



Q3-2022

A Game of Innings

June 30, 2022

The McConachie Team – Educational Update

A Game of Innings:

Baseball, Economics, and Market Cycles

Foreword:

It is May 30th, 2022. I sit in the bleachers at Wrigley Field with a new perspective on *time*. It is my first Cubs game in... oh, I can't remember, but it's been a while. To narrow it down, it was certainly before the pandemic of 2020 and after the Great Financial Crisis of 2008. It's interesting how time works, passing quickly in certain moments and lasting forever in others.

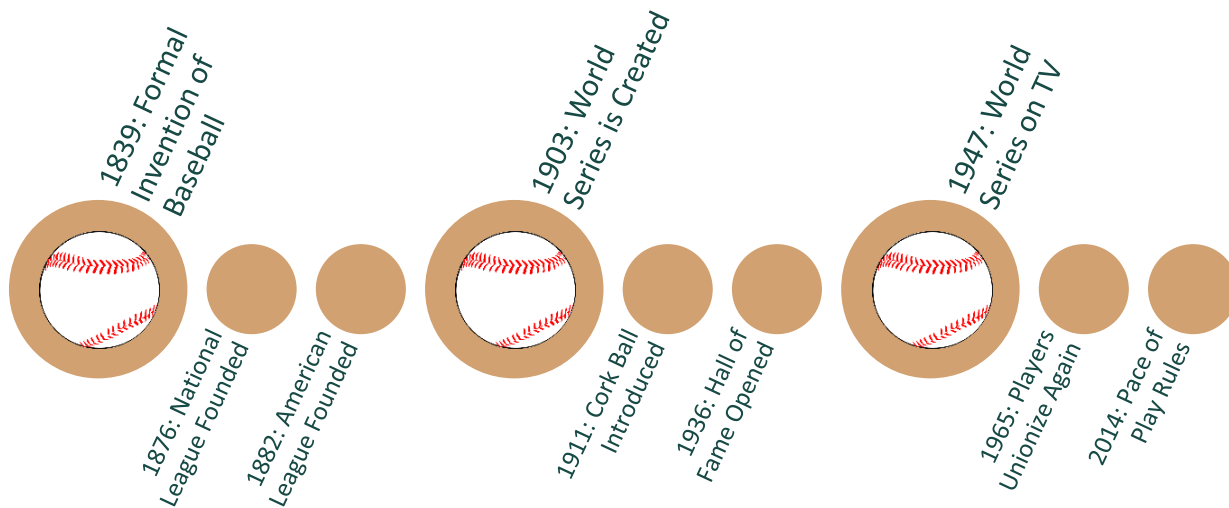
On this day, time is a beautiful reminder in many ways. The wind is blowing out to center field at 18-20 mph, providing a cooling breeze to the bleacher fans who are soaking up the sun in the 84-degree weather. We take time to appreciate and celebrate the fallen ones that served our country and thank all the generations that have helped get us to this moment. The bleacher fans are playing their regular cup snake games, the right bleacher crew competing against the left. The stadium is filled with fans ready to see the Cubs lose in that loveable fashion at the "old ballpark."

As I observe everything around me, I notice one new thing: a clock. Baseball didn't have a clock last time I checked. I remember baseball being a game of at-bats, outs, runs, and innings... not time. What gives? My mind explores these thoughts as I enjoy a tight game that comes down to the last out. The Chicago Cubs lost to the Milwaukee Brewers by a score of 6-7 that day.

Baseball is a game that was founded in the sandlots of early America during the hard times following an economic downturn. The rules of baseball evolved during the *first* depression in America, and the game soared in popularity soon following that depression in the 1840's.

In our 3Q-2022 educational update, *A Game of Innings*, we explore the concept of baseball, economics, markets, and the cycles that they are. We will use patterns of time in the medium of baseball as a metaphor for our ever-changing economic environment.

Brief Baseball Timeline



Sean Lahman, *A Brief History of Baseball*, May 2021; Soft Schools, *Baseball History Timeline*, August 2021

A Historic Game:

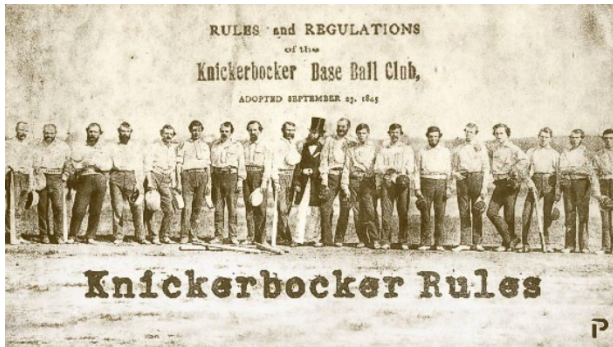
It was the 1830's and British investors had been investing heavily in the booming industry that was America. As more capital flowed into American investments, such as the popular "cotton bonds", the Bank of England noticed their monetary reserves began to dwindle. The Bank of England, a central bank of the time, raised interest rates to influence higher bank reserves and limit money supply in the global economy. Thanks to good fortune, a robust wheat yield, and ample agricultural supply, Great Britain was spared from the hardship that America would soon experience.

The Bank of England's hawkish policy led to widespread deflation, or lower prices, in the US. The reduction in available funds caused a depression in America that has long been forgotten. With diminishing incoming

investments, American cotton prices dropped 25% in a single month (March 1837), which was a crucial blow to the fledgling economy. This contraction set off the Panic of 1837 and its effects compounded. Unemployment, famine, and financial distress then plagued America until 1844. How many of our readers remember this point in history? We are guessing very few, but some may know this period coincides with the founding of America's national pastime.

Baseball took many shapes, in many places, prior to its formalization. It gained popularity during, and after, the Panic of 1837. The sport can be traced back to the game of 'Rounders' in England, and the formal founding of the game is often attributed to Abner Doubleday in 1839. The New York Knickerbockers were one of the first organized professional baseball teams whose ruleset has been woven into the fabric of baseball history. In 1845, The original rulebook

consisted of only 2 pages and 20 rules, most of which still lives on in today's +180-page edition.



PitcherList, *The Knickerbocker Rules*, April 2021

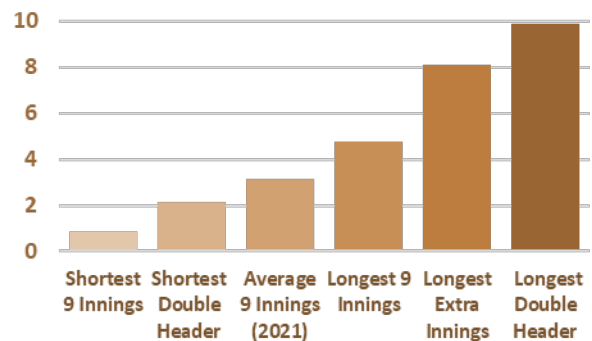
Although the rulebook has evolved over the years, certain consistencies remain, most notably the absence of a time limit. This makes baseball unlike most other popular sports that are bound by a running clock. This absence of a time limit draws parallels between baseball and the modern world of finance. Like baseball, markets and economic cycles are not constrained to the passing tick-ticks on a gametime clock.

How Long is an Inning?

If someone asked you how long a baseball game is, what would you say? What if they asked how long an inning is? There is no exact time limit in baseball, leaving infinite possibilities on the table. Despite previous gametime averages, or our usual expectations, there are some anomalies that last much longer, or shorter, than expected. However, we know the game must end at some point. Using the experience and knowledge of the past, we can estimate just how long we expect a game to be. We might be wrong.

The longest game by time was 8 hours, 6 minutes, and 25 innings (an average of 19.4 minutes per inning), where the game ended in an ironic Chicago Sox victory of 7-to-6 versus the Milwaukee Brewers in 1984. A different game holds the record number of innings, where in 1920, the Brooklyn Robins and Boston Braves played a game to 26 innings. This game ended in an unexpected tie, of 1-to-1. This game only lasted 3 hours and 50 minutes, with an average of 9 minutes per inning. This 26-inning game was only 40 minutes longer than the average length of a 9-inning Major League Baseball (MLB) game in 2021. The approximate length of an average inning in 2021 was 21 minutes. These captures of time seem long when compared to the shortest ever 9-inning game, which only lasted 51 minutes.

Record Baseball Game Lengths (hrs)



Baseball Almanac, *MLB Game Length Records*, June 2022

Using history as a guide, a game can last anywhere from 51 to 486 minutes, where the innings last an average of 6 to 21 minutes... So, how long is a baseball game? Or an inning? The answer is, we don't know exactly, BUT we can make a hypothesis using statistics from the past in our analysis of what may occur in the future.

For example, we know the trend is that the average game is getting longer. Baseball games

averaged just under 2 hours in the early 1900's; whereas over the last decade, they have averaged around 3 hours. Additionally, the MLB started imposing Pace-of-Play rules starting in 2014. MLB has added to those rules through 2019 to control, or shorten, *transitory* portions of the game (while never putting a time limit on an inning or game itself). Knowing these things, we would expect the average time of a game to cap around 3 hours and maybe slightly decrease in the future. If we narrow it down to the teams competing, we have even more information about what to expect, although nothing is guaranteed.

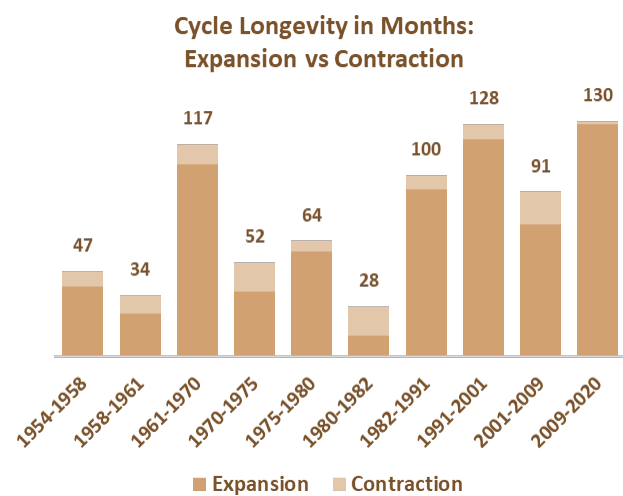
How long is an Economic Cycle?

Next question, how long is an economic cycle? Or how long does the expansion, peak, contraction, or trough part of the cycle last? A cycle could theoretically last forever, as it is not dictated by the ticks, or the tocks, of a clock. Nevertheless, we can use what we know of past cycles, and beliefs about future conditions, to estimate how long a cycle could last. In essence, we can look at economic cycles the same way we do baseball games; some innings may last longer than others, but its just a matter of time before we move to the next part of the game.

For many of us reading this piece, we have been through a multitude of economic cycles with varying durations. The *National Bureau of Economic Research* has recorded US business cycles going back to 1854. There have been 33 economic cycles from 1857 to 2020, with an average cycle length of 58.4 months, or almost 5 years.

The longest full cycle was from December 2009 to February 2020, which lasted 130 months measured from trough to trough. This cycle consisted of 128 months of expansion and only 2 months of contraction, which was the Covid-19 flash crash starting in March 2020. The shortest full market cycle was from August 1918 to January 1920, which lasted 28 months, consisting of a 10-month expansion and 18-month contraction. Just like a baseball game, the duration of a cycle can often be unpredictable, but note that it still follows a relatively normal distribution.

Looking at the period from 1945 to 2020, cycles lasted an average of 75 months, or 6.3 years. Bringing that horizon even closer to today, we can note that the last 4 cycles from 1990 to 2020 have averaged 112 months, or 9.3 years. For reference, the chart below shows the last 10 market cycles. The expansion and contraction phases of the cycles are broken out to show the trough-to-peak and peak-to-trough periods.



NBER, *US Business Cycle Expansions and Contractions*, July 2021

These economic cycles are just like baseball games, we don't know how long the game or

inning will last, but we can expect to move forward at some point. We can trend the historic timelines of the games and cycles to give us an understanding on how the environment is evolving. For example, we have seen the average length of a cycle (and baseball game) getting longer as we move towards modern era.

Just as MLB organizations give guidance on what they think is best for the league of baseball, the Federal Reserve Board gives guidance on what they think is best for the economy. As we have noted in past educational updates, the Fed will use their tools to influence the economy in different ways during different stages of the economic cycle. Currently the Federal Reserve Board is *hawkish*, meaning they are tightening the money supply. They are doing this through the raising of the discount rate and quantitative tightening (selling assets to the market instead of buying them), in hopes of slowing inflation. Jerome Powell's language has been clear and consistent, which the market has appreciated. The *hawkish* policy may dampen the opportunity for a bullish market, but the slowing of economic growth also slows the raising of prices. Our league commissioner Powell is doing his best to make it a level playing field.

Time is Confusing, and so are Cycles

Time is confusing. Don't believe me? Ask anyone who has sat through a math class on the last day of school, right before summer begins, just how long a minute is. Then, ask the sleep-deprived mother of an infant what a reasonable night of rest looks like. Minutes seem to pass by

likes hours and hours like minutes. Life is filled with long days and short years. How we interact with time is confusing, and our interaction with the market is no different.

Downturns seem to last forever, while the upside flashes by in an instant. This concept is a practical application of Prospect Theory (referenced in more detail in the appendix). The previous *Cycle Longevity in Months* chart shows us that the '08 Great Financial Crisis's downside lasted only 18 months from peak to trough. It was preceded by 73 months of growth and followed by 128 months of expansion. An hour of grief seems to last much longer than an hour of ecstasy. Either way we don't know what the experience will be like until it happens.

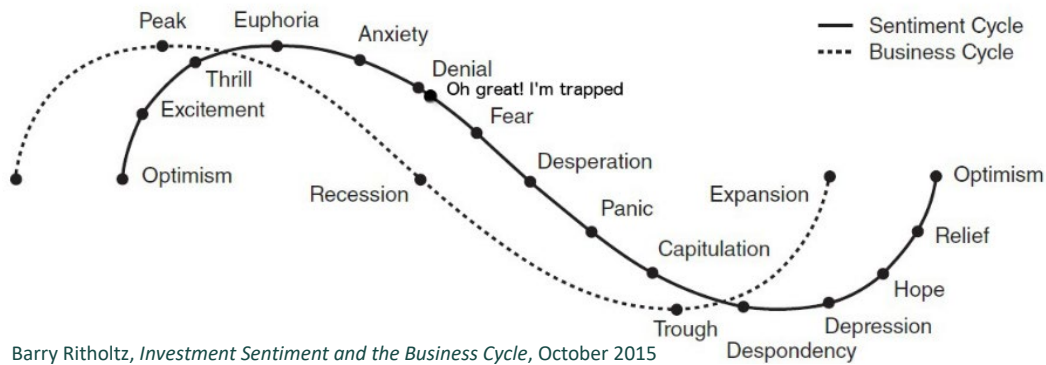
Generally, humans tend to be reactionary, just like when watching a baseball game. After something great happens we cheer. When something bad happens we bury our face in our hands as the loss seems to hurt twice as bad when compared to the pleasure of a win (just as Prospect Theory suggests). Either way, we respond after the event happens. We may wait in eager anticipation for a home run hitter or the next GDP print, but we don't know which way it will go until the event occurs, no matter how hard we try to handicap it.

Investor sentiment during the market cycle essentially operates the same way. We may expect things to occur, but much of the market's reaction is based on outcomes. Market sentiment is often backward looking, as seen in the pictured comparison of business and sentiment cycles at the end of this section. "Anxiety" only begins after the market has tipped off its highs. Then, we are filled with "hope" only after the market has already come

off its lows. The idea of market sentiment lagging the market is becoming well known. Some modern-day investment theorists try to front-run these sentiment changes by investing opposite of market sentiment.

know how long they will last; some may last a decade, and some may last a year. Either way, it is beneficial to understand the concept of time and innings to stay in the game.

There are many parallels between economics and baseball. Bust most notably, market cycles, like baseball, are a game of innings. We don't



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Kindest regards,

The McConachie Team

This piece was written by Michael McConachie and Lucas Ciabattoni

Sources:

1. Sean Lahman, [A Brief History of Baseball](#), May 2021
2. Soft Schools, [Baseball History Timeline](#), August 2021
3. The Economic Historian, [Panic of 1837](#), November 2020
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5. Baseball Almanac, [MLB Game Length Records](#), June 2022
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8. Major League Baseball (MLB), [Pace of Play](#), April 2022
9. National Bureau of Economic Research, [US Business Cycle Expansions and Contractions](#), July 2021
10. Investopedia, [Prospect Theory](#), July 2021

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