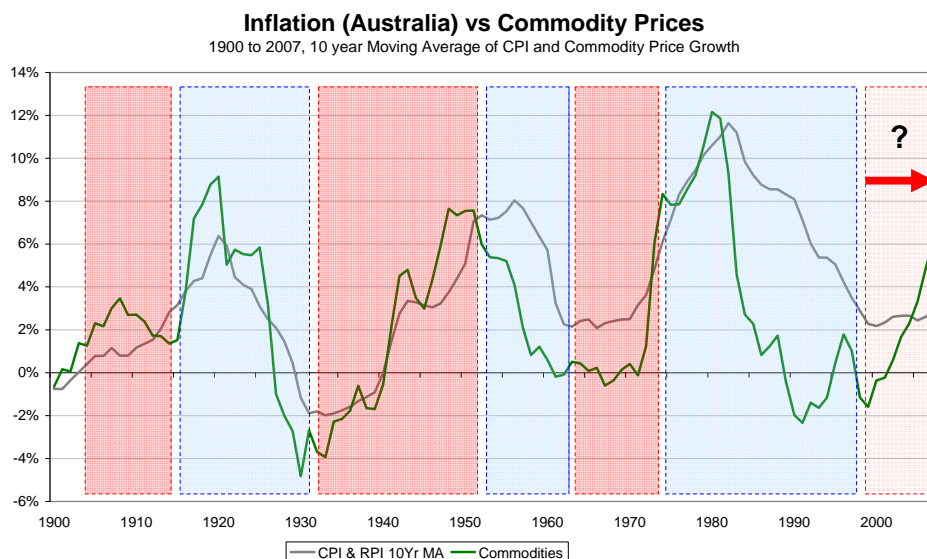
Source: Barry Bannister, Stifel Nicolaus, ABS, Brown, HP (1964) 'Three Aspects of the Australian Retail Price Indexes' Economic Record, KR-CRB Commodity Indices

Figure 7: Poor periods for share investment. During these periods, commodity price growth has significantly exceeded real ASX growth.



Source: Barry Bannister, Stifel Nicolaus, ABS, Brown, HP (1964) 'Three Aspects of the Australian Retail Price Indexes' Economic Record, KR-CRB Commodity Indices

Figure 8: Good and poor share investment periods vs inflation and commodity price growth



Source: Barry Bannister, Stifel Nicolaus, ABS, Brown, HP (1964) 'Three Aspects of the Australian Retail Price Indexes' Economic Record, KR-CRB Commodity Indices

These three charts provide some insight into the inter-relationship between commodity prices, inflation, and the real rate of return on investments. High inflation, which corresponds to strong commodity price growth, can decrease real rates of return as a result of simple arithmetic. Furthermore, rising costs can erode business profits, reducing returns on investments in those industries.

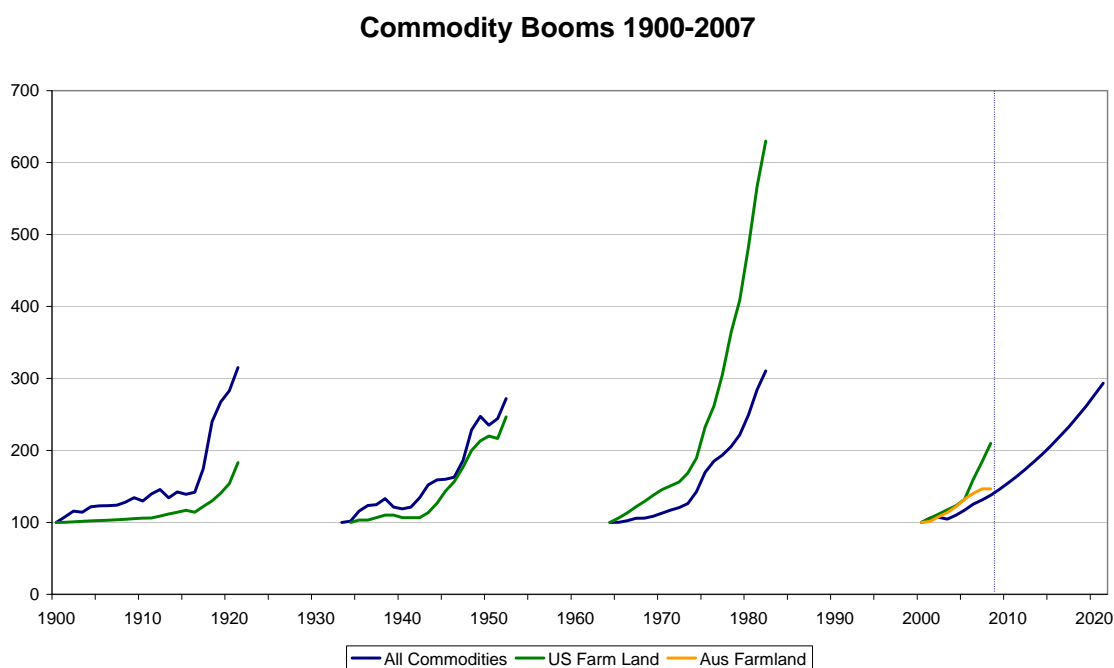
The agricultural sector however, is expected to experience widening profit margins as commodity price rises increase revenues at a greater rate than the cost of inputs. This result occurs as many substantial inputs into agricultural businesses, such as rainfall and solar radiation, are unaffected by the inflation cycle. Therefore, agricultural industries benefitting from increased prices and strong demand may outperform traditional asset classes and many businesses that are unable to pass on rising costs to consumers during the next inflationary cycle.

Capital growth & land

Values

During periods of strong commodity price growth, farm land values also increase. This capital growth can be very significant – for a period during the late 1970's commodity boom, cattle, sheep and dairy businesses all experienced capital growth of over 25% p.a. (ABARE, 2008). Figure 9 shows the commodities index and farm land values are standardised at the beginning of each commodity boom, to illustrate the growth experienced in prices and capital.

Figure 9: Land values rise substantially in periods of inflation and commodity price growth. TUS farmland more than doubled in value during 1950 boom, and grew sixfold during the 1980 boom



Source: ABARE, US Department of Agriculture, Bureau of Labor Statistics.

The main driver of these periods of strong capital growth has been increased affordability among owners of farm enterprises, resulting from the widening profit margins discussed above. This suggests that during a likely fourth wave of inflation, agricultural investments will benefit from strong levels of capital growth. The historical data also shows declining growth in agricultural land values following a commodity boom, and therefore points to the timing of when it is best to be selling farms and other assets.

Portfolio implications

As agricultural investments are expected to perform strongly for the duration of the current cycle, the impact that these will have on a broader portfolio is worthy of consideration. These effects can be grouped into two categories – effects on the overall volatility of a portfolio, and effects on the return levels.

Volatility and diversification

Figure 10 shows the correlation coefficients of a number of investment categories. The final investment included is a retail diversified agribusiness fund¹, used as a proxy for agricultural investments. The correlation matrix shows that agribusiness investments often have the lowest correlation coefficient with other asset classes. Furthermore, the agribusiness fund is weakly negatively correlated against the majority of the other assets considered, which implies that an

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agricultural investment will help to smooth out portfolio returns and decrease volatility by way of diversification.

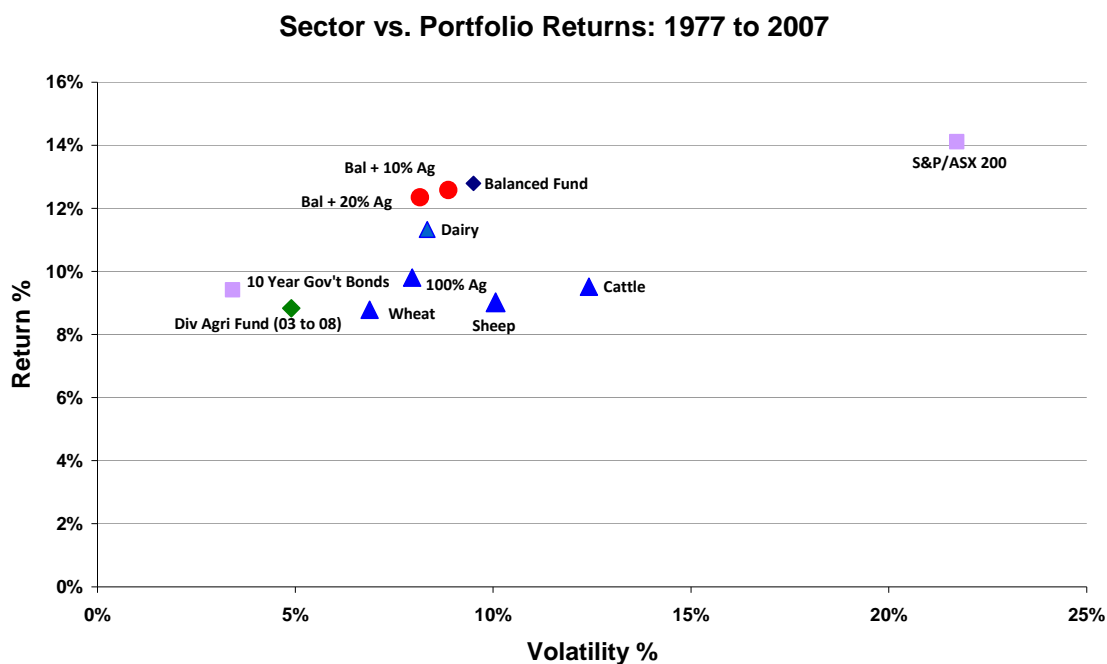
Figure 10: Agricultural investments are weakly correlated with traditional asset classes

Correlation Matrix	Aust Listed Prop	Global Equities	Global Bonds	Aust Bonds	Aust Equities	Aust Cash	Global Listed Prop	Div Agri Fund
Aust Listed Prop	1.00							
Global Equities	0.31	1.00						
Global Bonds	0.11	-0.36	1.00					
Aust Bonds	0.14	-0.30	0.70	1.00				
Aust Equities	0.50	0.52	-0.18	-0.27	1.00			
Aust Cash	-0.22	-0.09	0.06	0.05	-0.07	1.00		
Global Listed Prop	0.51	0.54	-0.04	0.13	0.39	-0.10	1.00	
Div Agri Fund (ROF)	-0.25	-0.11	-0.06	-0.05	-0.09	0.25	-0.20	1.00

Source: S&P/ASX 300 Total Return Index, MSCI World Ex Australia Net Return Index, S&P/ASX 300 Property Trusts Total Return Index, FTSE EPRA/NAREIT Global Real Estate Index (Hedged \$A), Citi AusBIG Index, Lehmann Brothers Global Aggregate Total Return (Hedged \$A), RBA Australian Bank Bill 90 Day

Historical fund and farm performance also suggests that agricultural investments can decrease the volatility of a broader portfolio. Figure 11 shows the return and volatility of several investment options over the past 30 years, including investment in Australian wheat, sheep, cattle and dairy farms, and a weighted average of the four (100% Agriculture). Over this period, by investing 20% of funds across these four agricultural industries and 80% in balanced funds, an investor would reduce volatility from 9.5% to 8.2%, whilst only reducing returns by 0.4%, when compared to a 100% investment in balanced funds.

Figure 11: Agricultural investments can reduce total portfolio volatility

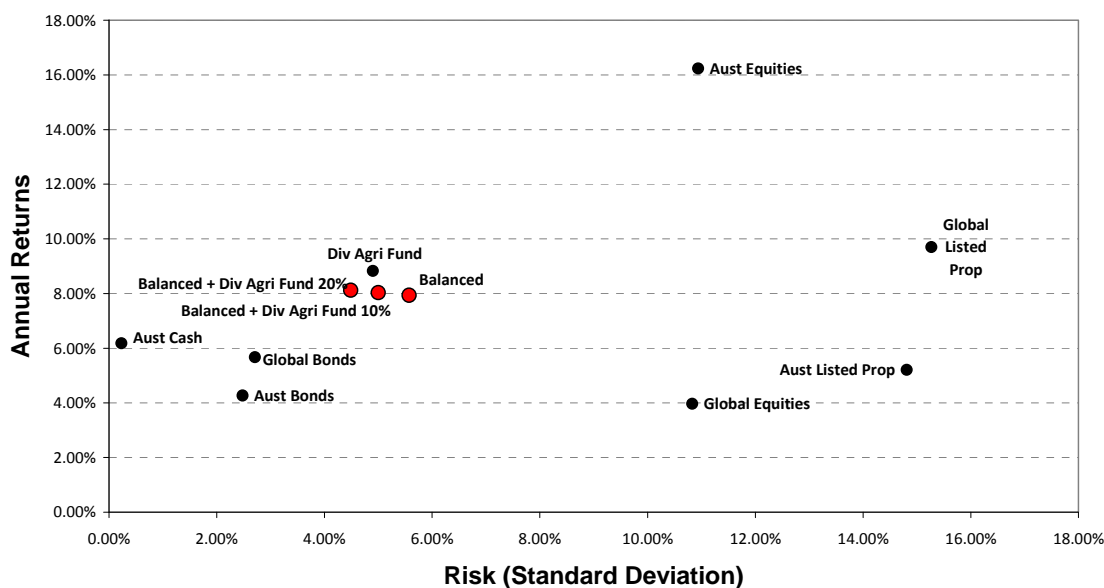


Sources: S&P/ASX 200 Accum Index, RBA, ABARE, Intech Balanced Funds Survey, SuperRatings 50 (60-76) Returns Index

It is worth noting that while the proxy agribusiness fund achieves similar return levels to the combination of dairy, wheat, sheep and cattle, it has a significantly lower volatility level. This is in part due to increased diversification, across regions, industries and asset classes, within an agricultural fund. This diversification policy mitigates the effect of negative climatic events or market impacts, both of which can adversely influence on agricultural investment performance.

Figure 12: Over the past five years, adding agriculture as a component of a balanced portfolio could have reduced volatility and lifted return levels

Sector vs. Portfolio Returns: 1 July 2003 to 30 June 2008



Sources: S&P/ASX 300 Property Trusts TR, MSCI World Ex Australia NR, LB Global Agg TR Hdg, Citi AusBIG, S&P/ASX 300 TR, RBA Australian Bank Bill 90 Day, FTSE EPRA NAREIT, ROF

The impact of agriculture on a broader portfolio can also be measured over the past five years, and is shown above in Figure 12. By splitting a portfolio 80:20 between balanced funds and the agricultural fund, an investor could reduce volatility from 5.57% to 4.49%, and improve returns by 0.18%, when compared to a straight balanced funds investment. These volatility-mitigating benefits stem from the fact that agricultural assets are, for the most part, weakly negatively correlated with typical investments.

Investment returns

In periods where agricultural assets outperform other classes, a diversification regime that involves an agricultural element will add to the absolute return of the investment. Portfolio diversification via agricultural investment over the past three decades would only have reduced returns by 0.4%, even though most of this period was dominated by falling commodity prices. As a result, in times when agricultural assets outperform traditional classes, such as the one predicted for the next 10-12 years, an investment in an agricultural fund, especially a diversified one, may increase total returns as well as reducing volatility. The first indication of this is the moderate increase in returns (0.18%) that would have been achieved via the investment in Figure 12, even though the period in question was dominated by concerns over the availability of water for farming and other agricultural production.

Summary

Strong commodity price growth, driven by rising population, dietary changes and the increasing competitiveness of biofuels, is expected to continue for some time. These factors, combined with years of underinvestment in the energy sector, are bringing about a wave of high inflation, which will have implications for investment performance. Simple arithmetic, coupled with increasing input costs that are often difficult to pass on to consumer, ensures that high inflation often results in poor real returns for traditional investments. Agricultural assets, on the other hand, will benefit from high prices, strong capital growth and increasing, rather than decreasing, profit margins. As such, it seems likely that an investment in agricultural commodities currently benefitting from the global boom will outperform many traditional investments for the duration of the current inflation wave. Furthermore, adding an agricultural investment to a broader portfolio may increase returns and reduce volatility, as a result of the negative correlation present between agricultural investments and assets such as bonds, equities and property.

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ENDNOTES

¹ The Diversified agribusiness fund used in this section of the paper is GSFM's Rural Opportunities Fund (ROF)