Macro Radar

Cognitive Science Meets Economic Analysis

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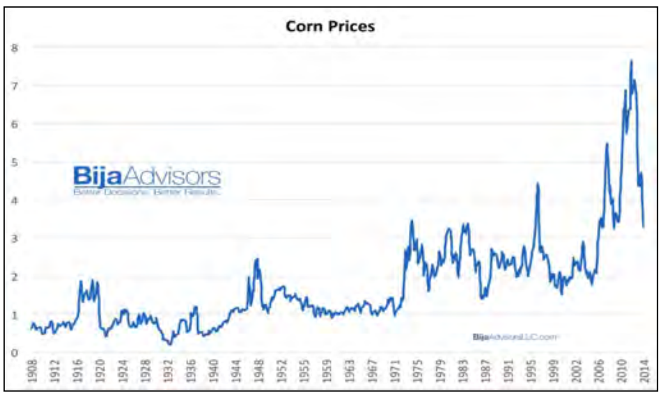
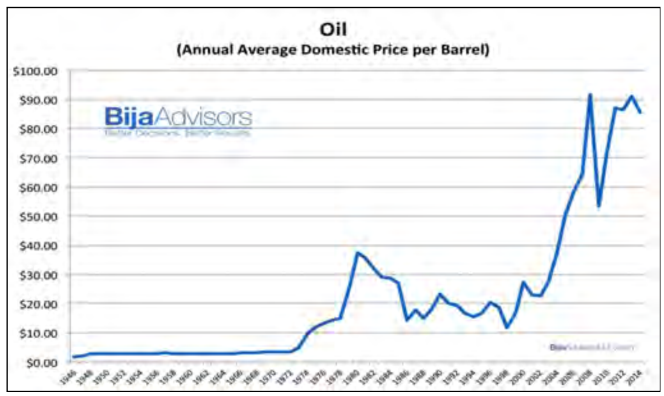
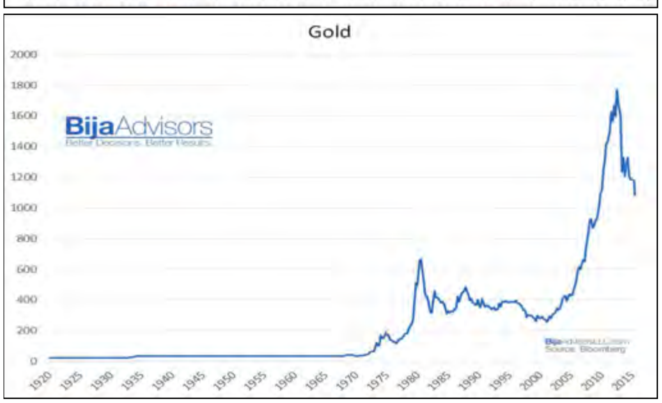
The Real Reason Commodities Collapsed

Since 2011, I have been writing and trading my view that the trigger behind the spike in commodity prices that began early this millennium had reversed, and would result not just in a return to the old ranges, but likely to the lower end of them, and probably for an extended period. I could refer you to the write-ups that accompanied those trades (Corn 2012) or the research pieces I've written along the way (China's Slowing Urbanization), but with so many now pontificating on why commodities are set to head higher again, I thought it worth revisiting the topic. So here it is in one up-to-date, succinct edition of Macro Radar.

Let's begin by looking at a selection of long-term charts.



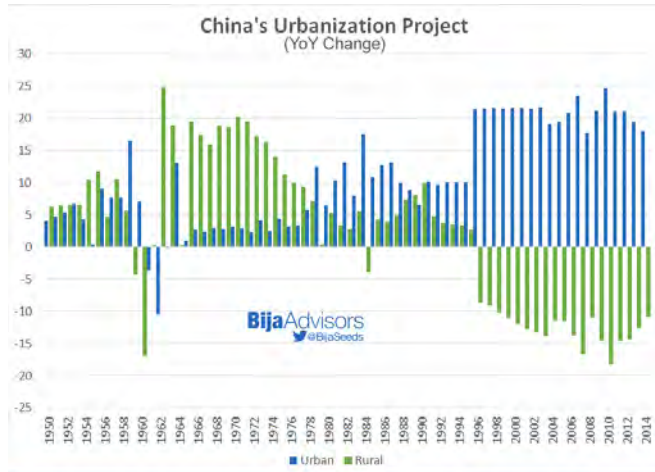


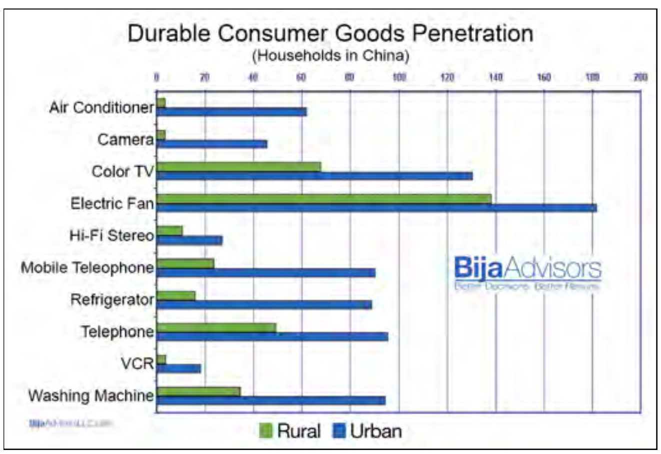


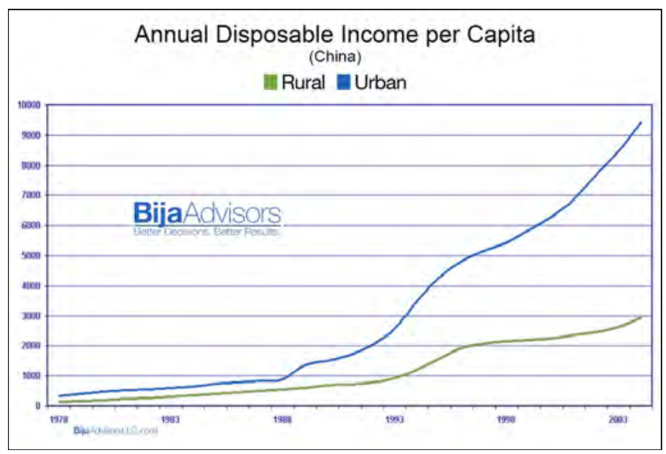
Truth is, no matter which commodity chart you choose, they all look very similar. Each exhibits extended periods in which a clearly defined range held, until something happened around the millennium. If we are going to discuss where commodities are headed from here, it would be absurd to do so without first addressing what it was that caused them all to *simultaneously* break out to the upside. I am referring to the orchestrated urbanization of the largest country on the planet. For it is what created the massive dislocation to the upside, and its secondary effects are likely to drive prices lower, much lower even, for a very long time.

What happened and why it was so powerful.

In 1996, without any warning or global policy debate, and certainly void of any fanfare, China began orchestrating the biggest urbanization project in the history of mankind. In 1996, they moved 22 million people from rural to urban areas. To put that in perspective, 22 million is more than the entire population of Manhattan, London, Paris, Sydney, Berlin and Stockholm combined. Now, imagine all of those cities being empty at the beginning of a year, then completely full by the end. That's essentially what began happening in 1996, and has continued unabated *every year* since. How is it comparable? Well, the urbanization of a country like China is like population growth on steroids. In essence, people go from being economically invisible to the rest of the world, to suddenly competing for jobs, raw materials and food on a global scale. Fact is, city dwellers simply live differently than their rural counterparts, particularly those in rural China.







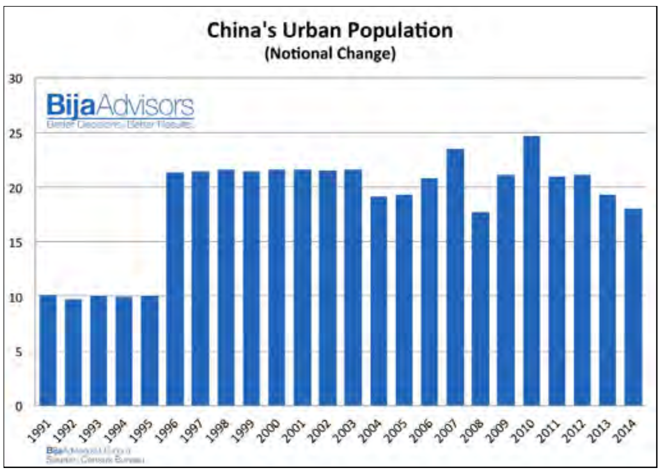
They live in smaller groups, use 4 times more electricity, earn more money and have greater expenses. They even eat differently, consuming far more sugary foods, more meat and, importantly, they no longer produce it themselves. (Fun Fact: Cows are 7x less efficient at converting corn into calories. That means when someone stops eating corn and instead chooses to consume beef, they actually create 7x more demand for corn.)

Urbanization of this magnitude, and the industrialization which accompanies it, leads to a spike in demand for raw materials and food. It always has. Think America, England, Rome, Greece, Egypt. The difference this time around is that the demand wasn't satisfied through colonization and theft. This time, those who produce what was in demand, namely the tropical emerging markets, were paid fair value for what the world needed. As a direct result, it was the first time in history they had the opportunity to become as wealthy as their temperate counterparts. (The temperate emerging markets were simultaneously hampered because their competitive edge, primarily cheap labor, was facing serious competition from China's insatiable supply of the same.)

However, even when talking about a country as massive as China, urbanization has a finite life. In 1996, 30% of China's 1.2 billion citizens were urbanites. Meanwhile, almost every developed nation was and is 85% urbanized. When economists finally picked up on what was happening, China had reached as high as 50%, which means another 540 million people would still need to come online before they too hit that magic 85% level. Therefore, these economists and analysts came to the conclusion that commodity prices would not only remain high, they would probably continue rising.

They were wrong for two reasons.

The first flaw in their assessment is that in order to bring people online, someone has to pay for it. For all intents and purposes, the incredible expansion of credit fueled by the combination of low interest rates, financial innovation and irrational exuberance funded it for many years, but it couldn't go on forever.

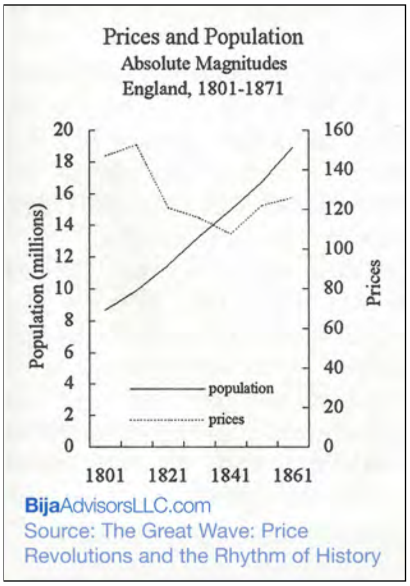


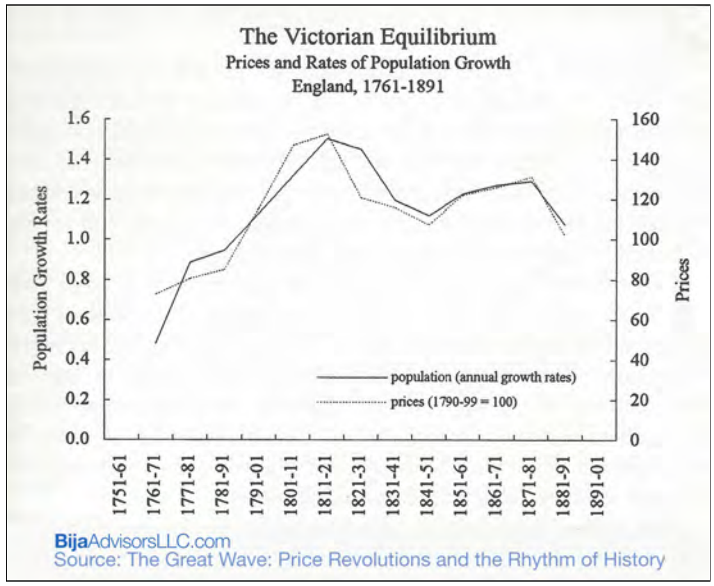
The second fly in the ointment was, well, math. When you consistently increase the denominator (total urban population) by adding 22 million to it each year, each additional 22 million will have a gradually declining effect on the year on year growth rate (see chart on right). The chart on the left however, shows that although the Chinese authorities did what they could to prop things up during the crisis, the notional increase has also begun slowing from the steady pace of 22 million per year to 18 million in 2014. So, in this case, the numerator has also been getting smaller, and the result is that the growth rate fell to pre-orchestration levels just as the crisis hit (by pure coincidence), and after the brief propping up by the powers that be, is now well below it, and going lower.

Who cares, right? I mean, they're still urbanizing 18 million every year and another 500 million plus are waiting in the wings.

Well, as it is with almost everything, it isn't the notional increase in population that matters, it's the year on year growth rate. Take a look at these charts (next page) from England in the 1800's showing the relationship between notional population growth and prices, and the population growth rate and prices, to see what I mean.

That's why it doesn't really matter that China is only 50% urbanized and that another 540 million are waiting in the wings to come online. Both flaws have become exposed.

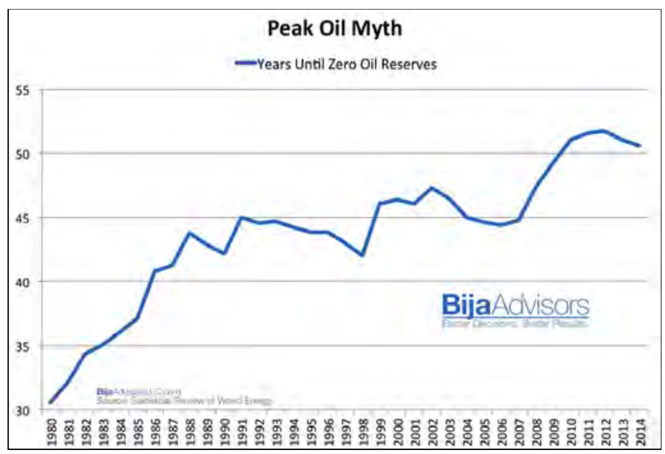




That's the bad news for commodities, but it is actually far, far worse than demand growth simply receding back to long run averages.

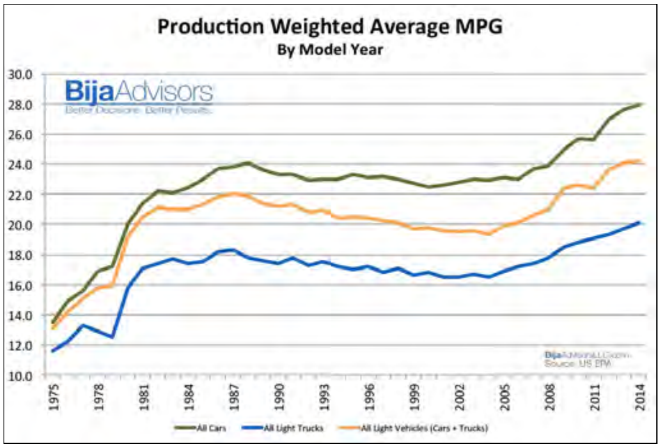
While everyone knows demand can affect commodity prices, the power of the demand side is almost always discounted, particularly by the commodity experts. There's good reason for that too. Demand shocks don't tend to last very long, which is why producers were so slow to respond to the spike in demand this time around. However, when it became clear that higher prices were here to stay (or at least it seemed that way), the supply side kicked into high gear on a number of very impactful fronts.

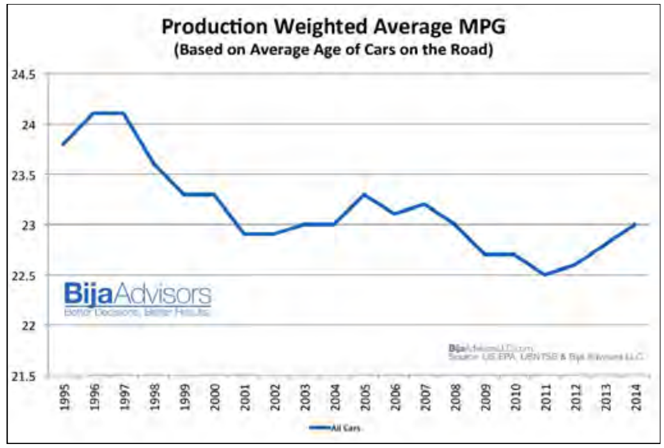
It began by drawing down on stock. Then the spigots were opened which sparked concern that demand would soon overwhelm even potential supply. (Remember all those peak oil papers?) Well, although many think tanks and even practitioners think these things occur in a vacuum, they do not. When projections of radical shortfalls gain traction, opportunists rush in to capitalize on the void that is predicted to develop. With oil over \$60, then \$80 and even \$100, the money for exploration poured in and the peak oil theory quickly petered out (even if its proponents still aren't willing to admit it).



Investment also went toward devising ways to reduce future demand. As the price of gasoline spiked, consumers shifted away from their SUV monstrosities toward more fuel efficient alternatives like the Prius and Tesla. Manufacturers responded and fuel efficiency has spiked over this period.

However, the real impact has yet to be truly realized. What the *Production Weighted* chart shows is the average miles per gallon achieved by models released in a given year. It ignores the fact that not every car on the road is brand new. In the US, the average lightweight vehicle is 11 years old. So, the average mpg for cars on American roads is something more akin to the chart on the right. Meaning, demand is only now about to show the true impact of the efficiency gains we've achieved over the past decade.





Fuel efficiency of the cars on our roads hardly scratches the surface of what has been gained since the commodity boom began. GMO's, mining technologies, newly discovered oil reserves and the technology that made it possible, wind, solar and Tesla's new batteries are but a few of the many improvements already made on the supply-side, with many more sure to follow, that will continue putting downward pressure on commodity prices. Add to that, concerns over global warming and other environmental drivers pushing for greater efficiency, recycling and upcycling, and you have additional downward pressure coming from the demand side of the equation, possibly for generations to come.

The bottom line is this. Without the orchestration of the biggest urbanization project in the history of mankind, commodities would not have exploded out of their long run ranges. With the impact of that event having run its course, you could argue that we should simply go back to the well worn ranges that preceded the boom. However, even though the direct impact of urbanization is now over, the aftershock of its secondary effects will remain with us for a long time to come.

As a result, I expect commodity markets to continue performing similarly to how they have in previous periods of urbanization of this magnitude. In other words, lower for longer.

About the Author

For nearly three decades, Stephen Duneier has applied cognitive science to investment and business management. The result has been 20.3% average annualized returns with near zero correlation to any major index, the development of a billion dollar hedge fund, the turnaround of numerous institutional trading businesses and career best returns for experienced portfolio managers who have adopted his methodologies.

Mr. Duneier teaches Decision Analysis in the College of Engineering at the University of California Santa Barbara.

Through Bija Advisors' publications and consulting practice, he helps portfolio managers and business leaders improve performance by applying proven decision-making skills to their own processes.

As a speaker, Stephen has delivered informative and inspirational talks to audiences around the world for more than 20 years on topics including global macro economic themes, how cognitive science can improve performance and the keys to living a more deliberate life. Each is delivered via highly entertaining stories that inevitably lead to further conversation, and ultimately, better results.

Stephen Duneier was formerly Global Head of Currency Option Trading at Bank of America and Managing Director of Emerging Markets at AIG International. His artwork has been featured in international publications and on television programs around the world, and is represented by the world renowned gallery, Sullivan Goss. He received his master's degree in finance and economics from New York University's Stern School of Business.

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