

COMMODITY PRICES AND THE AUSTRALIAN ECONOMY: TRENDS VERSUS CYCLES

Real commodity prices will decline over the long run, argues **Stephen Kirchner**

Rising commodity export prices have been a positive factor for the Australian economy since 2002. With growth in export prices exceeding growth in import prices, our terms of trade have reached their highest level since the Korean War boom. There is debate over whether these gains are merely cyclical or represent a structural shift to a permanently higher level of national income. The pronounced cyclical behaviour of commodity prices, highlighted by their dramatic fall in the wake of the global financial crisis, makes it difficult to isolate underlying trends, but there is a case that productivity gains make real commodity prices decline over the long run.

As Australia is a major commodity exporter, commodity prices affect its national income. However, historical experience suggests Australia is well placed to weather any downturn in commodity prices. Commodity production and exports are not as important to the overall Australian economy as commonly assumed.

Trends and cycles in commodity prices

Commodity prices are subject to significant cyclical variation. As with the business cycle more generally, the amplitude and frequency of these cycles is also highly variable, with booms and busts that last many years. This variability tends to obscure

longer-run trends in commodity prices. Inflation also works to obscure the longer-run trend. Even low rates of inflation can add substantially to the level of prices over time. Ultimately, we are interested in the inflation-adjusted value of commodities, since economic welfare depends on our command of real resources. When looking at commodity prices over the longer term, it is common to adjust for either the consumer price index or the gross domestic product (GDP) deflator. This gives us a measure of the purchasing power of commodities in terms of either consumer goods or economy-wide output respectively.

The oldest continuous commodity price index is published by *The Economist*, and dates back to 1851. The index is denominated in US dollars. Adjusting for inflation using the US GDP deflator, this index posted an average annual rate of decline of 1.3% between 1862 and 1999, which coincided with a major cyclical low point for global commodity prices.¹ Between 1917 and 1999, the average annual rate of decline was 2.3%. Within this long-run downtrend, there was significant cyclical variation. Of the annual real

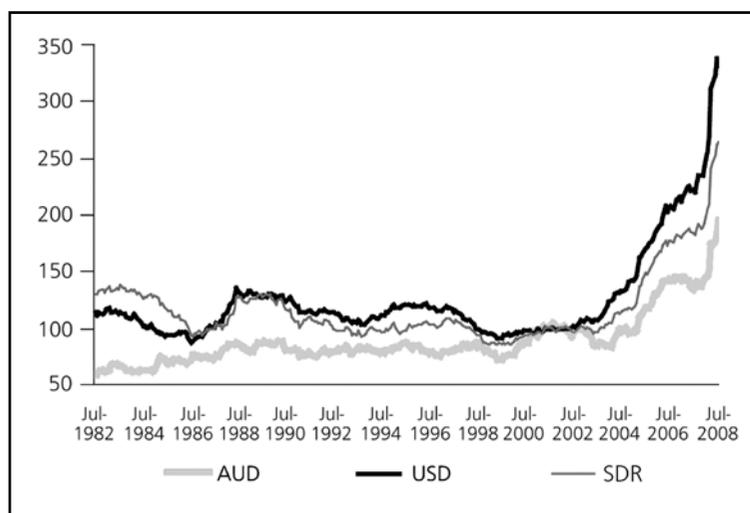
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price movements observed in the index, 5% were up or down by more than 20%.

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Since 2002, commodity prices have seen a pronounced upswing, followed by a decline in 2008. The following chart (figure 1) shows the Reserve Bank of Australia's index of commodity prices in Australian- and US-dollar terms, as well as IMF Special Drawing Rights, a unit of account that abstracts from exchange-rate valuation effects.

Figure 1: RBA index of commodity prices (2001–02=100)



Source: Reserve Bank of Australia²

The stronger gains in the US-dollar index in recent years points to a valuation effect from weakness in the US dollar against other currencies. Australian-dollar commodity prices have underperformed world commodity prices, highlighting the role of the floating exchange rate in insulating Australia against external shocks. The variability of commodity prices has increased since the demise of the Bretton Woods system of fixed exchange rates in the early 1970s, reflecting increased variability in exchange

rates against the US dollar, which serves as the denominator for many measures of commodity prices. Exchange-rate movements may also affect the global supply and demand for commodities, apart from the direct valuation effect. While longer-run trends and shorter-term cycles in commodity prices have been extensively studied, forecasting future changes in commodity prices remains as difficult as forecasting other asset prices. Past trends and cycles do not necessarily represent a good guide to future trends and cycles.

Price cycles are equilibrating forces that coordinate the consumption and production of commodities over time. It is almost tautological to say that commodity prices reflect the net balance of supply and demand, although analysts often focus on only one side of the equation or attribute changes in commodity prices to non-fundamental forces such as speculation. Speculation can be found on both the supply and demand sides of commodity markets, and is essential in providing

the liquidity that enables price discovery. As Milton Friedman noted in the context of foreign exchange rate markets, speculation must be a stabilising force on average, since speculators only make money if they buy low and sell high. Speculation will drive commodity prices in the direction of underlying fundamentals.

On the demand side, the sharp increase in global commodity prices since 2002 has been widely attributed to growth in the Chinese and other emerging economies. The rise of China

predates the most recent run-up in commodity prices, but it is only more recently that Chinese demand has put upward pressure on prices, reflecting capacity constraints in the global resources sector. While China accounts for a rising share of global consumption of commodities, this follows naturally from its rising share of global industrial output. At least some of this output has been shifted from other countries and so may not represent a net increase in the global demand for commodities. Demand from China and other emerging market economies would seem to be

an incomplete explanation for the global supply–demand imbalance driving higher prices. Given that the industrialisation of China and other emerging market economies is far from complete, this process is seen as underpinning future demand for industrial commodities, but higher prices are also likely to induce an increasingly positive supply-side response, leaving the net balance of these forces uncertain.

On the supply side, the rise in commodity prices is best seen as an echo of the broad-based decline in prices seen in the late 1990s. This was responsible for a global downturn in investment in commodity production and related infrastructure. This is well illustrated by capital expenditure in the Australian mining industry, where real investment spending fell nearly 50% in the year to the March quarter 2000. Like the rest of the world, the Australian mining industry was subsequently caught short by the strength in demand for commodities seen since 2002. By the March quarter 2006, real investment in the mining industry was growing at an annual rate of nearly 100%. This supply-side response should eventually increase commodity output and ease prices, but the capital-intensive nature of mining means that it may take many years before this investment yields increased output.

The secular case for declining real commodity prices

Where does the most recent cycle leave the underlying trend in commodity prices? If the recent cyclical upswing in commodity prices is just the flipside of the lows seen in the late 1990s, then a positive supply-side response could eventually leave the long-run secular downtrend in real commodity prices intact.³ This long-run trend implies that commodities are becoming less scarce even as consumption of them increases, an apparent paradox resolved in the work of economist Julian Simon.⁴ The economist's perspective is very different from the technical-engineering point of view, which focuses on rates of extraction from known reserves to conclude that resources must be finite ('peak oil' is an example of this thinking). By contrast, Simon argued that the supply of resources in general is effectively infinite, because human ingenuity in responding to short-term or

localised resource constraints is also effectively limitless. Price cycles serve as the signalling and coordinating mechanism that drives this process. Higher commodity prices are a spur to innovation, so short-term scarcities often result in long-run price declines.

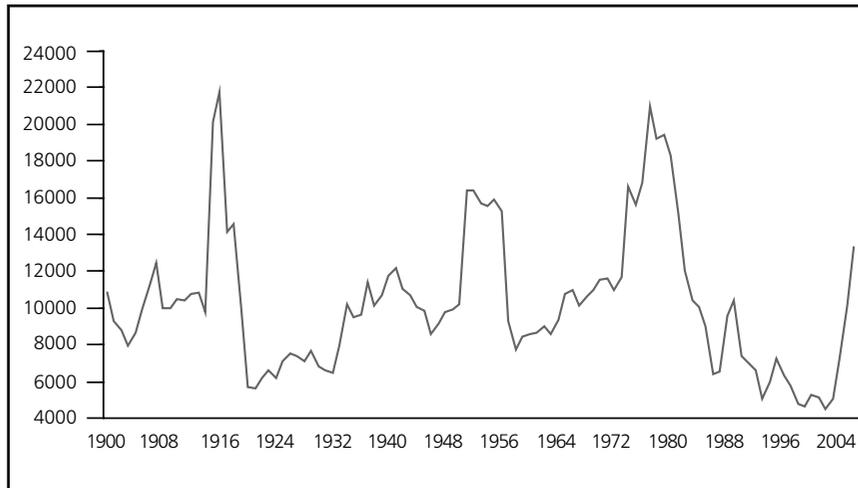
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In 1990, Simon won a bet with the environmentalist Paul Ehrlich on the direction of real commodity prices. Simon left the choice of commodities and the timeframe for the wager entirely up to Ehrlich. Ehrlich nominated chromium, copper, nickel, tin, and tungsten, and a timeframe of ten years, commencing on 29 September 1980. If the real price of these commodities rose, Simon was to pay Ehrlich the amount of the price increase and vice versa. Ten years later, the nominal and real prices of each of the five commodities had fallen, and Ehrlich mailed a cheque to Simon. Simon then proposed another, larger bet, again leaving the choice of commodities and timeframe to Ehrlich. Ehrlich declined the second wager.⁵

The bet was actually quite risky for Simon, who understood that the cyclical variability in commodity prices could have seen him lose to Ehrlich. He would have won the same bet in only five of the ten decades of the twentieth century, although he would have won a bet taken for the twentieth century as whole.⁶ It was because of the very-long-run trend in real commodity prices that Simon thought he was more likely to win than lose.

The following chart (figure 2) shows an equally weighted sum of the metric ton prices of the five commodities making-up the Simon-Erlich wager, in constant 1998 US dollars.

Figure 2: Simon-Erlich commodity prices 1900–2006 (1998 US dollars/metric ton)



Source: Thomas D. Kelly and Grecia R. Matos⁷

The real price of the Simon-Ehrlich commodity bundle made more-than-100-year lows in 2002, before rising again to be back above the level prevailing in 1900 by 2006. The most recent cyclical upswing might be thought to invalidate Simon's argument about the secular downtrend in real commodity prices, but as already argued, this upswing cannot be divorced from the negative supply response to the previous cyclical downturn in prices. This highlights the inherent difficulty in isolating the longer-run trend from the pronounced multi-year cycles in commodity prices. These data could alternatively be interpreted as simply mean-reverting rather than experiencing a long-run secular decline. However, even mean reversion would be consistent with Simon's view that there is no long-run trend to increased resource scarcity as measured by real commodity prices.

Simon's work reminds us that economic progress is a function of human ingenuity in overcoming resource constraints—what economists term productivity, the main source of economic growth. Productivity gains allow demand to increase without putting upward pressure on prices. While there have been historical episodes in which knowledge has been lost and progress has been temporarily reversed, the expansion in human knowledge, technology, and living standards has been more or less continuous at least since the Industrial Revolution. These positive longer-run

trends are rarely recognised against the backdrop of shorter-term economic and other problems that tend to command our immediate attention.

However, Simon's optimism about long-run declines in real resource prices and rising living standards was subject to an important proviso. Human ingenuity and productivity can only flower in the right political and economic context, with appropriate incentives and rewards for innovation and risk-taking. Take away that environment, and

the secular progress manifest in declining real commodity prices could easily stall. Simon would certainly not have been surprised by the recent run-up in food prices associated with misguided government policies such as US and EU biofuel mandates that diverted agricultural production from food to fuel. According to World Bank research, 70–75% of the increase in food prices seen between January 2002 and June 2008 was attributable to biofuel policies.⁸

It is noteworthy that Simon was also an optimist on the implications of addressing climate change. In 1995 he wrote, in relation to what was then an emerging issue, that

we now have ever-increasing capacities to reverse these trends, if necessary. And we can do it at costs that are manageable rather than being an insuperable constraint on growth or an ultimate limit upon the increase of productive output or of population.⁹

Simon would stress the spontaneous adaptability of people and other species to a changing environment as an important mitigating factor in assessing the net costs of both climate change and carbon emissions abatement.

In most contexts, we recognise that real price declines represent an increase in our command over resources and therefore a higher standard of

living. This is as true of the price of computing power as it is for the price of copper. But is it also true for a net commodity producer and exporter like Australia?

Commodity prices and the Australian economy

An obvious corollary of rising global commodity prices is that growth in commodity output and export volumes has underperformed growth in commodity demand. This reflects past underinvestment in commodity production and related infrastructure, as noted previously. There have also been more short-term supply disruptions that have driven up prices. In Australia's case, one of the worst droughts on record has depressed agricultural output, contributing to higher world as well as domestic prices for agricultural commodities. Weather-related disruptions to Australian mining output were also a factor in pushing up spot prices for commodities such as coal and iron ore earlier this year, although spot prices have since fallen dramatically.

Rising commodity prices have made less of a contribution to real economic growth in Australia than commonly assumed, because growth in real commodity output and export volumes has been relatively subdued. One approach to measuring economic growth is to take the sum of value added in each sector of the economy. Gross value added in the mining and agricultural sectors has made only a small contribution to GDP growth since the beginning of 2003. This should not be surprising, since most value added in the Australian economy resides in sectors such as services rather than primary production. Another approach to measuring economic growth is to add up expenditures in the economy, including foreign expenditure on Australian exports. Export volumes have also made only a small contribution to economic growth over the same period, reflecting supply constraints such as the drought. Imports and exports are usually measured in terms of both prices and quantities. It is thus no paradox that the commodity price boom has also coincided with some record trade deficits in Australia, because weakness in export volumes has offset strength in export prices. The same factors that have driven up prices have been responsible for depressing output and export volumes.

This is not to say that there are not economic benefits from rising commodity prices for a net commodity producer and exporter like Australia. An increase in the ratio of export to import prices, or rising terms of trade, increases the international purchasing power of domestic production, a direct contribution to economic welfare. Some measures of economic activity, such as gross national income, do a better job of capturing these gains than gross domestic product, and have grown at a faster rate than GDP. Gross domestic product understates the welfare gains from rising commodity prices, but it is still the most widely used measure of economic growth. On this measure, the Australian economy has still outperformed most developed countries, but that outperformance owes little to the commodity price boom.

Economic progress is a function of human ingenuity in overcoming resource constraints.

There are two sides to the terms of trade. While Australia benefits from rising world prices for commodity exports, we can also benefit from falling prices for manufactured and other imports. The terms of trade ultimately reflect relative movements in import and export prices. Declining export prices may still see steady or even improving terms of trade if import prices are also declining.

What would happen to the Australian economy if global commodity prices slumped? We only have to go back to the last major cyclical downturn in commodity prices in 1998–99 to answer that question. The Australian economy maintained above-trend growth rates for much of the period, highlighting the small contribution made by commodity production and export volumes to overall economic growth. The terms of trade and national purchasing power would suffer from any decline in export prices, all else being equal. However, lower global commodity prices might also contribute to lower prices for imported goods and services, with offsetting benefits for the terms of trade.

Conclusion

A cyclical decline in global commodity prices might reflect a reduction in world economic growth and commodity demand, as well as the positive supply-side response to past gains in commodity prices. However, long-run supply reflects more than just a cyclical response to higher prices. Increased supply and declining real commodity prices could also be expected as a result of long-run productivity gains in the economy more generally and commodity production in particular. The resources no longer needed to produce a given quantity of commodity output could be put to alternative, more highly valued uses. Increased productivity is the main driver of long-run economic growth. Australia's status as a net commodity producer and exporter should not blind us to the gains associated with long-run productivity growth and declines in real commodity prices, especially given the relatively small contribution commodity production makes to overall economic growth in Australia.

Endnotes

1. Paul Cashin and John McDermott, *The Long-run Behaviour of Commodity Prices: Small Trends and Big Variability*, Working Paper 01/68 (Washington, DC: International Monetary Fund, 2001).
2. Reserve Bank of Australia, 'RBA Index of Commodity Prices' (3 October 2008), rba.gov.au/Statistics/Bulletin/G05hist.xls.
3. *Secular* in this context refers to a trend that persists over an indefinitely long period.
4. Julian Simon, *The Ultimate Resource 2* (Princeton: Princeton University Press, 1996).
5. The history of the bet is discussed in Ed Regis, 'The Doomsayer,' *Wired* 5.02 (February 1997). See also John Tierney, 'Betting on the Planet,' *New York Times* (2 December 1990).
6. David McClintick and Ross Emmett, 'Betting on the Wealth of Nature: The Simon-Ehrlich Wager,' *PERC Reports* 23:3 (September 2005), 16–17.
7. Thomas D. Kelly and Grecia R. Matos, 'Historical Data Series for Mineral and Material Commodities in the United States,' US Geological Survey Data Series 140 (17 April 2008), minerals.usgs.gov/ds/2005/140/#data.
8. Donald Mitchell, *A Note on Rising Food Prices*, Policy Research Working Paper 4682 (Washington, DC: World Bank Development Prospects Group, 2008).
9. Julian Simon, 'Introduction' in *The State of Humanity*, ed. Julian Simon (London: Blackwell Publishing, 1995), 18.