

# World Review

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Using Cognitive Science & Economic Analysis to Understand the World

## World Review Explained

This publication is designed to explain the world as it currently exists. By understanding the macro drivers, key player behavior patterns, and historical context, as well as how they interact and create highly predictable patterns, investors are better positioned to capitalize on the opportunities as they present themselves.

What you will find in the pages that follow are the stories behind the most important issues driving markets, policy, politics, and society today. To tell it, we have taken previously published editions from Bija's *Seeds of Thought* and *Macro Radar*, and grouped them together to make a coherent story. They are republished here exactly as they were initially. If you would like a bound hardcopy, send a request to [subscriptions@bijaadvisorsllc.com](mailto:subscriptions@bijaadvisorsllc.com) and we will happily mail one to you.



### About the Author

For nearly thirty years, Stephen Duneier has applied cognitive science to investment and business management. The result has been the turnaround of numerous institutional trading businesses, career best returns for experienced portfolio managers who have adopted his methods, the development of a \$1.25 billion dollar hedge fund and 20.3% average annualized returns as a global macro portfolio manager.

Mr. Duneier teaches graduate courses on Behavioral Investing and Decision Analysis in the College of Engineering at the University of California.

Through Bija Advisors' [coaching](#), [workshops](#) and [publications](#), he helps the world's most successful and experienced investment managers improve performance by applying proven, proprietary decision-making methods 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, Managing Director in charge of Emerging Markets at AIG International and founding partner of award winning hedge funds, Grant Capital Partners and Bija Capital Management.

His [artwork](#) has been featured in international publications and on television programs around the world, is represented by the renowned gallery, Sullivan Goss and earned him more than 50,000 followers across social media. As Commissioner of the [League of Professional Educators](#), Duneier is using cognitive science to alter the landscape of American K-12 education. He received his master's degree in finance and economics from New York University's Stern School of Business.

### Bija Advisors LLC

1482 East Valley Road

Suite 217

Santa Barbara, CA 93108

Main: 805.521.8001

Web: [BijaAdvisorsLLC.com](http://BijaAdvisorsLLC.com)

Twitter: [@BijaSeeds](https://twitter.com/BijaSeeds)

General Information:

[info@bijaadvisorsllc.com](mailto:info@bijaadvisorsllc.com)

Subscription Information:

[subscriptions@bijaadvisorsllc.com](mailto:subscriptions@bijaadvisorsllc.com)

Coaching Information:

[coaching@bijaadvisorsllc.com](mailto:coaching@bijaadvisorsllc.com)

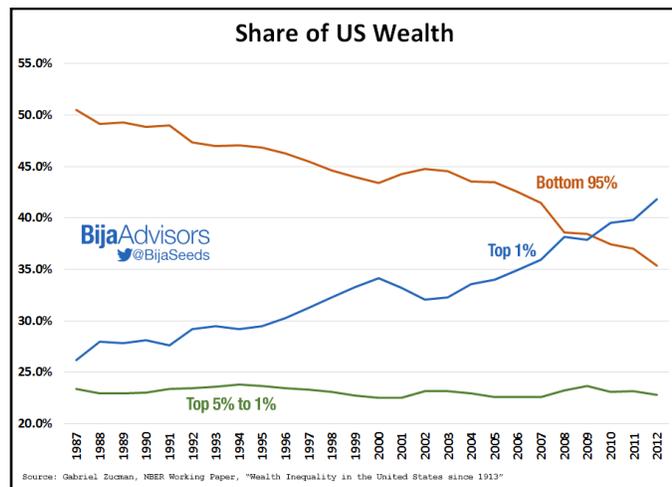
# Macro Radar

Cognitive Science Meets Economic Analysis

Issue 14-1  
October 28, 2014

## Declawing of the Federal Reserve

Times have changed dramatically since Alan Greenspan took the reins of the Federal Reserve. The shift in wealth distribution from the bottom 95% to the top 1% has been nothing short of amazing. In 1987, more than half the country's wealth was controlled by the bottom 95% while the top 1% owned roughly half as much. Fast forward to the financial crisis and that gap had collapsed to near zero, with the divergent paths having continued unabated since (see *Share of US Wealth* chart).



No matter how you look at the landscape of wealth and income in the United States, the disparity has been growing at an astounding pace. What started it, whether it's sustainable or even justified, is not my concern here. What is of great importance, however, is the impact this shift in the composition of the Federal Reserve's target audience has had on the economy and the consequences for the effectiveness of the Fed itself.

## Behavior Modification

What gets lost in conversations about Fed policy is the fact that the Federal Reserve, for all intents and purposes, is in the business of behavior modification. Every tool, from open market operations to the discount rate and even quantitative easing, is meant to alter the behavior patterns of its target audience. Interestingly, their tools were devised for an economic demographic that no longer exists, and that is what makes it difficult to set policy and predict it, but also calls into question whether it even matters.

## Diminishing Marginal Utility

What is rational to one individual isn't necessarily so for another equally intelligent person. This is particularly the case when it comes to marginal utility, a concept that underpins Fed policy. To review, marginal utility is the additional satisfaction or benefit that a consumer derives from buying an additional unit of a commodity or service. Merriam-Webster uses the example that an additional slice of bread given to a family that has 5 slices will provide much greater marginal utility than it would to a family that has 30. This example is reflective of the sort of proportionality most of us consider when thinking about how changes in interest rates affect consumers and investors.

The issue these days, is that the overwhelming majority have somewhere between 5 and 30 slices of bread, while a tiny minority has wheat farms and bread factories. In other words, the law of diminishing marginal utility plays out very differently between a multi-billionaire and the average American consumer. That dramatic divergence in behavior patterns, combined with the extraordinary proportion of the country's wealth now

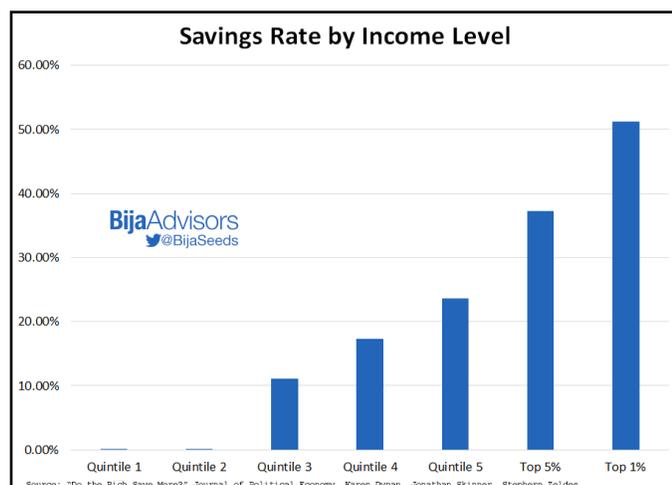
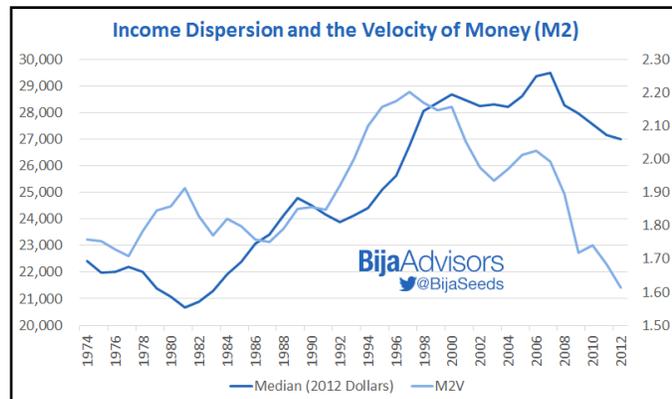
being controlled by that tiny minority, is affecting the effectiveness of the Federal Reserve's tools. Unfortunately, rather than acknowledging it and making adjustments by devising new tools, monetary or otherwise, we seem to be advocating the marginalization of the signals that are sounding off the loudest alarms, such as velocity (see *Income Dispersion and the Velocity of Money* chart) and underemployment, both of which are being dismissed due to the difficulty in gathering accurate data.

### Target Audience

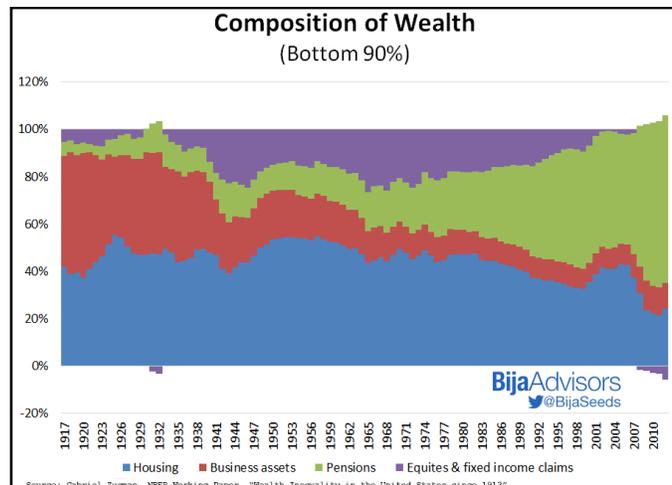
I am purposely using the term Target Audience, because I am trying to drive home the point that the Fed is not just some obscure, bureaucratic entity that waves its wand and effects change. It is very much like any other business whereby it must assess the environment in which it exists, understand the behavior of its target audience and craft a suitable strategy for guiding that behavior in the direction it desires.

Take a look at the [savings rates by income level](#) and you quickly see, the more one makes, the more one can, and does, save. When you get to the Top 0.1%, the savings rate approaches 100%. Give a household with an income of \$25,000 per year an additional \$500 and they are very likely to quickly purchase something with it. When the majority of the economy is made up of people in a similar situation, those transactions get repeated over and over again. That is the velocity of money. However, when that household purchases

\$500 worth of goods from a multi-billionaire or even WalMart, where Michael Duke made 1,372 times more than a full-time minimum wage employee of WalMart, you can see how quickly the velocity of that \$500 injection dies. So while the Fed and other central banks around the world have been "priming the pump" and "printing money", it's had surprisingly little effect on the overall money stock, inflation and growth.



Some argue that the economy has struggled even with the massive injections and so any reduction in stimulus would have a devastating effect. Recall the tantrum triggered by Bernanke's taper comment on May 22, 2013. At the time, while the markets were in a frenzy over the potentially disastrous effect of the removal of stimulus, I made the argument that it didn't actually matter. Although many point to the economy's performance since tapering began as evidence of an underlying strength, I believe it simply didn't matter very much.



Now we are facing a similar situation with the imminent removal of “considerable period” language, debate over the timing of the first hike and the speed at which they will rise. For the last several Fed meetings it has caused quite a stir. I contend once again, it probably doesn't matter as much as we'd like to think. The problem the economy faces is not one of money supply, but of velocity.

### Behavior by Proxy

There's one more rather significant phenomenon that compounds the issue I'm attempting to highlight. While the great majority of Americans control a rapidly dwindling proportion of wealth in this country, it is still a rather sizable chunk. What's noteworthy is that the amount of that wealth now directed by pension fund managers, rather than the individuals themselves, has ballooned (see [Composition of Wealth](#) chart).

What this means is that the people now controlling velocity are the mega wealthy, CEOs and pension fund managers. All of them have very different incentive systems and behavior patterns, than the bottom 95%. For years, the new power players have been more focused on controlling risk than on initiating it. Much of it has to do with the post financial crisis zeitgeist (see [Seeds of Thought](#), February 21, 2013) which demonizes risk taking and criticizes those who profit from it. Cash is hoarded or shuffled between players with similar marginal utility levels. Companies are borrowing from the pool of wealth to buy back stock which only serves to return more capital to the pool. It kind of reminds me of the movie, *Brewster's Millions*.

### Real vs Financial Economy

What ultimately stands in the way of the economy realizing its true potential is that the money that has been pumped into the system can't seem to find its way to the real economy, and instead is being dumped into the financial economy. The traditional transmission mechanisms are broken and unless the Federal Reserve devises new tools, the only thing raising rates will eventually confirm is just how impotent the institution has become.

## Implications

So what do we do with this information? First, we must recognize that the Fed probably matters less than we think. There is a massive pool of wealth that was created from 20 years of uninterrupted global prosperity thanks to financial innovation and loose monetary policy which, even when you factor in the financial crisis, has experienced little more than a brief hiccup. That money is no longer being put to work and the velocity of it is on a downward trend. Wealth isn't being invested so much as it is being parked.

Corporate borrowing to buy back stock and the recent spike in M&A activity represents the low hanging remnants of financial innovation, but it has limited upside potential. Higher equity prices since the crisis have also helped the bottom 95% move forward. When they could no longer tap into skyrocketing home equity loans to fuel their spending, the rising balances in their pension accounts cushioned the psychological blow.

Bottom line, the giant Ponzi scheme in which everyone is participating is the only thing to keep an eye on. So long as none of the participants panic, the path we have been on for the past 5 years will likely continue. The sheer magnitude of excess cash in the system will keep things moving in the same direction. The US government will continue to have access to as much cash as it desires. From there, the excess cash will likely continue to flow into the lowest risk assets in the investor's home country first, with everything else attracting capital on a risk adjusted basis. I believe returns will be harder and harder to come by, with risk/reward ratios continuing to recede. Implied vols should remain compressed, except for the occasional blip, for while protection is an important thing to have, remember that the "risk on" side of future moves will likely be subdued and therefore attract its share of sellers looking to fund that protection.

While it sounds like the only possible outcomes are slow and steady risk on or cataclysmic risk off, it's the ebb and flow in expectations between the two that is likely to continue exacting the most pain.

# Macro Radar

Cognitive Science Meets Economic Analysis

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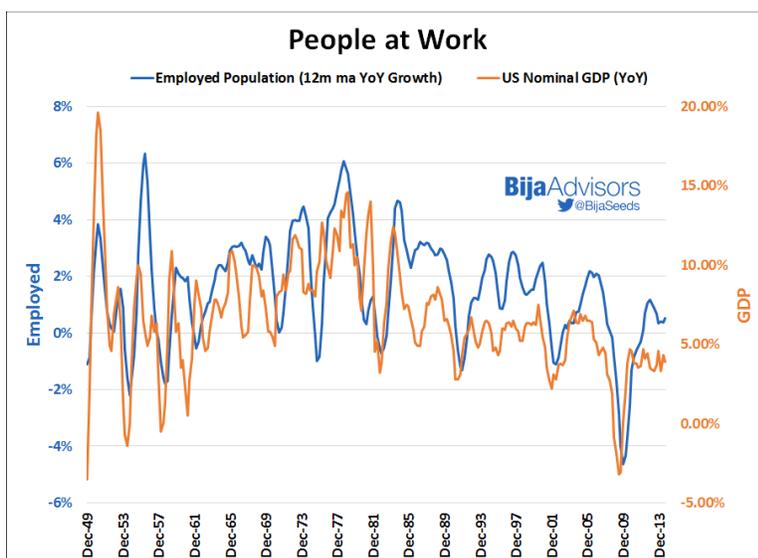
## Wealth, Taxes & the Next Bull Run

In *Declawing the Federal Reserve*, I argued that wealth disparity was a game changer for the composition of the Fed's target audience, rendering its monetary policy impotent. This edition explains why it's too early to worry about wealth disparity's impact on growth and corporate earnings. Instead, history would suggest that wealth disparity has much more room to run, and public policy in places like Europe and Japan, will make the divide, and a stock market burst higher, all but inevitable. Meanwhile, the outlook for inflation and growth, their intended goals, aren't nearly as certain.

### SOMETHING HUGE HAPPENED

Labor markets are a hot topic at the moment, but rather than focus on its impact on inflation, I want to look into its relationship with growth. I'm going to skip past the structural vs cyclical participation rate debate and get right to the indisputable trends. To begin with, I overlay the annual growth rate of the actual number of Americans employed with nominal GDP growth (see People at Work chart). Naturally, you would expect to see a relationship between the two, but there's so much more to glean from this chart.

Most notably, something huge happened around 1978, a year rarely mentioned in economics courses, but from the look of things, should have garnered a syllabus all its own. However, before we dig into why things shifted that year, let's note what changed. The trajectory and volatility of both nominal growth and employment was altered, with GDP peaks becoming more and more muted, especially relative to employment peaks. (I wrote at length about velocity in the previous edition, so I will simply mention that it may be a factor here.) Also, in looking at the cyclical peaks and troughs of the current well-established downward trend, we would appear to



be much closer to the top than the bottom. The reason that's important is that the odds should favor reversion to the downward trending mean, putting the burden of proof on those who would argue for a break of the trend. In other words, if you are going to argue for greater growth in the employed population (likely requiring a higher participation rate), you'll need to make a pretty compelling case.

Looking at a chart of the share of total U.S. wealth controlled by the top 0.1% (see Rise of the Upper

Upper Class chart), once again 1978 jumps out as a fulcrum point. (As an aside, when looking at wealth disparity charts like this, keep in mind they represent relative proportions, not absolute values, so when one group spikes, another group must be collapsing. These charts also tell you nothing about the growth of the pie itself.)

## THE TRIGGER

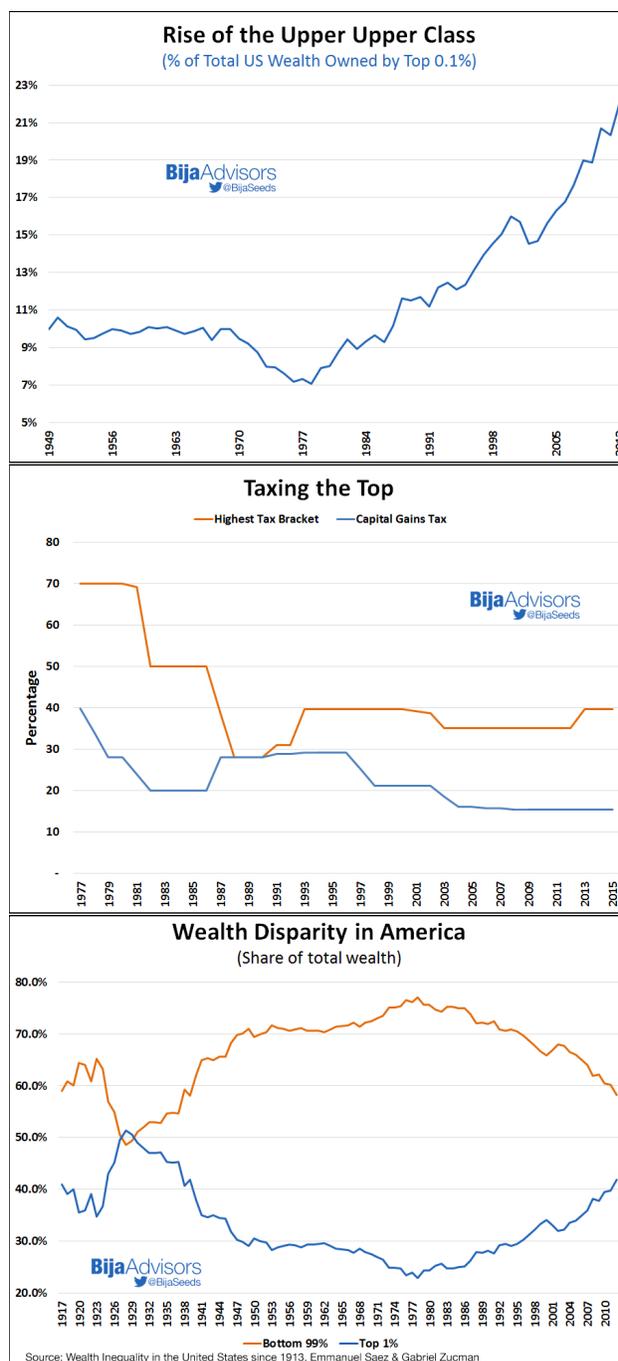
After considering numerous possible factors that could have caused such a disruption, one jumped out as being worthy of further investigation. 1978 marked the beginning of some fairly radical tax reform, particularly as it relates to capital gains and the highest income tax bracket (see Taxing the Top chart). Yes, at a time when Democrats controlled the Oval Office, House and Senate, wealth disparity began its march, so you could say, Jimmy Carter's administration gave birth to the rise of the upper upper class, while Reagan's nurtured its growth. But I'm getting ahead of myself.

Although the idea that taxation could be a powerful tool for wealth redistribution makes intuitive sense, I'm concerned about leaping to such a grand, far reaching conclusion based on just one data point. So I pulled the charts back further to see if there were other episodes which might support or refute the view (see Wealth Disparity in America chart). By going back to 1917, we now have two additional turning points to investigate. One in the early 20's and the other in the early 30's.

Before we move on to the taxation chart, take a second to absorb the extreme level of wealth disparity and the speed at which it jumped over the course of the 1920's. Now, compare that to where things stand today, and you'll see there is plenty of room for this to run. (The same can be said for equity markets, but I'll come back to that point shortly.)

## TWO CERTAINTIES: WEALTH AND TAXES

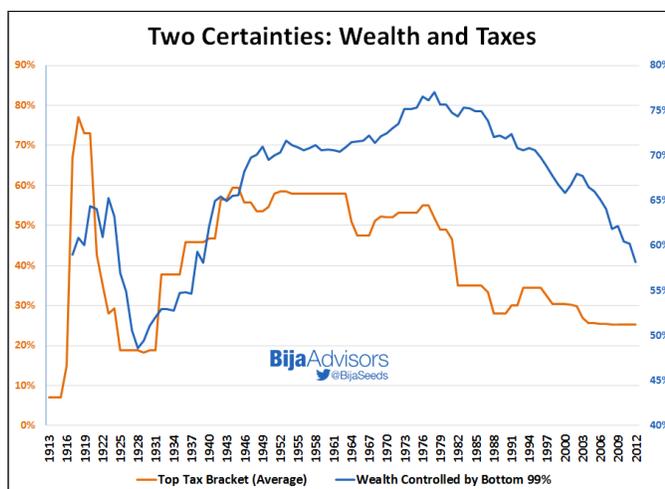
Let's see if the taxation chart provides any clarity when we pull it back to cover the same time frame (see Two Certainties chart). For ease of comparison, I've simplified things by charting the average of the top tax bracket and capital gains tax levels, and overlay it with the wealth



controlled by the bottom 99%. Based on the data, it'd be hard to argue that there isn't a very strong structural relationship between these two factors.

What this tells me is that the natural order for an economy is much like a game of monopoly or a no-limit Texas Hold 'Em poker tournament. Ultimately, the game progresses until one person controls all the money. The first line of defense against this fate is some unnatural force, like a government which redistributes wealth through proportional taxation and spending.

Therefore, if you believe that wealth disparity will eventually become such a disruptive force that its course will need to be slowed or reversed, watch the national discourse regarding taxation and federal spending as a key trigger. Until then, it's just conversation. Based on the mid-term election results and current level of distaste for government spending programs, I would argue we're still in the conversational phase with plenty of room to run. (I'm considering the addition of Fox News viewership numbers to my macro dashboard.)



## RELEASE THE BULLS

What are the implications of wealth disparity spiking to the next level, then? Well, before I get to that, let's consider some other factors currently in place and potentially on the horizon, that argue in favor of wealth disparity not just continuing at its current pace, but experiencing a leap higher, similar to what we saw in the Roaring 20's. Low inflation, technology moving up the food chain (read *The Second Machine Age*), tight credit standards, higher equities and perhaps the most powerful of all, central bank asset purchases at a time when federal budgets are not ballooning. This makes what the ECB and BoJ are embarking upon so powerful. While they believe money will suddenly find its way into the real economy, they are missing the key piece of the puzzle necessary for that to happen - government spending. You see, just as the Fed doesn't fully comprehend how drastically wealth disparity has affected its target audience, neither do the Europeans and Japanese. Abe and Draghi are simply putting more money in the hands of savers, therefore they should expect the crowding out from their asset purchases to flow into other financial assets, like equities, not the real economy.

You might think, it's too late. Equities already had their run. Au contraire. Take a look at the Dow Jones Industrial Average (S&P doesn't go back as far) using log normal returns. Note the periods with the most extreme slopes, namely the 1920's and 1978 to the end of the century, those periods when wealth disparity also took off. What's notable is the lack of a significant run higher in equities since 2000, even though wealth disparity has continued unabated.

## MEGA-WEALTHY MISSING OUT

Much like it was in the 20's, we all know about the fragility of the economy and the issues that make it unsustainable. As I said in the previous edition of Macro Radar, this is ultimately a giant Ponzi Scheme, but sometimes you can be too smart (or too risk averse) for your own good. You

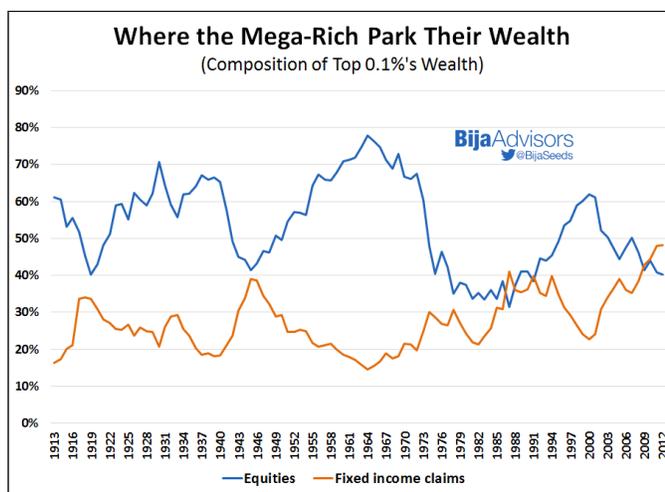
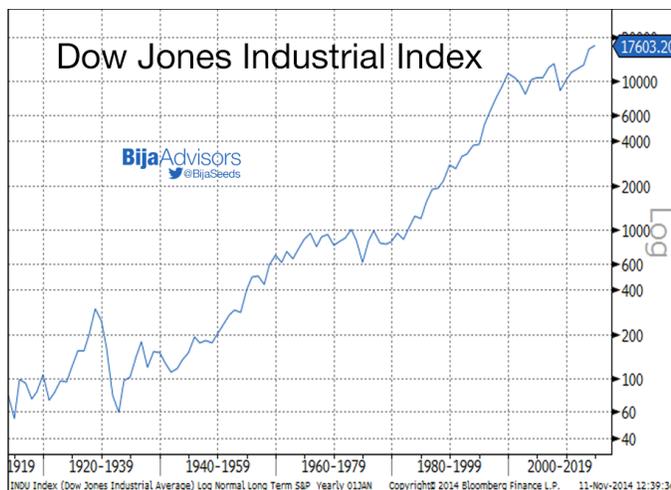
could argue this has been the case for the mega-rich since the financial crisis. Typically, they capitalize on equity bull runs far better than anyone else, but this time around, they've been sitting on the sidelines (see Where the Mega-Rich Park Their Wealth chart).

Perhaps the crowding out effect from ECB / BOJ purchases will mark a turning point for this ratio, pushing wealth out of fixed income and into equities, thereby triggering the start of the next lurch higher for stock markets. Maybe it will be higher growth expectations when low oil prices during the holiday shopping season spark higher discretionary spending or a Fed that becomes more focused on inflation than employment. Fact is, there are a whole host of reasons for equity markets to spike higher, and it shouldn't matter that most of them are not based on sound economic fundamentals, like higher growth rates or improved corporate earnings. (Yes, I hear myself.)

The laws of supply and demand ultimately drive price action. When you reduce supply (assets available for purchase) and increase demand (wealth *in the hands of savers*), prices go higher.

### P.S.

There are as many lessons to be learned from the years leading up to 1929 and 2008 as there are in the aftermaths.



## Participation is Half the Battle

Right up until 1940, the labor force in the United States had been defined as those who were 10 years old and over. Yes, little kids were active participants in our economy, working rather than attending school. In 1836, Massachusetts passed a law requiring factory workers under the age of 15 to attend school at least 3 months a year, but they were progressives. It wasn't until 1938 that federal law regulated minimum ages and hours for children.

To this day, we define the labor force according to the Fair Labor Standards Act of 1938. Everyone who is 16 years old and up is technically part of our labor statistics, including unemployment and the participation rate. Seem silly to include kids who are just 16 years old? Good, then you'll be interested in the rest of this Macro Radar.

Back in the early 1800's, America was primarily an agrarian economy, employing as much as 80% of the labor force. Since most farms were family owned, it was only natural that parents would put their kids to work. Among white children between 5 & 19 years old, only about half were enrolled in school, and even those that were would attend sporadically for just a few hours at a time.

Then manufacturing took over and kids moved to the factories. When a child works in an industrial setting though, it has a very different connotation than a child essentially doing chores on their family property. With the women's suffrage movement gaining steam, it's not surprising that there was a simultaneous push for child welfare laws. Even though the federal law wasn't enacted until 1938, the wheels were set in motion to move kids out of the labor force more than 50 years earlier.

As recently as 1910, a full quarter of the US population over the age of 25 had less than a 5th grade education and only 13% had completed high school. However, as children left the labor force, they began attending school. Kids not only finished elementary school, they kept on going. As of 1970, half of America's adults had a high school diploma and from there, the numbers jumped, reaching 88.8% by 2010. That's why you think it's silly that high school aged students are still counted in our labor force statistics. You assume that since just about everyone gets their high school diploma these days, most of them aren't really active labor participants, and you're correct. The participation rate among 16 & 17 year olds is lower than every other subset, but between 1948 and 2000, it had held fairly steady at approximately 40%.

It's only since then that it has collapsed to 20%. The decline is rivaled only by the 18-19 and 20-24 year old subsets. You could attribute the collapsing participation rates among this age group to the desire to attend college, but as we saw in previous episodes, it's the lack of work that drives the demand for education, not the other way around.

So what happened? As is often the case, when inflation spiked in the early 70's, Americans began saving less and taking on more debt, thereby borrowing from their own futures. By the late 70's,

more 45-49 year olds began to participate in the labor force. 5 years later, the 50-54 year olds did and so on. Each time the older generations who were already entrenched in their jobs, increased their participation in the labor force, they were eradicating an opening meant for the youngest generation.

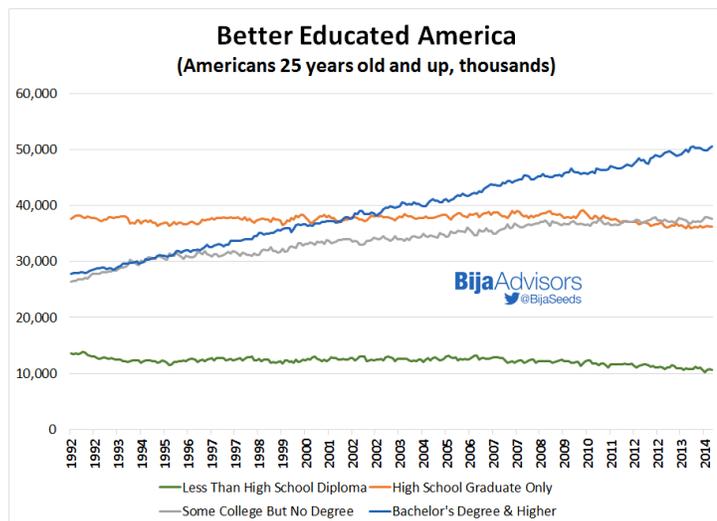
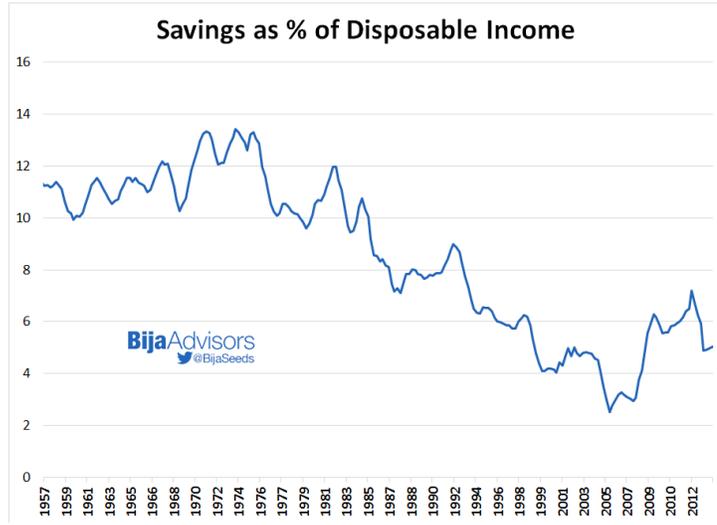
So, it's not that life expectancy suddenly jumped, it's that people hadn't prepared for retirement neither/nor were they willing to adjust their spending habits as they got older. As kids entered the workforce, they had trouble finding work, particularly the kind of work that would support the

lifestyle to which they had become accustomed. Rather than struggle, they opted to not only finish high school, but go on to college, after all, the statistics were clear as day. College graduates are less likely to be unemployed and have significantly higher incomes. There's just one problem with those statistics, they reflect the past, not the future.

Since 1992, the number of Americans 25 years old and up with at least a bachelor's degree has skyrocketed 82.5%, whereas those without it has grown by a mere 8.9% and the effects are already being felt. According to the Federal Reserve, 44% of recent graduates with bachelor's degrees and higher were in a job that required little more than a high school diploma and 1/5 were in "low-wage" jobs, earning less than \$25,000 per year. With few opportunities for decent jobs and attractive wages, young adults are opting to stay in school longer,

borrowing money to finance bachelor degrees that now take nearly 6 years to attain. Even at the 6 year mark, only 59% of those who start college, actually graduate.

The spike in demand for a college education has driven prices up at several multiples of the underlying inflation rate. Since 1992, adjusting for inflation, the cost of attending a "4-year" institution has jumped 70%. Higher education has become a growth industry, with the number of available seats doubling since the 80's. New colleges are popping up around the country, and online. Whole new industries have developed, catering to parents desperate to help their children get into a "good" school.



## Implications

There are so many implications to consider, many of which will be covered in future editions of Macro Radar, but here are a few to get the ball rolling.

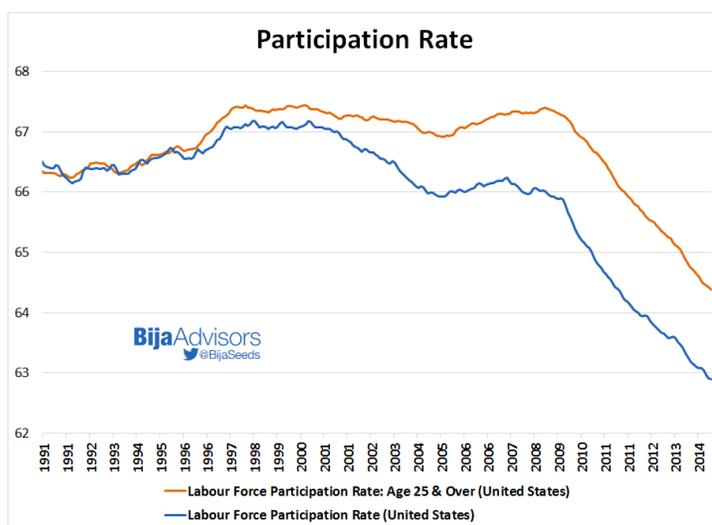
First of all, we are missing a signal in the participation rate. Economists, including those at the Fed, keep saying that it began to fall well before the financial crisis, and therefore it is a structural issue. I believe they're wrong.

What is structural is that everyone seems to believe that you must attend college in order to get a decent job and make real money. It will take time to change that. Therefore, as silly as it is to include 10 year olds or even 16 year olds in our analysis of the labor force, I

am arguing that we should also exclude the entire population under 25. When you do that, you see that the participation rate in 2008 was exactly the same as it was in 1996. However, since then, it has collapsed. That means it isn't as structural as many seem to believe. Something actually did change as a result of the financial crisis.

Secondly, unless the economy explodes, the added value of a college degree will collapse, just as the value of a high school diploma did when everyone had one of them. However, there's one big difference. A high school diploma was/is fully funded by the government. The cost of a college education is not and a whole generation is getting deeper and deeper in debt as a result. Yet another drag on future economic growth. (Note: Add student loan forgiveness to your macro radar. It would be a powerful tool for reducing wealth disparity, stimulating velocity and adding wage pressure in an otherwise inherently low inflation environment.)

Third, I believe the shift in participation from the young to the old masked a leap higher in productivity rates. As the deeply entrenched older generations reduce their spending to a more reasonable level, the result of everyone's expectations being adjusted by the financial crisis, they have begun to exit the workforce. That's the change we've seen in the participation rate since '08. However, rather than fill their places with the younger generations, they'll simply allow the job to disappear, or be filled by technology. That means, lower participation, low unemployment, low wage pressure and higher productivity prints.



# Macro Radar

Cognitive Science Meets Economic Analysis

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## Rise of the Machines

The very first tool, known as an Oldowan chopper, was invented 2.6 million years ago (see image). It wasn't until 1.7 million years ago when the next major technological breakthrough occurred with the invention of Acheulean Hardware (see image). Take a good hard look at the images to fully fathom the leap forward in technological innovation that was achieved over a 900,000 year span.

13,000 years ago, man was still traveling in small nomadic packs. Its travel patterns dictated by the migration of the animals it hunted and the seasonality of the plants it gathered. It wasn't for another 1,500 years that the 1st known village was created, made possible by the invention of a granary, where grains could be stored for future use. This allowed for the use of seeds to grow their own food and the advent of farming. We may think of GMO crops as a new phenomenon, but it is merely an extension of what began during the stone age, 11,500 years ago. It is called domestication, the process of changing crops through human interference. When humans began to favor the tastiest, highest yielding, easiest to harvest plants, they interrupted the natural cycle. If you think about it, rightly or wrongly, what companies like Monsanto are doing is an extension of that on a molecular level, by selecting genes and breeding crops to be ever more useful to humans.

10,000 years ago, animal domestication began. Having meat and milk readily available, as well as hair and skin for warmth, man began to urbanize and seasons no longer controlled them. The efficiency provided by these early technological innovations changed civilization forever. Hunters and gatherers suddenly found themselves out of work. They learned new skills, like tilling soil, spreading seeds, shearing sheep and milking cows.

Employing beasts of burden allowed for plowing, yet another leap forward in productivity, displacing many of the highly skilled agricultural workers. Luckily, they'd had a good 1,500 year run before the animals took their jobs, though. At the time, I'm certain it must have been very



Oldowan Chopper  
Invented 2.6 million years ago



Acheulean Hardware  
Invented 1.7 million years ago

stressful for those who lost their place in the hierarchy to the stupid beasts, but as a species, we look back on it as the dawn of civilization.

Freed from the burden of farming, specialists developed new skills and new technologies. Home construction was improved with the invention of plaster, which required heating limestone at 1,000+ degrees for days. A mere 3,000 years later, what was learned by those fire workers led to metal work. The Bronze Age lasted 2,000 years, leading to the Iron Age for 600 more. With each advancement, efficiency and productivity soared, displacing workers, but also freeing them for other pursuits, such as the arts and sciences, which led to yet further advancements (and greed and politics, but that's a topic for a future piece).

Fast forward to 1958, when Herbert Simon, Nobel Prize winner and co-inventor of the "General Problem Solver", a computer program designed to solve any logic problem, predicted that a computer would be the world chess champion by 1968. He was wrong, and many publicly and loudly mocked his ridiculous prediction at the time. Although computer chess programs improved their ELO chess rating each year, it wasn't until 1997, 39 years after his prediction was made, that Deep Blue beat the world chess champion, Gary Kasparov. At the time, Deep Blue had 32 processors and could calculate an astounding 200 million potential chess moves per second. \$100 million and 5 years later, Blue Gene was employing 131,000 processors to routinely handle 280 trillion operations every second. Today, free apps on your mobile phone have achieved grandmaster levels and regularly beat the top human players.

Our ancestors existed as hunter / gatherers for millions of years. For tens of thousands more, we were primarily an agrarian society. Manufacturing dominated the American job market for a hundred years and services for half that time. The pace of change is increasing at an astounding rate, but we are slow to acknowledge just how rapid it is. The point I am trying to make is that our species has been innovating and improving productivity for millions of years. With each leap forward, the gap between one leap and the next has been getting shorter and shorter, and with it, the time afforded people, and society as a whole, to adjust, has been shrinking too.

In 1991 there was 1 website. 3 years later, Yahoo and 2,737 other websites came to be, along with the very 1st e-commerce transaction. The number of websites jumped ten-fold the next year and everyone proclaimed the internet to be the future of commerce. Website development, specifically HTML coding, was the skill to have for the future and, under the direction of their forward thinking parents, kids rushed in. Those parents were correct about the growth of the Internet. As of this year, more than 1 billion unique domains exist. However, they were wrong about the future of the website developer. Visual Basic, Java, Javascript, PHP, WebDNA and so many more programming languages have appeared and disappeared since. Now, anyone with an internet connection and a mouse can create an incredibly professional, attractively designed, highly interactive website that is functional on all browsers, computers, tablets, and phones, in a matter of minutes, for FREE! So much for the time, effort and expense that went into learning the skill of the future. Technology itself leapfrogged us. An entire job sector was created and rendered obsolete within 20 years.

Bookkeepers and accountants have been replaced at an astounding pace by Quicken, which is now being replaced by the tax authorities own websites. Lawyers have been undermined by LegalZoom. Stock brokers replaced by E-Trade. Before our very eyes, the skilled laborers of the

service sectors are being replaced by technology (and it's not even very sophisticated technology), but these are the jobs for which our universities continue to prepare their students. They are creating the next generation of hunter/gatherers just as the world is moving to farming. It's the reason why America is now more highly educated than at any other time in its history, yet we are experiencing a skills gap.

For millions of years, humans have been using technology to free them up to do the tasks that require greater computational ability. It would appear, we may have hit the tipping point, where humans actually can't keep up with the pace of change. We are the wrench in the gears. High school students are graduating with the same exact skillset as they did more than 50 years ago, and college students aren't very different. What humans used to do because it would cost hundreds of millions of dollars for technology to accomplish, can now be done by technology for a fraction of the cost to have it done by a person. Technology is learning at a faster pace than people.

So, is this the end for mankind? The rise of the machines? In my opinion, the answer is an emphatic, NO!, but just as farming led to the end of mankind as it had existed for millions of years before, so too will life as we know it be changed forever, and that change is happening, now. Unfortunately, we aren't adjusting the metrics we've been employing to gauge its impact, because we're at a loss as to how to go about it. That has implications for your entire macro economic dashboard, and those of the world's policymakers.

The point of this piece is to continue the story I've been telling in the previous Macro Radar issues. It is still more context for understanding the macro economic fundamentals. In the next installment, I will discuss the Lottery Economy in some detail, but here is a teaser to get you thinking.

### **The Lottery Economy**

Eastman Kodak was a key player in the photography industry almost from its very beginning, with the town of Rochester, New York perhaps its greatest beneficiary. A big, successful business can have a tremendous influence on the area surrounding it. The wealth that is brought in and then distributed across a large, highly educated workforce attracts others. Homebuilders, restaurants, suppliers and even educational institutions pop up in order to service the demands of the personnel. By attracting a more highly educated population, it also draws other businesses that look to tap into that talent pool. Universities receive funding from local benefactors, and spit out graduates who have been educated in the fields in which the region specializes. (Think NYU and Columbia for finance, Stanford for hi-tech and USC for film.)

Kodak isn't alone in being so influential that the mere mention of their name conjures up images of the city in which it resides. It's hard to separate Microsoft from Seattle or Ford from Detroit. Of course, other business eventually bulk up the economies of those cities as well. Starbucks in Seattle, Chrysler and GM in Detroit, and Bausch & Lomb in Rochester, to name a few.

It is estimated that since the first photograph was taken in Paris in 1838, 3.5 trillion photos have been snapped. Amazingly, a full 10% of them, or 350 billion were taken in the last year alone. Even more incredible is that the business that had until very recently commanded a full 90% of photo related sales, and actually invented the digital camera, filed for bankruptcy at the same time.

At one point, Kodak alone employed more than 60,000 people in the town of Rochester. Today, that number is less than 1/10th of that. On the flip-side, in the same year that Kodak defaulted and entered bankruptcy, one of the biggest players in photograph development and dissemination, was purchased for \$1 billion. That company is Instagram and at the time, it had just 13 employees. No town is rising up to support it. No new universities pumping out graduates to fill its ranks. No homebuilders, restaurants or suppliers are needed to service its workforce. Welcome to the Lottery Economy.

# Seeds of Thought

Cognitive Science Meets Investment Management

Issue 14-11  
December 29, 2014

## Doctoring Deflation

There are two compelling reasons inflation won't be a concern for quite some time; Chinese urbanization and technology. In fact, I would be more inclined to predict deflation, and to be honest, I'm not really sure why that should be any more worrisome than its opposite. More on that in a bit.

To understand why I began predicting the collapse of commodities two years ago, read [China's Slowing Urbanization](#). In this edition of Seeds of Thought, I will focus on the other major factor, technology. In particular, we will look at the field of primary healthcare and the role physicians play in it to show why it is that no matter how low the unemployment rate goes, wage pressure is unlikely to become a factor.

Recall, in Rise of the Machines (Macro Radar, 12/9/14), I covered a number of areas in which technology has made great strides to first catch up to human capabilities, and then rapidly surpass them. As I've stated in previous pieces, it is my contention that the services industries will soon be dominated by technology, just as it has in agriculture and manufacturing. This is not prognostication for some time far off in the future. It is happening now. Yes, it takes time for such a large scale transformation, but, like the development of technology itself, the process of turnover is not a straight line. It is exponential, beginning slowly and building speed as it progresses, until change occurs so rapidly, that it feels as though it had happened overnight.

## Doctor 2.0

According to most estimates, America is experiencing a shortage of about 8,000 primary care physicians, a number expected to grow to nearly 66,000 by 2025. However, I believe the apocalyptic estimates will once again fail to materialize. Let's set the stage with this excerpt from a recent study by the Yale School of Medicine.

"In recent years, physicians and policy makers have raised concern that this fragmented, under-funded system of primary care is not fulfilling the health care needs of Americans. In particular, Americans are finding it difficult to access primary care services and, when they do, the systems often provide inadequate care for chronic illness, mental illness, and continuity of care. Physicians who practice in primary care settings are pressed to see large numbers of patients during short visits to maintain income in circumstances of reduced per-visit compensation. Escalating demands of insurers, pharmacy providers, and regulators have created a work environment in which primary care providers spend increasing amounts of time away from patients, responding to oversight and creating reports. Adding to this challenging environment is the rapid pace of scientific advancement in medicine. While this progress means physicians can help patients achieve better health outcomes, it also means physicians must work harder to learn and apply new standards of care. Doing primary medicine well is becoming increasingly difficult in the current US health care environment. As one result, fewer students are entering primary care internal medicine and practicing primary care physicians are seeking other work."

One paragraph, so densely packed with thought provoking material, it's hard to know where to begin. For clarity, I've highlighted each aspect with bullet points.

1. Americans are dissatisfied with the care provided by primary care physicians (PCP)
2. Insurance companies are reducing per-visit compensation
3. PCPs must increase the number of patient visits / reduce time spent with patients in order to maintain income
4. Regulatory oversight and insurance paperwork have increased the demand on PCPs time, taking them away from patients
5. Rapid scientific advancement improves health, but also places great demands on PCPs to keep up
6. Increased workload, more critical consumers, lower pay leads to fewer people pursuing the field

Now, you might read all this and come to the same conclusion as the experts. We are headed for a crisis. I get it. I spent five years studying the teaching profession, where the US has been experiencing a shortage for decades, and this reads eerily similar to the progression of that profession. (Yes, teaching used to be considered a highly regarded profession.) At less than 3%, education has had one of the lowest unemployment rates for a very long time, even during economic slowdowns, yet it has experienced very little wage pressure.

In America, there are roughly 200,000 primary care physicians, plus 56,000 nurse practitioners and 31,000 physician assistants who work to support them. That adds up to 287,000 diagnosticians. They take in information through samples and questionnaires, run the results through their encyclopedic minds, which were developed through years of medical school and on the job experience, and spit out their findings. They then prescribe a course of action, many of which are ignored, and/or medication. For clarity's sake, let me rephrase that. Primary care physicians and their colleagues collect data, run correlation analyses and present results. Sound like a job typically done by something other than a doctor?

Yes, I'm implying that as a diagnostician, the primary care physician's role is very similar in nature to that of a computer. Here's the catch though. Ironically, the very thing that once allowed doctors to add value and charge commensurate fees, namely their encyclopedic knowledge, is now their greatest shortcoming. In this age of rapid scientific achievement, PCPs can't possibly keep up, no matter how studious they may be. Unfortunately, due to increased regulation and insurance demands, combined with the need to see more patients, they have very little time to keep up with the latest discoveries.

That's why, even when notified as to what to look for in patients presenting Ebola symptoms and amid a heightened awareness regarding its threat, the well regarded staff at Dallas' Presbyterian Hospital released an infected patient back into society. It's a simple matter of [chunking](#). With so many demands on their time, healthcare professionals resort to gut feel and instinct more than you might think. (Suggested reading: [How Doctors Think](#) for some eye opening perspective from an insider). So, when confronted with something new, even something as hazardous as Ebola, that email with the new protocol that could save their life, is trumped by habit, a mistake computers are far less likely to make.

There is proof that computers are better diagnosticians than humans, and not just because their encyclopedia is far more developed and they are less inclined to exhibit bias in their findings due to years of experience.

“Since the 1920s, these humans have been trained to look at the same small set of cancer cell features. The C-Path team, in contrast, had its software look at images with a fresh eye—without any pre-programmed notions about which features were associated with cancer severity or patient prognosis. Not only was this software at least as accurate as humans, it also identified three features of breast cancer tissue that turned out to be good predictors of survival rates. Pathologists, however, had not been trained to look for them.” ([The Second Machine Age](#) by Erik Brynjolfsson, Andrew McAfee)

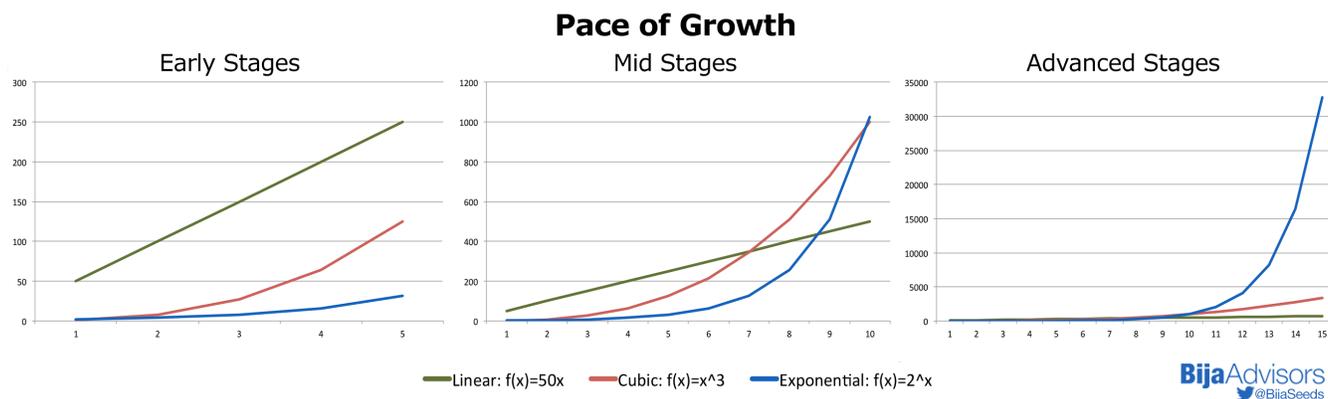
In other words, computers can not only use current knowledge to diagnose at least as well as humans, they have the ability to “think” of ways to improve upon what is already known.

What does this mean? The future of medical diagnosis is about to experience a radical shift. The same pocket sized computer which now holds the power to beat any human being at the game of chess, will soon be used to diagnose medical ailments and prescribe actions to follow, far more cheaply and with a whole lot more accuracy. Yes, there will soon be an app for that and there’s a decent chance it will come out of the XPrize competition, or from one of the hundreds of applicants who were not chosen as finalists.

Americans visit primary care physicians roughly 1 billion times a year. That’s a little more than half of all visits to doctors, and a thorn in the side of insurance companies. Doctors order a tremendous number of extremely expensive tests that are often unnecessary. They do so in order to satisfy patient demands or to cover themselves in the case of a malpractice suit. Office visits are inefficient for patients and costly for insurers. There is a great incentive for all involved, except perhaps the PCPs, to see primary care replaced by an app. More people would have affordable access to healthcare, patients would achieve better results and with the collection of amalgamated data in real-time, society could respond more rapidly to clustering and breakouts. All of which is good news, but hardly inflationary.

I’ve purposely chosen a field that most people believe is unlikely to see the replacement of humans with technology. If doctors can be replaced, it should be easy to see how all other service positions are also at risk. Not only will livery drivers and chauffeurs eventually be replaced by the self-driving car, but so too the body shop mechanics, due to the dramatic reduction in accidents. When the PCP’s disappear, so too will the pharmaceutical sales rep and all the ancillary businesses who depend on their expense accounts. And on, and on it goes.

I firmly believe, the world as we know it is about experience far more radical change than many expect. We are used to linear progression, where things develop over time, because that is how we advance. In the early stages of progress, linear growth outpaces that of exponential gains. It is why Herbert Simon



was mocked when his prediction that a computer would be the world chess champion by 1968 failed to come true. Rather than taking 10 years as he expected, it took 39. However, within 5 years, the computer went from calculating 200 million chess moves per second to 280 trillion. A few years later, free apps had attained grandmaster status. Here is a graphical representation of how exponential growth looks relative to linear progress. I had to break it up into 3 stages for clarity. It is my contention that we are entering the more advanced stages and the implications for macro and microeconomics are far reaching. Through Seeds of Thought and Macro Radar, we will explore many of them in the months and years to come.

### Final Thoughts

I realize that many will push back on this idea that people will allow an impersonal computer application to replace the personal touch of a human being. I respectfully disagree. The transitional phase accounts for that. By forcing doctors to see more and more patients, they spend less time with each one. Gone are the days of a real relationship with a physician, with that down home bedside manner. These days, doctors behave more robotic than the apps, and it begins when you first make the appointment.

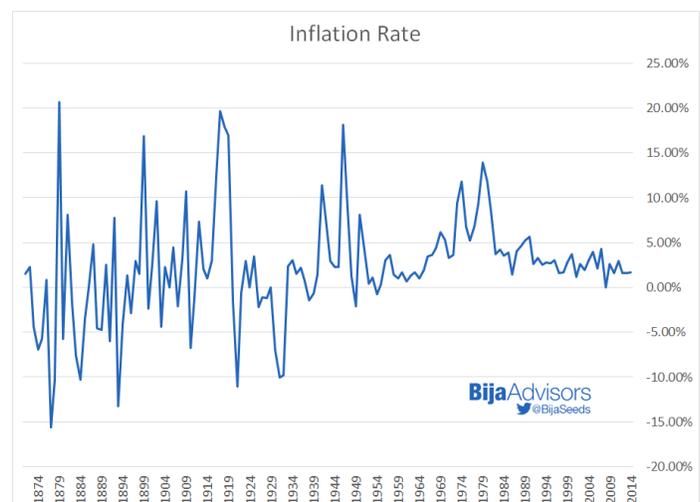
Before you go into your symptoms, the first question always asked is, "What insurance do you have?" Walk into any doctor's office and the first thing that hits you are the many signs demanding payment up front. Sit in the waiting room for 30 minutes or more, then move on to the second holding area for another 15-20 minutes. When the doctor sees you, she is brief and to the point. She is all business. You are essentially being weaned away from human doctors.

Besides, even if you weren't, it's not like you'll have a choice. You do what your insurance company tells you to do. PCPs are a tremendous inefficiency for them and so it is in their best interest to replace them with a free app. That's how the insurance companies will differentiate themselves, while reducing their costs. It's ironic though. That app will be easily replicable, just as all technology is, so new players will enter the insurance business, just as many low cost carriers have entered the cellular market, forcing price wars. A similar phenomenon has played out in numerous industries since technology moved into services. In other words, the great savings and improved efficiencies achieved through technology very quickly find their way to the consumer. Again, deflationary.

As for why deflation isn't necessarily worse than inflation, take a look at a historical chart of the inflation rate in the US. You'll see that during the period when technology was radically altering our agriculturally dominated economy, deflation was fairly common.

Finally, when you look at unemployment data, and compare it to recent historical trends, keep this in mind. Wages, like all other prices, are a function of supply and demand. Just as the price of oil is now likely to be capped at the extraction cost of shale, wage pressure must factor in not

just the unemployment rate (supply and demand of human capital), but the cost of replacing a person with technology. In an economy that has been dominated by services for as long as most of us can recall, it isn't something that comes naturally for us.



Think about it. We investors, economists, analysts and business leaders sat on the sidelines, perplexed when the doctors and nurses missed the clear signs of Ebola in that Dallas patient and allowed him to walk out the door. They did so, because they relied on their instincts and experience, missing something so obvious. Could it be that we are doing the same thing in the way we are assessing the economy and the impact of technology?

# Macro Radar

Cognitive Science Meets Economic Analysis

Issue 15-2  
Jan 20, 2015

## CARRY IS DEAD, LONG LIVE CARRY

I had a busy week fielding phone calls from clients trying to make sense of it all. It's been a long time since I've sensed such unease and frustration from these seasoned veterans, including those doing quite well. It can be chilling to hear people I hold in very high regard, say things like, "Things are different now," "The markets don't care about fundamentals anymore," or "You have to ignore the facts and just go with the flow," especially since I disagree.

Markets do reflect fundamentals, perhaps more so today than they have for some time. What is at issue, I believe, is that the cause and effect relationships between so many global macroeconomic factors, have changed. Some of them have reverted back to earlier times, as in centuries earlier. That's important, because it means we haven't seen the interactions behave like this since before the advent of modern monetary policy. The implications are big, huge even, and they are compounded by the unwillingness or inability of policymakers and many investors to recognize the paradigm shift.

### What Was I Thinking?

Cognitive dissonance, that discomfort we feel when we are confronted with information that is inconsistent with our beliefs, is a powerful thought driver. We don't like it when things don't make sense, and when we are forced to make important decisions quickly, whether we have resolved that dissonance or not, we tend to tighten up our frames. Framing, a phenomenon whereby we use an overly narrow approach to analyze an issue, such as correlating short-term price action to data and actions observed over a very limited, typically recent, period, has become a key factor. Confined to that framework, cognitive bias drives us to search for and interpret information in a way that confirms our preconceptions, while ignoring or even actively discrediting that which does not conform to our views.

So that's the science that helps explain why so many very smart people have concluded that markets don't care about fundamentals. I know from experience that the periods in which I have achieved my best performance are those in which I have had a firm grasp on what is driving fundamentals and I am able to accurately anticipate the market's response to them playing out as expected. This edition of Macro Radar focuses on the key factors that provided clarity for the conversations I had with clients last week. I hope you find it helpful too.

### Testing the Hypothesis

US Dollar strength would appear to be all but inevitable. While it may well be the case, it's important to understand why. I put that question to each caller, and the answers all gravitated to one simple point. The US economy is doing well. Conversely, most others are struggling. It's a valid hypothesis, and one that should be easy to prove.

| CURRENCIES    | 1 Year Performance vs USD |
|---------------|---------------------------|
| Euro          | -14.26%                   |
| British Pound | -7.96%                    |

| CURRENCIES   | 1 Year Performance vs USD |
|--------------|---------------------------|
| Swiss Franc  | +3.47%                    |
| Japanese Yen | -11.34%                   |

With all this money flowing into the US Dollar on the back of a positive prognosis for the US relative to the other countries, we would expect equity markets to have diverged, and P/E ratios to reflect radically different expectations. However, neither of those are in evidence.

| EQUITIES | 1 Year Performance | P/E Ratio |
|----------|--------------------|-----------|
| S&P 500  | +6.4%              | 17.91     |
| Dax      | +5.13%             | 17.99     |
| Nikkei   | +8.78%             | 20.56     |

Considering the hypothesis of growth in the US and slowing in the other countries, along with the ensuing talk and action regarding the ramping up of central bank balance sheets in the other countries, and the opposite in the US, we would expect rates in the US to be on the rise, while those in the other countries should be coming off. However, using the 10 year government rate as our benchmark, the hypothesis would once again appear to be in trouble.

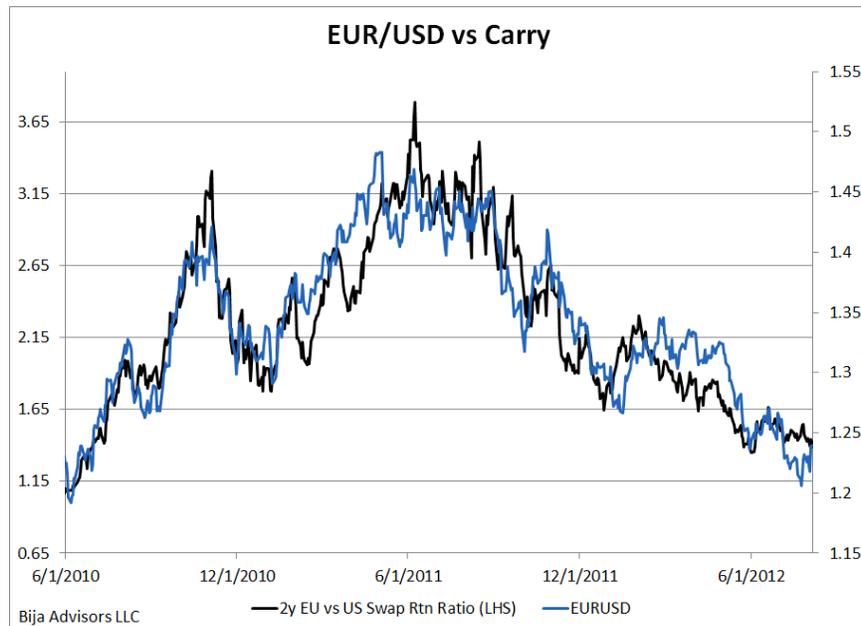
| GOVERNMENT BONDS | 1 Year Change in Yield | Current 10 Year Rate |
|------------------|------------------------|----------------------|
| US 10 Year       | -125 bps               | 1.8368%              |
| German 10 Year   | -139 bps               | 0.4394%              |
| UK 10 Year       | -147 bps               | 1.5270%              |
| Japanese 10 Year | -54 bps                | 0.2010%              |

I've been arguing for years that carry is king when it comes to tracking the currencies of the world's wealthiest nations. To some it may sound obvious, but I've had a lot of pushback from those who find it hard to believe that a few basis points could make much of a difference. I'm not unsympathetic to the opposition. It does sound crazy that a 5 or 10 bp shift in the interest rate differential could trigger a 5 or 10%+ move in the exchange rate, but we've been seeing it for years.

When yields collapsed in emerging markets more than a decade ago, I began looking at the ratio of interest rate differentials to predict exchange rate shifts, rather than the nominal differential. While others saw historically tight spreads and argued that they were unsustainable, the ratios showed that they had plenty of room to run.

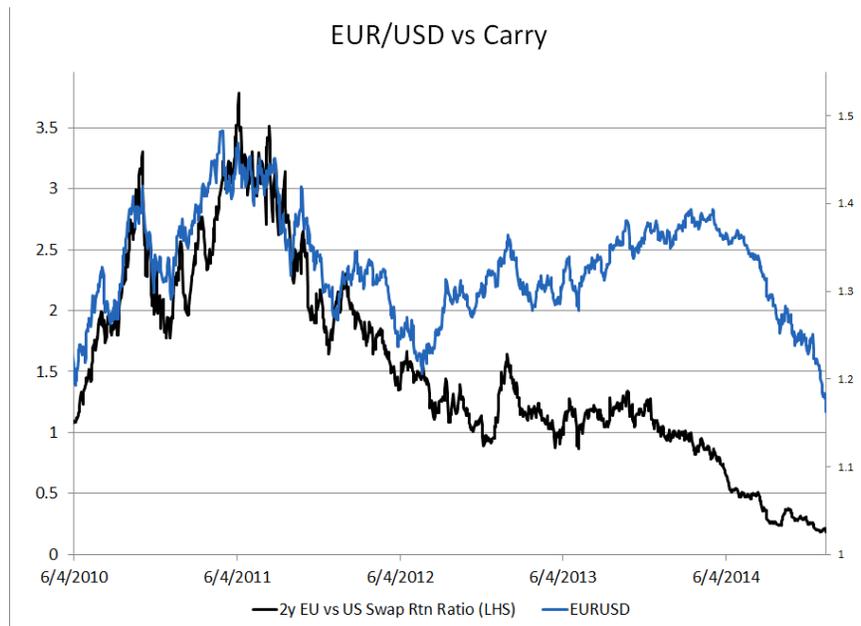
You see, when the risk-free rate is 7%, it will take a lot more than an extra 50bps to convince an investor to shift his money over to something more risky. However, when the risk-free rate is 50 bps, another 50 is a doubling of the return. So, the lower rates went, the less additional return those riskier investments needed to offer in order to attract capital. Factor in the new technology which has enabled the near instantaneous transfer of capital between assets and currencies at a fraction of the cost, and impact is super-sized.

Let's take a look at a chart comparing the EUR/USD exchange rate with the ratio of 2 year swaps in Europe vs the US, beginning from mid 2010 until the end of 2012. Very compelling, right?

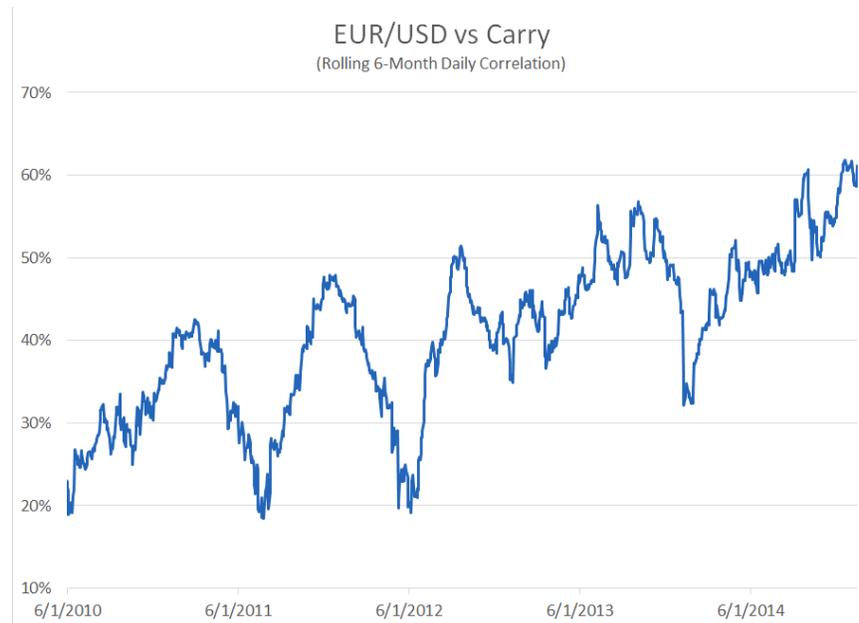


However, when you extend the chart to today, the relationship would appear to have broken down. Let's not jump to conclusions, though.

Looking at the daily correlation between the 2, over rolling 6 month periods, it turns out that they have actually become more correlated. In other words, the EUR/USD exchange rate has become hyper-



sensitive to changes in the 2 year swap rates. However, there was a a drastic pullback in the relationship before the correlation snapped back again, and the upward trend resumed.



So the answer to the question as to what is driving the USD strength, is fairly straightforward. It is the change in the ratio of interest rate differentials. The reason it snapped so dramatically, is that it had to make up for the initially delayed reaction. Therefore, we probably shouldn't expect to see such violent moves in the same direction, now that it has caught up.

You may be thinking to yourself, "Duneier is splitting hairs." I mean, when you say the USD is strengthening versus the other currencies because the US economy is stronger and its prospects are better, obviously it assumes rates would be higher in the US. I could not disagree more. That argument assumes a causal relationship, one that is not in evidence, and in fact, US rates are not higher, they are lower. They simply haven't fallen as quickly.

When we understand what is really happening, when relationships and outcomes make sense along the way, we gain confidence and conviction. That allows us to stay with positions longer and increase the size. If investors and money managers truly believe that they understand what is happening in the world, then portfolio returns should be just as massive as the moves we've been witnessing, but they aren't.

Again, it goes back to cognitive dissonance. When analyzed independently, price action in specific assets can be explained with nice, neat, widely accepted arguments. The problem comes when trying to use those same explanations to shed light on several of them, simultaneously. They don't jibe, at least not in a way that we have come to expect.

So, yes, a strong US economy would explain why the USD is so strong, but not why rates and inflation are lower, nor why stocks and other risky assets are struggling. You could attribute the strong Dollar to a world where carry is king, and every additional basis point of relative yield attracts more and more capital, but why then are emerging market debt and currencies not rallying? Even within the US, the destination for all this capital from around the world, we aren't seeing it flow beyond government debt.

### **Global Macroeconomic Cheat Sheet**

There is a coherent, consistent explanation for why markets are moving, policymakers are deciding and fundamentals are playing out as they are. Below is my global macro cheat sheet, which I reference any

time I read a CB statement, witness a major move in markets, listen to an analyst speak, take on a position and await the release of new data. The implications of each and every item on the list are far reaching and likely to remain with us for years to come.

I have written about these items repeatedly and will continue to do so until they are no longer valid. If you're not thinking about these things regularly and understanding their direct impact on the ramifications of policy decisions, the economy, feedback loops and market psychology, I would wager you're either underperforming your views or getting lucky.

1. The financial crisis did not destroy private wealth.
2. Wealth disparity is nearing historic highs and economic analysis needs to adjust for the impact of the shift in marginal utility. Government intervention is the only thing that can change its course.
3. Monetary policy is impotent with regard to the real economy. It merely affects shifts between financial instruments.
4. The impact of China's monumental urbanization project, which began in 1996, ended, by pure coincidence, in the midst of the financial crisis.
5. Technology is moving ever more rapidly up the cognitive value chain.
6. Fiscal policy is the only thing that can affect the real economy, and the only thing that can drive yields and inflation higher.
7. Economies and markets are now global.
8. Policymakers are people.

In this list you will find the answers to all of your questions. Why have commodities collapsed and how long will they stay down here? Why is it that unemployment is likely to continue to fall without triggering wage inflation? How is it that some assets have become hyper sensitive to interest rate adjustments, yet carry isn't a factor further out on the risk curve? How can prices be so tight, yet untradable? Can the US economy find its legs if the rest of the world is teetering on the brink of failure? Why has the cost of a college education been increasing at several multiples of the overall inflation rate? Why is deflation more likely than inflation, and why doesn't it matter? What will trigger the US Dollar free-fall? Why is competitive devaluation a fool's game, and why will protectionism escalate? Why are tech companies sitting on so much cash?

That's a lot to digest, so I'll leave it here for now.

# Seeds of Thought

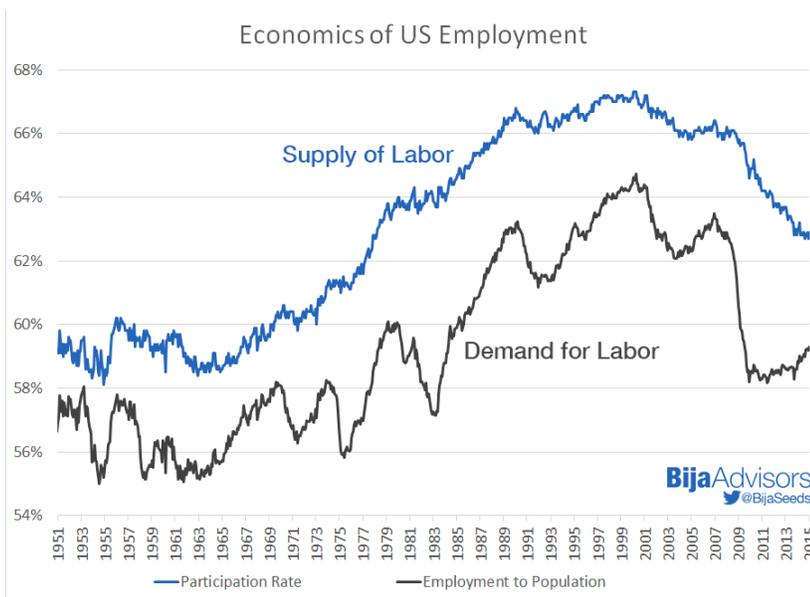
Cognitive Science Meets Investment Management

Issue 15-5

February 6, 2015

## Economics of Employment

In light of today's employment data, I thought it might be useful to inject some context. Since wages are a price and prices are determined by the relationship between supply and demand, why not look at labor from that perspective?



A few things worth noting. Not only has the supply of labor (participation rate) been declining since the mid-90's, so has the demand for it. Regardless of what the unemployment rate suggests, demand remains far, far below where it had been running since the early 80's. Two dates to keep in mind when searching for trends and watershed moments in the chart above. In 1991, just 1 website existed. In 1997, Deep Blue beat Gary Kasparov at chess (see [Rise of the Machines](#) for the significance). These dates are important because there is a part of the supply/demand equation for labor that is

missing from this chart, and from the discussion over wage pressure. What's missing is the recognition that technology is a viable alternative. But wait, there's more!

When you know the participation rate (supply) and employment to population ratio (demand), you can calculate the unemployment rate.

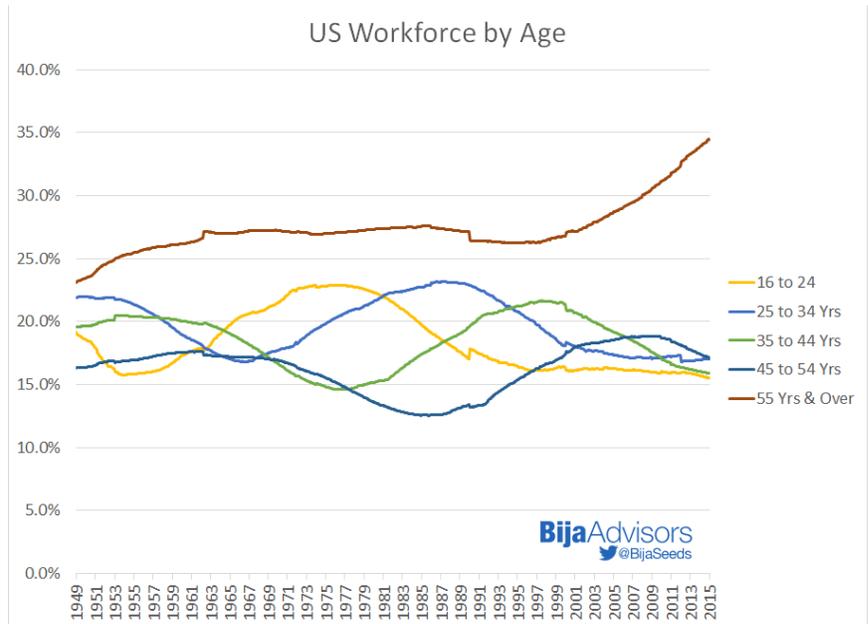
Let's look at the current situation, the last peak in employment, as well as two hypotheticals. In the 1st hypothetical, we use the supply of labor from the peak combined with today's demand for labor in order

|                              | Participation Rate (PR) | Employment to Population (EtP) | Unemployment |
|------------------------------|-------------------------|--------------------------------|--------------|
| <b>Today</b>                 | 62.9%                   | 59.3%                          | 5.7%         |
| <b>November 2006</b>         | 66.3%                   | 63.3%                          | 4.5%         |
| <b>Nov '06 PR / Curr EtP</b> | 66.3%                   | 59.3%                          | 10.6%        |
| <b>Curr PR / Nov '06 EtP</b> | 62.9%                   | 63.3%                          | -0.6%        |

to arrive at a 10.6% unemployment rate. In hypothetical #2, we use today's supply of labor with the peak in demand to find an unemployment rate of -0.6%.

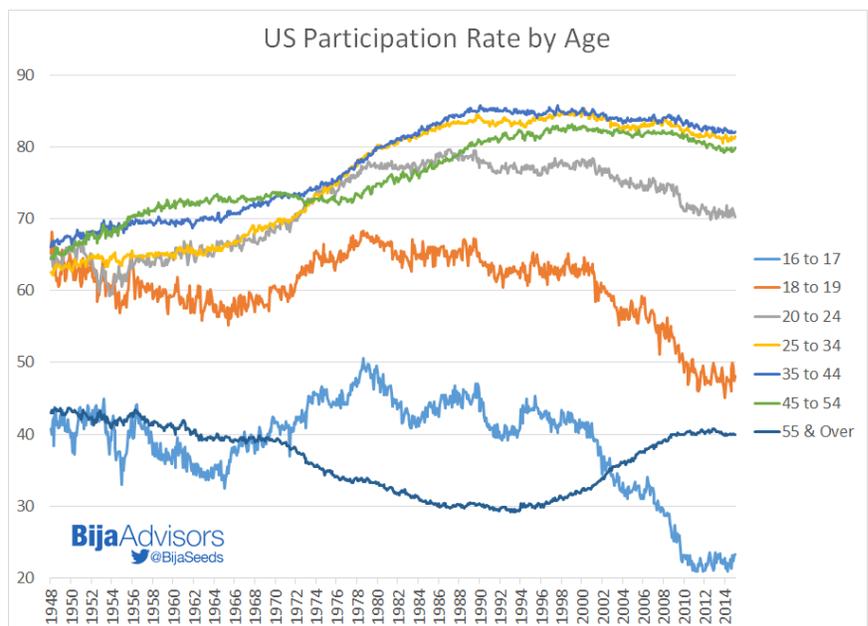
The table provides fodder for both sides of the aisle, but its real value lies in the questions it prompts us to ask. Most importantly, which is more likely to see a jump/fall going forward, the demand or supply side of the equation? I believe the consensus answer is that the participation rate (supply side) is in structural decline due to an aging population, therefore it is the demand side that will drive the unemployment rate, and by extension, wage pressure. Just to be sure, let's see if the data supports this consensus view.

Looking at the chart to the right, it is abundantly clear that the American workforce is indeed aging, and at an astounding pace. It wouldn't require a huge leap of faith then to assume that much of the drop in the participation rate is merely a function of older people opting out of the workforce. That's significant, because when someone decides to retire it would probably require great incentive to bring them back to work again. With that as the assumption, it makes sense to think that the structural decline of the participation rate is unlikely to be reversed any time soon, leaving the demand side of the equation as the driver.



However, before we move on to discuss the implications for wages (clearly higher, right), let's just make sure our deductive reasoning hasn't led us astray.

The chart on the right shows the participation rate by age group. Turns out, the participation rate among the 55 & over crowd whose population has been skyrocketing, hasn't come off at all. In fact, in November of 2006, the participation rate for people 55 years old & over was 38.4% versus 40.0% today. So the most heavily populated age bracket has actually seen a rise in its participation rate. At the other end of the spectrum, the youngest age groups, right up to



the age of college graduation, has seen a dramatic decline in participation since the 2006.

Where did these kids go when they dropped out of the workforce? The answer is college. The dramatic reduction in demand for labor didn't send old people into retirement, it sent young people to college. Would it be difficult to attract kids who are drowning in student loans and expenses back to the job market? I wouldn't think so. (See [Participation is Half the Battle](#) for more color.)

## **Moral Hazard's Lesser Known Twin**

Remember when there was some concern that the bailouts that occurred amidst the financial crisis would result in moral hazard? Turns out, we needn't have worried, but it does beg the question, "Why didn't it?"

To review, moral hazard is defined as a situation where there is a tendency to take undue risks because the costs are not borne by the party taking the risk. While this is a widely accepted definition, it's nonsensical. After all, if the costs are not borne by the party taking the "risk", then from their perspective no risk exists, undue or otherwise. If the potential for reward isn't simultaneously erased too, the risk / reward relationship becomes so extreme as to be irreconcilable. As a result, the rational decision maker must elect to take action. In fact, from this one participant's perspective, the only logical decision is to go all in. This describes what is meant by moral hazard. The moral hazard exists, because although it is the only logical choice for that participant, it is the wrong one for the greater good. The system as a whole is taking the undue risks.

Since for the most part, bailouts did occur without exacting any toll on the equity of those who were bailed out, it makes sense that it would encourage riskier behavior among investors going forward. However, this hypothesis requires that one essential assumption holds true. It must set a precedent, and the players must believe that it has. Therein lies the flaw in the expectation for moral hazard. At least in this case.

If instead of a crisis, just one company had run into trouble and was bailed out without any cost being borne by its equity holders, it would be inconceivable for moral hazard not to have arisen. However, so many bailouts were required thereby creating extreme stress for the system as a whole, and exposing the fragility of it all. In fact, it has created such hardship for the sovereign saviors that it calls into question the ability of the system to absorb any future cost, regardless of its desire to do so.

As a result of this combination of fragility and inability to backstop risk, rather than seeing the risk / reward relationship staying at the irreconcilable extreme that had favored risk taking, owners of wealth (aka capital) believe it has flipped to its polar opposite. By extension, the controllers of that wealth, namely CEOs, fund managers and allocators see it that way too. At least that's what their behavior implies.

In other words, from each individual's perspective, the potential cost associated with taking risk has skyrocketed to unimaginable levels, while the reward has collapsed to nearly zero. Therefore, it is only natural, in fact it is perfectly logical that these decision makers would elect not to take any risk. However, it is the wrong decision for the greater good. As a result, the system as a whole has almost no potential for reward, and ironically, that puts it all at risk.

Come to think of it, it sounds an awful lot like the definition of moral hazard, but from the end of the spectrum we rarely consider.

## Incentivizing Inefficiency

Behaviors don't just change on their own. They are a function of incentives. Shift the incentives, you'll adjust the behavior. Since market price action is a reflection of behavior patterns en masse, it's important for investors to recognize how incentive systems have changed.

Let's begin with the shift from paying for performance to paying for administration. Prior to the financial crisis, the investment industry was in its heyday. New hedge funds were launching with hundreds of millions under management on a weekly basis, older funds were ramping up both management and performance fees, and jobs on the sell and buy-sides were plentiful. All of which encouraged risk taking among participants across the spectrum. When a trader or fund blew up in spectacular fashion, ironically it was often seen as evidence of his/her ability to manage large AuM. With jobs so readily available, traders and PMs could take risk with confidence, knowing that if it didn't work out with that firm, another job could be landed with relative ease. On the other hand, if it did work out, the payoff would be huge. The system was rigged in favor of the cowboy.

Then came Bernie Madoff, record wealth, lower returns, technological innovation, and eventually the financial crisis. Volume collapsed, risk takers were suddenly reviled by the public and the sell-side job market dried up flooding the buy-side with traders. Just as non-financial companies began focusing on cutting costs to prop up their bottom lines when sales growth faltered, so too did investors. They pushed for lower fees, beginning with performance before tackling management and administrative.

Fund managers were now incentivized to focus on asset accumulation over innovation and returns, resulting in less performance differentiation. Allocators turned their attention to benchmarks rather than absolute returns, and investment managers responded by doing the same. As a result, many fund-of-funds struggled to earn their fees. At the same time, wealth disparity was heading ever higher, creating a whole new class of mega-wealthy investors and the simultaneous explosive growth in the number of family offices and wealth management firms. Here, ever greater focus could be put on reducing costs by investing directly with the largest funds at heavily discounted fees and maximizing portfolio efficiency from a tax perspective.

Along the way, each player has responded to some outside force with perfectly rational behavior, optimizing their decisions for the balance of risks versus rewards as they currently exist. The result is one of the most risk averse investment environments any of us has ever experienced, with fear and despair at near fever pitch, even if few would characterize it as such.

If history has taught us anything, it is that moments like these are rife with opportunity for those who can maintain objectivity and see the world as it actually exists. By understanding why decisions are being made and acknowledging that people are actually behaving very logically we improve our ability to do exactly that.

# Seeds of Thought

Cognitive Science Meets Investment Management

Issue 15-10  
March 17, 2015

## Risk (Aversion) Seeking

| Performance in Local Currency | 1 year | 6 months | 3 months | 1 month |
|-------------------------------|--------|----------|----------|---------|
| <b>S&amp;P 500</b>            | 11.26% | 3.33%    | 2.76%    | -1.57%  |
| <b>Euro Stoxx</b>             | 20.03% | 13.02%   | 19.93%   | 6.46%   |
| <b>FTSE 100</b>               | 3.79%  | 0.54%    | 7.61%    | -1.16%  |
| <b>CAC 40</b>                 | 17.33% | 13.08%   | 21.91%   | 5.46%   |
| <b>DAX</b>                    | 30.17% | 23.75%   | 25.24%   | 9.67%   |
| <b>IBEX</b>                   | 10.04% | 0.65%    | 9.26%    | 2.62%   |

Lately, whenever I mention my bullish view on large cap US equities, someone inevitably steers the conversation toward European equities. For me, that's a surefire indicator that Euro equities are en vogue. What seems to take many by surprise is when I point out that US equities have generally outperformed. If you're like most, you're thinking I've made a mistake, especially after looking at the table above.

When I mentioned to a Euro equity bull today that US equities have actually outperformed since the USD began to rally, her impulse response was, "Well, that just means they have room to catch up." That'd be a sound thesis if European equities hadn't actually outperformed their US counterparts by almost 2x over the last year. Truth is, Euro equities have crushed it in local currency terms. In order for them to "catch up" then, we'd really need to see the USD sell back off. What would drive that? Well, it'd probably be either higher European rates or lower US rates. Either of which would also likely be accompanied by reasons for US equities to outperform in local currency terms. The point I'm trying to make here is that comparing returns in local currency terms is like comparing apples and oranges. You can't isolate the investment in equities and ignore the consequences of the currency. So let's look at those same returns, but in US Dollar terms.

I'm told that the demand for European equities is a function of regulations having trapped money in Europe and with the ECB depleting supply of sovereign debt, that trapped capital simply must flood into European equities. Fair enough, but if the capital is truly trapped, why did the EUR collapse?

| Performance in USD | 1 year | 6 months | 3 months | 1 month |
|--------------------|--------|----------|----------|---------|
| <b>S&amp;P 500</b> | 11.26% | 3.33%    | 2.76%    | -1.57%  |

| Performance in USD | 1 year  | 6 months | 3 months | 1 month |
|--------------------|---------|----------|----------|---------|
| <b>Euro Stoxx</b>  | -8.55%  | -6.82%   | 3.01%    | -1.16%  |
| <b>FTSE 100</b>    | -8.04%  | -9.00%   | 1.75%    | -5.21%  |
| <b>CAC 40</b>      | -10.59% | -6.75%   | 4.73%    | -2.07%  |
| <b>DAX</b>         | -0.84%  | 1.94%    | 7.54%    | 1.88%   |
| <b>IBEX</b>        | -16.15% | -17.04%  | -6.16%   | -4.69%  |

My argument against investing in European equities over US equities is directly related to my argument against choosing any risk asset over US stocks. At the heart of it is the fact that we have been, and continue to be in what can only be characterized as one of the most risk averse environments in nearly a century. As evidence of that, ask yourself this. With all the money that flooded into the USD over the last year, pushing its value up 25% against the EUR, where did that capital land when it got here? The answer is, it went into the most risk averse instruments available. So the real question is, if it moves away from that safety will it go back overseas or squeeze out to fill in the lowlands along the risk curve, e.g. large cap US equities? My argument has been, and continues to be that its first port of call should be US equities.

One should be careful to make a distinction between capital seeking risk and capital being crowded out of the most risk averse instruments. I believe the latter to be the more accurate description of what we are witnessing. If that's the correct assessment, then it doesn't make sense to take on risk beyond large cap US equities until they are overvalued, and I don't believe that to be the case yet.

### The High Price of Free Dumb

“It takes a huge investment in introspection to learn that the thirty or more hours spent ‘studying’ the news last month neither had any predictive ability during your activities of that month nor did it impact your current knowledge of the world.” - Fooled by Randomness: The Hidden Role of Chance in Life and in the Markets by Nassim Nicholas Taleb

I discovered this for myself well before Taleb wrote about it in 2008, but long after Amos Tversky and Daniel Kahneman first published their findings on the matter 32 years earlier, in a piece entitled, “Judgement under Uncertainty” in *Science*. They explained that in order to make decisions when the outcome is uncertain, we rely on our beliefs to assign probabilities to each of the potential outcomes. What they discovered is that very often the heuristics, or mental shortcuts we employ lead to biased expectations which can result in “severe and systematic errors.”

They describe a phenomenon known as judgement by representativeness through a series of examples and experiments, one of which is particularly applicable to Taleb's point. In it, they tell subjects that a group consists of 70 engineers and 30 lawyers. Without providing any additional information, they asked the subjects what the probability is that a particular individual selected from that group is an engineer. They correctly judged it to be 70%.

They then provided the following personality sketch of the individual in question.

“Dick is a 30 year old man. He is married with no children. A man of high ability and high motivation, he promises to be quite successful in his field. He is well liked by his colleagues.”

The description was meant to convey no information relevant to the question. Therefore, when asked again what the probability is of him being an engineer, the answer should have remained 70%. However,

the subjects now judged the probability to be 50% after reading what was essentially worthless information.

“Evidently, people respond differently when given no evidence and when given worthless evidence. When no specific evidence is given, prior probabilities are properly utilized; when worthless evidence is given, prior probabilities are ignored.”

Armed with the evidence that even perfectly innocuous information can have a detrimental impact on your ability to make rational decisions, does it make you question the real cost of all that free research flooding your inbox? Will you take action? If so, when?

As I mentioned in “Do Not Read This” (*Seeds of Thought*, Issue 15-6, 2/11/15), an information portfolio with 100 components that are 60% correlated offer the same diversification as one with 4 components that are 40% correlated. If you find yourself skimming everything and absorbing nothing, re-build your information portfolio, intelligently and deliberately, with publications that deliver unique content and improve your performance in different ways.

## The Coming Seismic Shift in American Politics

To review, my thesis is that we are experiencing a transitional phase similar to what we went through in the late 1800's and again as we entered the second quarter of the 1900's. The three disruptive factors that dominated those periods are also paramount today. They are:

1. A leap in technological innovation resulting in the large-scale displacement of workers from the sector that employs roughly 80% of the population.
2. Urbanization on a globally significant scale.
3. A spike in wealth disparity.

I have detailed the derivative effects of these disruptive elements in previous editions of Macro Radar. All of them being highly predictable thanks to those previous episodes, and perfectly rational when examined through the lens of behavior analysis. The effects include, but are not limited to:

1. An extension of educational careers (currently resulting in higher college attendance and lower participation rates among the youngest workers).
2. An initial spike in raw material prices followed by an extended period of depressed prices.
3. Elevated savings rates, leading to less effective monetary policy.
4. Steadily increasing suicide rates, particularly among middle age white men.
5. A rise in risk aversion.

Before diving into another of those derivative effects, let's consider why it's worth our time. When we know what is happening at the highest level, we can understand the relationships between seemingly disconnected events further down the line. Perhaps most importantly, when we know what is driving things, we are better able to identify the key elements that will lead to a potential reversal of the most powerful trends. When we know what those triggers are and have a high degree of confidence that they are not in danger of materializing, then we can have a high degree of confidence in the right positions to have in our portfolios. The result is a lower probability of being stopped out by randomly occurring data and/or events.

In this edition, an explanation as to why another radical shift in the two party political system is in the works, similar to what we experienced in the late 1800's and the second quarter of the 1900's. Of all the derivative effects, this one is the most important to understand and to watch for progress, because in the previous episodes, it was the one that triggered the reversal of the biggest trends. If we learned anything from the previous eras it is that the only thing that can be as disruptive as a leap in technological innovation is a decisive shift in political will. With that said, let's dive into the evidence.

First, let's review the previous eras as they relate to the political party system. In the 1890's, the central issues of debate shifted in American politics. It was the beginning of the Progressive Era, which interestingly was championed by the Republican Party and ushered in what is now known as the "Fourth Party System". The key characteristics of the new political regime? More government regulation, increased role of labor unions, immigration controls, worker's rights and an overhaul of the banking system. Remember, this didn't happen in a vacuum. It was the result of those 3 key factors listed at the top of this piece and irrevocably tied to the other derivative issues as well.

In other words, the introduction of the gas powered farming machinery and other incredibly disruptive technological innovations which displaced workers employed in the agricultural sector, at a time when it was responsible for 80% of total employment, was a factor. The extreme rise in wealth disparity and consolidation of power were factors. The drop in participation rates among the youngest workers was a factor. Lower wages, high underemployment, and rising suicide rates, were all factors.

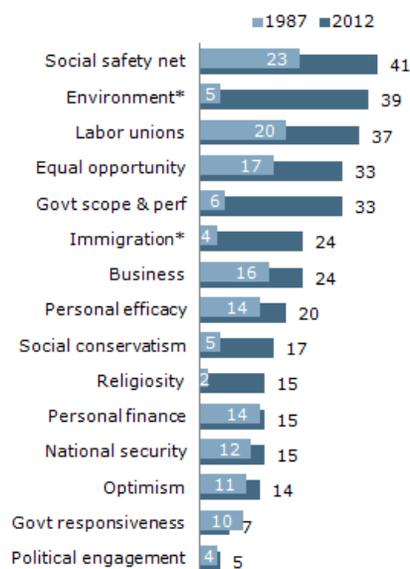
Fast forward to the second quarter of the 1900's and we come to the emergence of the New Deal Coalition and the introduction of the Fifth Party System, this time championed by the Democrats. Different party, but driving a similarly progressive movement. Again, it didn't happen in a vacuum. The leap forward in technological innovation that led to the displacement of workers in the manufacturing sector, which accounted for roughly 80% of employment at the time, was a factor. It was also in response to an extraordinary rise in wealth disparity, a consolidation of power, lower wages, high underemployment, and rising suicide rates.

It's important to recognize that in each of those previous eras, the shift in the political landscape resulted in very disruptive policy adjustments. Whether you think they were good changes or even warranted, is of little consequence. What matters is that without that shift, the well established trends that had been in place would not have been reversed. I believe the evidence suggests that things will be no different this time around, and in fact, we are already seeing signs of that shift, particularly in those same key areas as the previous two periods.

Take a look at the results from the Pew Research Center's big report (see charts), "Trends in American Values: 1987-2012" and make note of where the big shifts have occurred in the divide between members of the two main parties. What you'll find is quite striking. There is actually very little divide over the issues we normally think of, but a fairly radical shift in those associated with inequality, labor and the role of government. Sound familiar?

While some might say that movements like Occupy Wall Street haven't moved the needle, or worse, they have succeeded in bringing wealth disparity more to the fore. In spite of great opposition, Obama was able to push through

### Where Partisan Divisions Are Largest



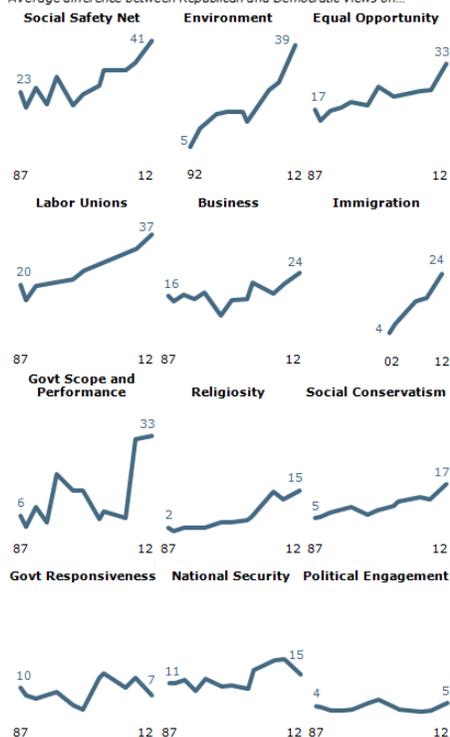
PEW RESEARCH CENTER 2012 Values Study. Bars show the differences between Republicans and Democrats across 15 values indices based on related survey questions. \* Environment index began in 1992, immigration index in 2002.

his landmark healthcare reform. On the other side, the Tea Party and its attempt to make tax reform a call to the masses has begun to fizzle, having converted more Republicans than Democrats along the way.

Despite the recent win for the Republican party in the interim elections, it is clear the direction the political debate is headed. However, what ultimately matters to us from an investment perspective is that we're not at the tipping point yet. The trends that have been solidly in place, remain so. At least for now.

**Partisan Polarization Spans Multiple Realms**

Average difference between Republican and Democratic views on...



PEW RESEARCH CENTER 2012 Values Survey. Average percentage difference between the answers of Republicans and Democrats on questions relating to each value dimension. The chart for "equal opportunity" is based on whites only.

# Macro Radar

Cognitive Science Meets Economic Analysis

Issue 15-5  
Apr 2, 2015

## I Was Wrong

For months now, I have been arguing that three key elements have been the driving force behind everything else happening in the world. I was wrong.

What I had been espousing is that technological innovation, urbanization and wealth disparity are the key elements. I then compared this moment in time with the previous periods when those three had occurred simultaneously, along with the issues that developed as a result. Where I erred is in identifying urbanization and wealth disparity as key elements rather than as the derivative issues they are. And yes, the distinction matters.

In December, I wrote a piece titled, [Rise of the Machines](#) in which I went back 2.6 million years to the invention of the very first known tool and therefore the very first leap forward in the evolution of technology. I later described what it must have been like for a highly skilled “hunter” or “gatherer” to have their contribution to society devalued almost overnight with the introduction of farming. No one, not even the hunter would have argued against the tremendous efficiency and resulting improvement in the quality of life it provided for society as a whole, but there is no doubt it must have been painful for them to have their place in the hierarchy so radically diminished. My point in telling those stories, was to introduce context for what we are experiencing today, for it is merely another chapter in this ongoing love/hate relationship between humans and the technology we develop to make ourselves more efficient.

I think it’s helpful to think of technology as synonymous with efficiency, where efficiency is defined as “a measurable concept, quantitatively determined by the ratio of output to input.” In simpler terms, when technological innovation experiences a leap forward, it means that in order to harvest the same acreage of wheat, produce the same number of widgets or file the same number of tax returns, far fewer inputs are required. Technology becomes disruptive when those inputs which are suddenly required in far smaller portions across a wide swath of the economy, are human beings. Although it has been happening for millions of years, we really only have useful data to call upon from the two previous periods when technology leapt forward — the late 1800’s and second quarter of the 1900’s.

| Period       | Dominant Sector | Disruptive Technology |
|--------------|-----------------|-----------------------|
| Late 1800’s  | Agriculture     | Horses                |
| Early 1900’s | Manufacturing   | Assembly Line         |
| Now          | Services        | Computers             |

By recognizing that it was the introduction of a highly efficient technology that served as the catalyst, everything that follows makes perfect sense, but perhaps just as importantly it helps provide a framework for discussion about the social implications, and potential solutions. Rather than this becoming an argument between two sides, we should be thinking about leaps forward in

technological innovation as something akin to a natural disaster, or in insurance parlance, “Acts of God,” for their impacts are similarly disruptive, and equally unintentional.

Within this framework, we come to understand that the spike in wealth disparity isn't the result of some devious plot by any one individual or group, but merely a natural bi-product of the replacement of an expensive input for a new, less expensive one. The key being that the inputs being replaced are human beings and the beneficiaries are the owners of capital. By comparison, when horses were later replaced by gas powered tractors, it was the exact same mechanism at play, but with far different societal and economic implications, because horses don't receive compensation, vote, feed their families, have hope or understand the concept of fairness.

It is the fact that this type of leap forward in the evolution of technology simultaneously reduces the value of the majority while a tiny minority very naturally reaps the benefits of the resulting efficiency, that makes it so disruptive. There are so many obvious derivative effects of this occurrence. Many of which I have been writing about.

For instance, in [\*Participation is Half the Battle\*](#), I provided historical context for the sudden surge in college attendance, similar to what we saw in education during those two previous eras when technology displaced so many workers. There is a very important distinction to be made though between those episodes and now. In each of those periods, when kids left the workforce in favor of an education, government footed the bill. In other words, the burden was shared across society.

You see, in the late 1800's, the American worker was defined as anyone over the age of 10. In response to the dramatic reduction in the demand for labor, state governments began mandating that kids stay in school longer, thereby dramatically reducing the participation rate and bringing the supply and demand for labor back in line. In 1934, it happened again and we began to include only those over 16 years of age in our employment statistics. If you think about it, by mandating that kids stay in school longer, and paying for that extended education, government was in a way paying these people not to work.

What makes this time around so unique is that although kids are being strongly encouraged (not mandated) to stay in school longer (ie attend college), it is the students themselves who must shoulder the economic burden. When you think of it in those terms, it begins to make sense that student loans are being offered and/or backed by the government. It also helps explain why Germany, Finland and several other countries have recently announced that their universities are now tuition free, and why I have been suggesting that student loan forgiveness should be on your macro radar.

In a way, education has served a dual purpose during these transitional phases. One is to reduce the size of the workforce at a time when demand for labor is experiencing an abrupt shift lower. The other is as a sort of insurance or protection against technology's creep higher up the intellectual scale. When technology takes your farming job, you escape to where technology isn't smart enough or adept enough to go, such as manufacturing. When it infiltrates manufacturing, you climb higher up that intellectual ladder, becoming better educated and escaping to the services sector, where rudimentary technology can't compete. What happens now though, when a computer can not only beat the world's greatest mind at chess, but can do it with a free app on your “smart” phone? Where do we escape to with a better education? What sector comes after

services? What happens when computers move up the intellectual scale more rapidly than we can?

I will continue to explore these and other derivative issues for the impact is being felt in every country and every facet of life, driving policy and markets.

# Macro Radar

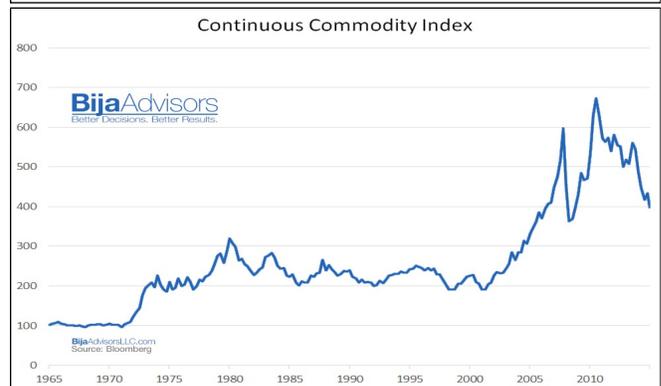
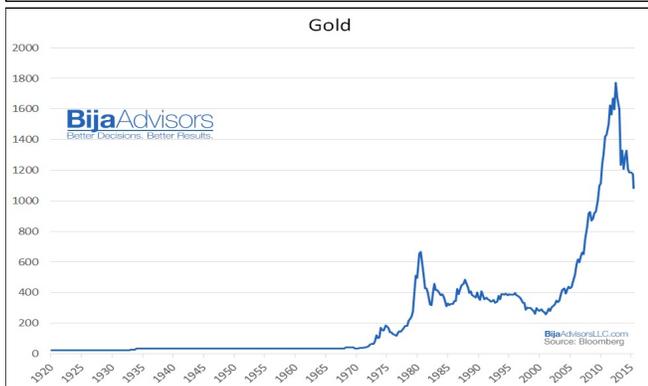
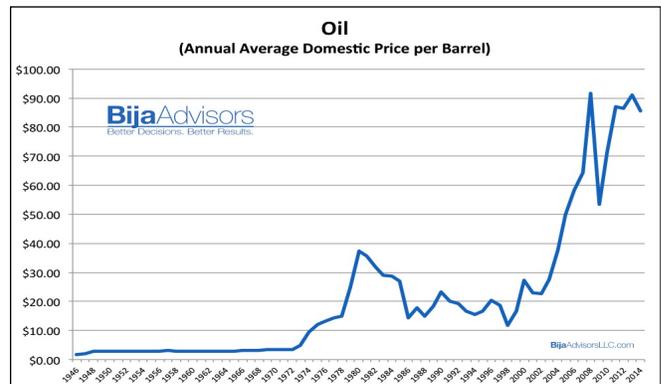
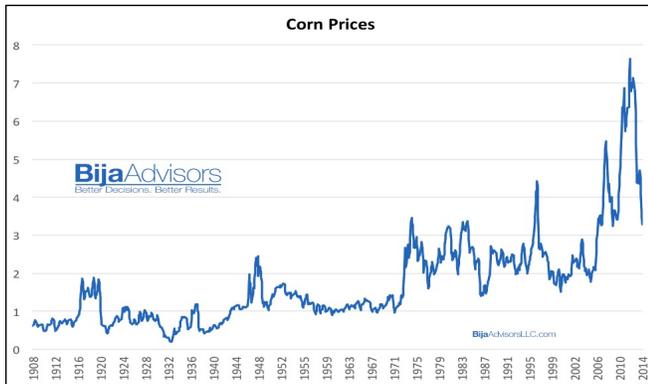
Cognitive Science Meets Economic Analysis

Issue 15-6  
August 9, 2015

## 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.

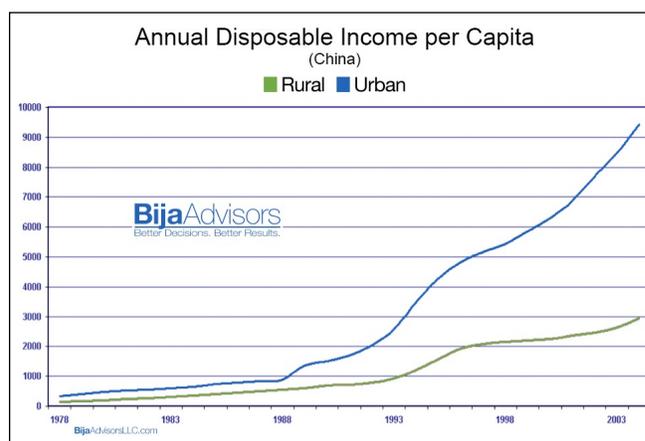
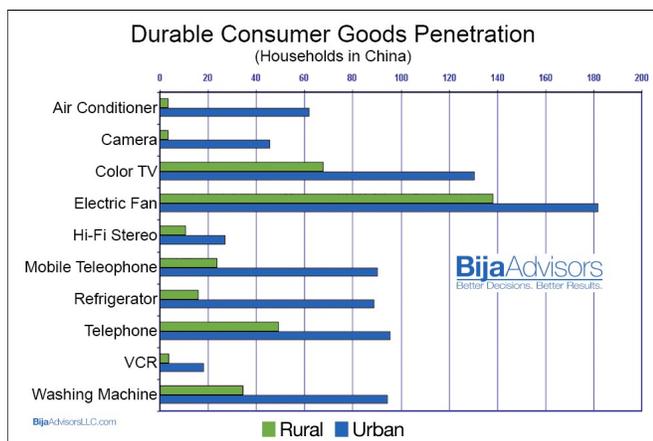
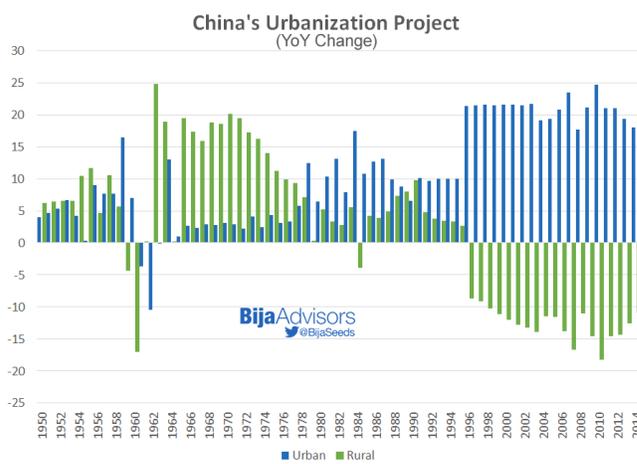


Truth is, no matter which commodity chart you choose, they all look very similar. Each exhibits extended periods in which a clearly defined range held, until something happened around the millennium. If we are going to discuss where commodities are headed from here, it would be absurd to do so without 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.)

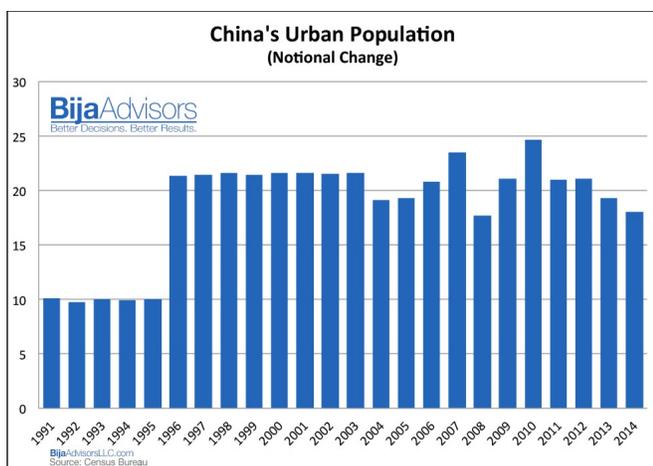
Urbanization of this magnitude, and the industrialization which accompanies it, leads to a spike in demand for raw materials and food. It always has. Think America, England, Rome, Greece, Egypt. The difference this time around is that the demand wasn't satisfied through colonization and theft. This time, 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.

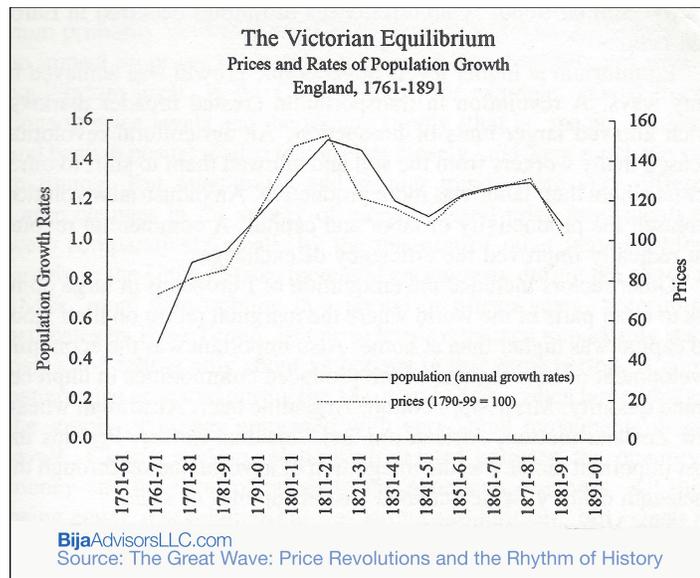
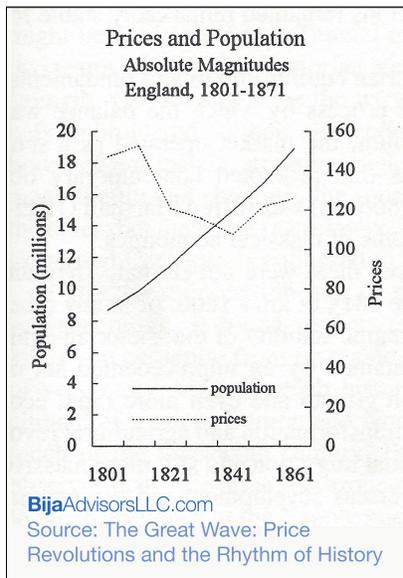


The second fly in the ointment was, well, math. When you consistently increase the denominator (total urban population) by adding 22 million to it each year, each additional 22 million will have a gradually declining effect on the year on year growth rate (see chart on right). The chart on the left however, 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.

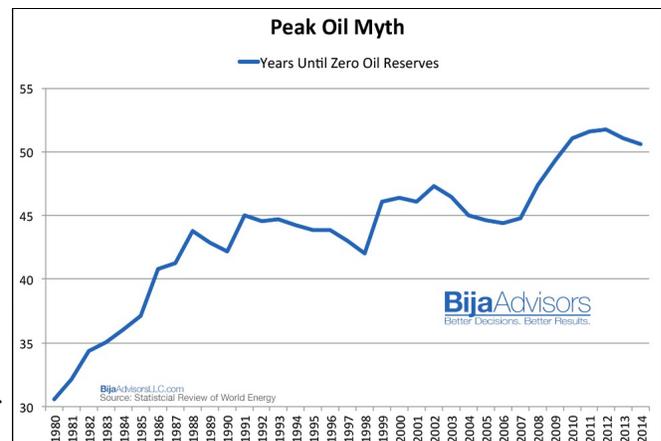
That's why it doesn't really matter that China is only 50% urbanized and that another 540 million are waiting in the wings to come online. Both flaws have become exposed.



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

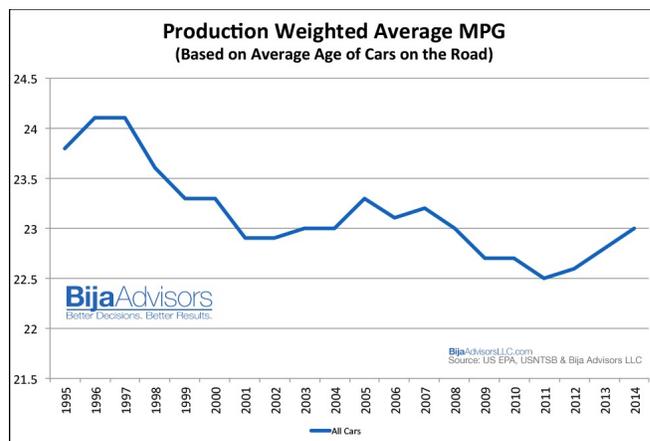
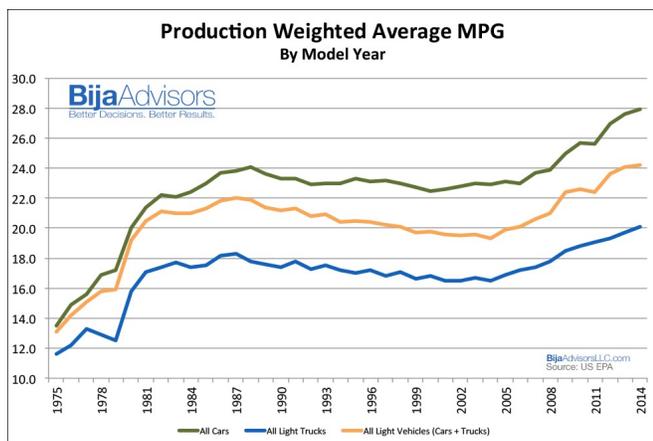
While everyone knows demand can affect commodity prices, the power of the demand side is almost always discounted, particularly by the commodity experts. There's good reason for that too. Demand shocks don't tend to last very long, which is why producers were so slow to respond to the spike in demand 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.

# Seeds of Thought

Cognitive Science Meets Investment Management

Issue 16-13  
April 14, 2016

## Why This Time It's Not Different

Most market commentary tells us what happened. *Stocks went up, oil went up, emerging markets rallied, energy stocks jumped, and yields went down.* That's the what. Even the narratives meant to explain why these things happened, are more often just the "what" rearranged. *Energy stocks and emerging markets rallied on the back of a rally in oil.* Although most analysis ignores the why, it is the why that truly matters. If you don't understand the why, and instead focus solely on the markers, you won't recognize when those markers represent something new. I prefer to focus on the why. In this edition, I will focus on why even if higher oil is in the cards (I don't believe it is), it is not bullish for emerging markets or risk assets in general, BUT that doesn't necessarily mean the S&P is in danger.

I wrote a [Macro Radar piece](#) back in January 2015, where I challenged the perception that markets were behaving irrationally. It's a discussion that I've had with market participants off and on for the last 6 years. When the correlations they believe in hold true, like we've been seeing for the last couple of months, then the market is seen as behaving "rationally". Then when they shift, it creates confusion, losses, and cries of irrational behavior.

The problem isn't that markets don't make sense or that they are ignoring macro fundamentals, it is that drivers have changed. The way we define entire asset classes should have been adjusted back in 2010, along with our correlation expectations among them. It is the very definition of terms like "risk on" or the "Dollar trade" that is causing so much pain and consternation. If you are unwilling to accept that, markets will have appeared irrational for much of the last 6 years, with intermittent bouts of sanity. However, those bouts of sanity were merely moments when old correlations, the ones you are holding on to, happened to have held true. Just because a clock is only right twice a day, doesn't mean every other time piece is wrong the rest of the time.

Let's go back to the most important factor of all, the historic Chinese urbanization and industrialization that began in 1996. Although, in notional terms it continues on a grand scale today, its impact disappeared in 2009/2010. It affected every market and everyone, both at the onset and again when its impact disappeared. Let's begin with commodities. I won't go into the details here, because you can find them in [The Real Reason Commodities Collapsed](#). However, it's important to note one particular phenomenon that was unique to that period.

Traditionally, demand for commodities is fairly steady. Instead it is the supply side that typically leads to the wild price swings. Think droughts for crops and OPEC manipulation for oil. Here is the significance of that. When supply drives prices, lower volume leads to higher prices, and vice versa. That means there is a negative correlation between price and volume. However, since China began driving year-on-year global demand higher, volume and price have been positively correlated. So, when the price of oil went up, since it was a function of demand going up, volume was going up too. Companies that rely on

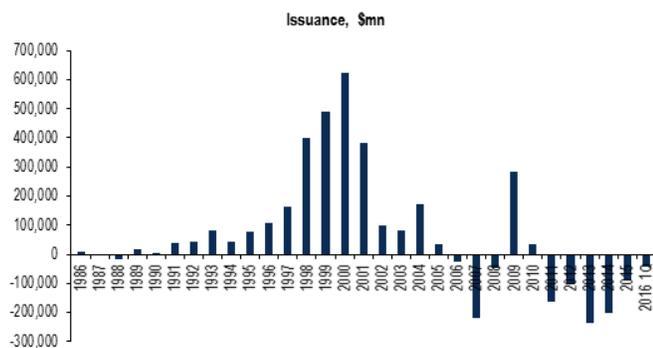
volume to generate earnings, like Oneok, would rally whenever the price of oil rallied, and it made sense. Oddly, it still happens, but it shouldn't, and neither should emerging markets.

As I've stated numerous times, the impact on commodities from the historic, one-time event of Chinese urbanization is over. It will not return. Ever. Therefore, everything that we've come to accept about commodities as a given, based solely on that unique period, must be revised back to historic terms. That period was an outlier, not the norm. If you believe in reversion to the mean, this is important, because the 1996-2010 mean is very different from the true long run mean, and that includes correlations. This is particularly significant at this very moment.

The recent rally in oil is driven not by an increase in demand, but by a potential reduction in supply. This is a radical departure from what had been the case for the entire professional experience of so many investment managers and traders. So they should be forgiven for mistakenly believing that the rally in oil should be seen as a positive for emerging markets and other risk assets. After all, higher oil has long been a signal of stronger demand. It no longer is. Emerging markets don't need higher oil prices, they need greater demand. Higher oil driven solely by supply side manipulation is a tax on demand. Therefore it is a negative for emerging markets, risk assets and global growth. It breeds greater uncertainty, which encourages even more risk aversion.

Now, let's return to a point I have been harping on for years. The S&P 500 is not a risk asset like the Bovespa is a risk asset. The US Dollar versus Japanese Yen or Euro is not the same as the US Dollar versus Brazilian Real or Malaysian Ringgit. Yes, during the 1996-2010 period, they were incredibly correlated, because the drivers were directly related. However, that is no longer the case. Just as the price and volume correlation has broken down in commodities, so too has it broken down between the S&P 500 and emerging markets, and US interest rates as a function of the US Dollar versus all currencies.

See [My View Without Obstruction](#) for a few charts that make the case for treating the S&P 500 differently than emerging markets and other equity indices. The following charts were shared with me by a client after I again made the case that US equities should be seen as an extension of the US Treasury market.



Here is the bottom line. What has been moving markets and economies for the last six years is likely to continue. The only things I see disrupting this trend are war or extreme wealth redistribution through taxation. That means that what has been working for the last six years is likely to continue working. However, if you keep misreading the price action, you will continue to have moments in which you feel

like you are finally seeing things clearly again, only to be blindsided by a move that “doesn’t make sense” again. It’s time to recalibrate.

### **Global Macroeconomic Cheat Sheet**

I published the following Global Macro Cheat Sheet back in January of 2015 and am republishing it again here because it remains relevant and potentially helpful...

“There is a coherent, consistent explanation for why markets are moving, policymakers are deciding and fundamentals are playing out as they are. Below is my global macro cheat sheet, which I reference any time I read a CB statement, witness a major move in markets, listen to an analyst speak, take on a position and await the release of new data. The implications of each and every item on the list are far reaching and likely to remain with us for years to come.

I have written about these items repeatedly and will continue to do so until they are no longer valid. If you’re not thinking about these things regularly and understanding their direct impact on the ramifications of policy decisions, the economy, feedback loops and market psychology, I would wager you’re either underperforming your views or getting lucky.

1. The financial crisis did not destroy private wealth.
2. Wealth disparity is nearing historic highs and economic analysis needs to adjust for the impact of the shift in marginal utility. Government intervention is the only thing that can change its course.
3. Monetary policy is impotent with regard to the real economy. It merely affects shifts between financial instruments.
4. The impact of China’s monumental urbanization project, which began in 1996, ended, by pure coincidence, in the midst of the financial crisis.
5. Technology is moving ever more rapidly up the cognitive value chain.
6. Fiscal policy is the only thing that can affect the real economy, and the only thing that can drive yields and inflation higher.
7. Economies and markets are now global.
8. Policymakers are people.

In this list you will find the answers to all of your questions. Why have commodities collapsed and how long will they stay down here? Why is it that unemployment is likely to continue to fall without triggering wage inflation? How is it that some assets have become hyper sensitive to interest rate adjustments, yet carry isn’t a factor further out on the risk curve? How can prices be so tight, yet untradable? Can the US economy find its legs if the rest of the world is teetering on the brink of failure? Why has the cost of a college education been increasing at several multiples of the overall inflation rate? Why is deflation more likely than inflation, and why doesn’t it matter? What will trigger the US Dollar free-fall? Why is competitive devaluation a fool’s game, and why will protectionism escalate? Why are tech companies sitting on so much cash?”

# Seeds of Thought

Cognitive Science Meets Investment Management

Issue 16-15  
May 2, 2016

## The Global Economy's 3rd Phase

The game of Monopoly has its roots solidly planted in the two other recent moments in history when technology experienced an evolutionary leap forward - the late 1800's and first quarter of the 1900's. Given my belief that we are experiencing another one of those evolutionary leaps and dealing with so many of the same social and economic issues, I thought it worth taking a look at what the game can teach us about society, behavior patterns and the economy.

## The History

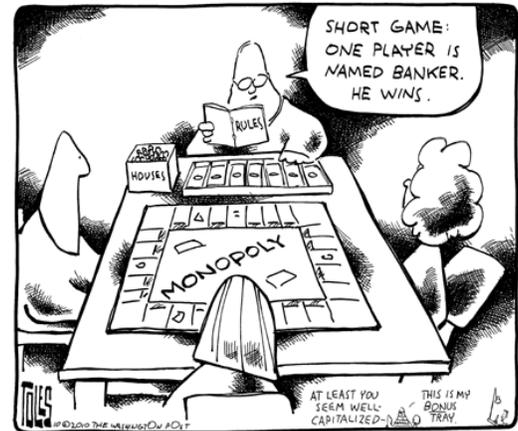
Let me be clear. I don't claim that there is anything original about connecting the game of Monopoly to economics and unfettered capitalism. To do so would be an admittance of ignorance about its origins. In actual fact, the original game was specifically intended as a tool for teaching the philosophy of Henry George as laid out in his book [Progress and Poverty](#) (1879). The premise is that private land ownership is a destructive principle and it came to be known as Georgism, the foundation of the United Labor Party in 1886. As you can imagine, it was very unpopular among wealthy landowners, not the least of which was the Catholic Church, who ruled it "worthy of condemnation".

The game, originally called The Landlord's Game (1906), was the brainchild of Lizzie Magie. All of the key features of the game, the ones that make it immediately recognizable, such as the square board with properties along the edge plus Chance, Electric Company and the Luxury Tax were included in her version. It became something of a movement in its own right as wealth disparity was escalating once again into the 1920's. If you want to read more about the history of the game, I highly recommend reading this beautifully written story in [Harper's Magazine](#). Rather than feebly attempt to replicate Christopher Ketcham's version, let's move on to what I believe we can learn about behaviors and the economy from the three strategic phases of the game.

## The Game

What interests me most about Monopoly is how its social dynamics serve as a beautifully simple metaphor for the social dynamics driven by an economic lifecycle. In fact, it interests me so much that I am working with organizational behavior specialist, Dr. Kyle Lewis, on a research study to examine its impact on individual behaviors and group dynamics.

While we tend to think of Monopoly as a game of pure luck, it is actually a strategy game. When you first sit down to play and the money is evenly distributed, everyone is excited. Each player chooses their



favorite piece, whether its the car, puppy or thimble doesn't really matter, but in that moment it feels as though it does. You neatly lay out your money, organized by denomination. Perhaps you tuck it gently under the board in front of you. Every player is engaged.

That's when Phase One of the game begins. During this phase, you want to gather as many properties as possible. If you wind up in Jail, you should pay your fine immediately so you can continue to gobble up properties before your opponents do. This phase is essentially a race to control as many of the income generating assets as possible. Do whatever you must in order to accumulate properties, even if it means immediately mortgaging them in order to free up capital for additional purchases. Beyond the "Buy Everything" strategy, this phase is mostly about the luck of the dice. Very quickly, players either become disheartened by "those crappy dice" or emboldened by their "superior strategy". The end of Phase 1 is interesting in that those in the best position are typically the ones with the least cash on hand. In other words, they are heavily invested. Of course, leverage isn't part of the game, but if it were, I could see a strategy called "Peloton" being very popular among the pros.

Phase 2 begins when roughly half the properties have been purchased. This phase is characterized by the frenzy of activity as players negotiate trades in order to position themselves for the remainder of the game. It is all about location. The goal is to monopolize property groups in the most valuable parts of the board, namely those just ahead of Free Parking and, to a lesser degree, those just after it. Of course, the strength of your negotiations are severely affected by what you were able to accumulate in Phase 1. When all properties have been acquired and the pace of transactions grinds to a halt, Phase 2 is over.

As Phase 3 begins, the fate of the players is all but set, even if three of them remain naively optimistic about their chances. Sure, your opponents might string together a few unlucky rolls, but the likelihood of someone who is poorly positioned as Phase 3 gets underway actually winning, are slim. This is the primary reason Monopoly is ranked 10,870th (below "Go Fish" and "Old Maid") among game aficionados. While the game may go on for hours more, everyone basically knows who is going to win very early on and some of the players may be eliminated hours before the others. Whereas in Phase 1 you wanted to remain active, paying the fine to get out of Jail immediately upon entering, in Phase 3, the strategy is exactly the opposite. Every roll of the dice is risky, so you do what you can to avoid activity. Nearly every transaction originated by you will be to your detriment. So you avoid originating transactions. If you wind up in jail, stay as long as possible. As a result, what was once a frenzy of activity, has become a monotonous series of dice rolls. Those who *have* look to protect it and those who don't are just trying to stay alive as long as possible.

Now, think about what happens when a player's stack dwindles and their ability to generate revenue is limited. They begin to lose interest in the game. They are no longer engaged. The money, the property, the rules, psychologically they all shift from possessing real value to representing fantasy. Those neatly stacked piles now lie haphazardly and unattended. They are more likely to get up for a soda or slice of pizza. "Just roll for me when it's my turn," he mutters as he gets up from the table. While the other players are still actively involved, particularly the leader, he has disengaged. He has broken the fourth wall as they say. Gone is the suspension of disbelief. Slowly but surely this will happen to all but one player at the table. Eventually, all that remains is a memory of what could have been. Even the winner eventually must come to grips with the fact that she possesses little more than colorful pieces of paper.

**"The greatest astonishment of my life was the discovery that the man who does the work is not the man who gets rich."  
Andrew Carnegie**

I believe the global economy is in Phase 3. Sure, houses can still be built or swapped out for hotels, but the frenzy of activity is over. Those who have, are taking as little risk as possible. Those who don't, have become disengaged, slowly coming to the realization that the odds are stacked against them. Even infusions of cash do little more than merely extend the game, for every transaction exaggerates the disparity adding to the wealth of the game's leader who simply socks it away. No new transactions, no investments. Just one player building their savings while everyone else is reduced to financial ruin, and the game is over. The only way to reengage everyone is to begin the game again, from scratch. If you think about it, that's how it happened in those two previous periods in recent history.

## **Bija Advisors LLC**

1482 East Valley Road

Suite 217

Santa Barbara, CA 93108

Main: 805.521.8001

Web: [BijaAdvisorsLLC.com](http://BijaAdvisorsLLC.com)

Twitter: [@BijaSeeds](https://twitter.com/BijaSeeds)

General Information:

[info@bijaadvisorsllc.com](mailto:info@bijaadvisorsllc.com)

Subscription Information:

[subscriptions@bijaadvisorsllc.com](mailto:subscriptions@bijaadvisorsllc.com)

Coaching Information:

[coaching@bijaadvisorsllc.com](mailto:coaching@bijaadvisorsllc.com)

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