EconoFact Chats: Gauging the Fair Value of the Stock Market

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Michael Klein:

I'm Michael Klein, executive editor of Econofact, a nonpartisan web- based publication of the Fletcher School at Tufts University. At Econofact, we bring key facts and incisive analysis to the national debate on economic and social policies, publishing work from leading economists across the country. You can learn more about us and see our work at www.econofact.org.

Michael Klein:

Newscasts report the performance of the stock market every day. Since the beginning of the year, this news has been grim. The S&P 500 index closed just shy of 4,800 at the end of 2021, but it has pretty consistently recorded losses since then. And at the time we are recording this podcast in June 2022, it has fallen by about 15%. But to put this in context, this index is now at the level where it was about one year ago. And furthermore, it more than doubled from its low point in March 2020 to the end of 2021. Why are stock prices so volatile? Were stock prices somehow too high before 2022 began? Are they too low now? More generally, how do we gauge whether stock prices are too low or too high, and what we would call their fair value? In fact, what does fair value mean? To answer these questions, I'm happy to welcome to Econofact Chats, Professor Eric Zitzewitz of Dartmouth College. Eric is an expert on financial markets, and has a very recent Econofact memo that addresses these questions. Eric, welcome to Econofact chats.

Eric Zitzewitz:

Thanks Michael.

Michael Klein:

Eric, there's a New Yorker cartoon from a number of years ago showing a man watching a newscaster who reports, "On Wall Street today, the news of lower interest rates sent the stock market up, but then the expectation that these rates would be inflationary sent the market down, until the realization that lower rates might stimulate the sluggish economy, push the market up, before it ultimately went down on fears that an overheated economy would lead to a reimposition of higher interest rates." Are stock prices really that crazy?

Eric Zitzewitz:

Well, what the cartoon gets right is that stock prices are forward looking, and react to changes and expectations of future conditions, rather than changes in the actual conditions themselves. Expectations can change a whole lot faster.

Michael Klein:

So now we've had, as I mentioned, this decline in stock prices, does that mean that the wisdom of the market is showing us that we're going to enter a recession?

Eric Zitzewitz:

As Paul Samuelson famously said, "the stock markets predicted nine of the last five recessions." So the market will drop when a recession appears probable, but it doesn't mean we always get one.

Michael Klein:

But ultimately, Eric, there are theories that are supported by evidence of what determines stock prices, right?

Eric Zitzewitz:

Oh, absolutely. The price of a company's stock reflects the current expected value of its future dividend payments adjusted for risk. This means that higher interest rates are going to be associated with a decline in stock prices, both because higher interest rates could cause a recession, and therefore lower future profits and dividends, but also because higher interest rates make bonds more attractive, and bonds are a substitute for stocks. So it makes you value stocks less highly.

Eric Zitzewitz:

But again, the role of expectations is key here. The value of the aggregate stock market as captured by indices like the S&P 500 will change immediately today with new information about the future prospects for economic growth, interest rates, rules and regulations that affect corporations, political factors, and a host of other factors.

Michael Klein:

So what you're explaining, Eric, is that expectations of the future matter for stock prices today, but we don't really know what those expectations are, right? And so how can we tell whether the market is overvalued or undervalued?

Eric Zitzewitz:

Yeah, absolutely. Expectations are very hard to measure. So what people do as an alternative is benchmark the value of the stock market against current hard information. A very popular benchmarking is called the price/earnings ratio. We compare the value of the market to what firms are currently earning.

Michael Klein:

How is that actually calculated then?

Eric Zitzewitz:

Well, so a price/earnings ratio, the basic idea comes to us from real estate. Real estate investors will compare the value of two different buildings by looking at the annual rental income from those two buildings. They'll divide the price by the annual rental income and get a sense of which building offers a more attractive value. Stock market investors will do that for different companies. They'll take the price of the company, the price of all of the shares of stock outstanding and divide that by the annual earnings of the company. We can do the same thing for the aggregate stock market or a subset of it, like the S&P 500. Basically what you do is you take the value of all of those 500 firms, add it up, and then divide it by the sum of the profits of those 500 firms. That gives you an aggregate price/earnings ratio for the entire stock market.

Michael Klein:

There's a refinement of this having to do with the business cycle, right?

Eric Zitzewitz:

Yeah, that's right. About two decades ago, the economists John Campbell and Robert Schiller developed a version of the price earnings ratio that adjusts for the business cycle. Basically what they did is fairly simple. Instead of using earnings in the denominator, they use average earnings from the last 10 years. That smooths out the fact that earnings tend to move up and down with the business cycle. They call their ratio, this adjusted ratio, CAPE, which stands for cyclically adjusted price earnings.

Michael Klein:

So it's nice that there's an easy acronym for that. Where is the CAPE today, and where was it at the outset of this year when stock prices were higher?

Eric Zitzewitz:

Yeah. So at the end of 2021, CAPE was at 38, and it has since fallen to about 32.

Michael Klein:

That's a pretty dramatic decline, right? And well, how do these compare to what we've seen historically for CAPE measures?

Eric Zitzewitz:

Yeah, no. Absolutely that's a big decline. So the maximum value of CAPE, the all time maximum going back to 1742; Robert Schiller's collected data back to 1742 and calculated this ratio back that far -- the maximum value was 44 in December of 1999, during the peak of the first internet era. It subsequently fell and hit a recent low of 13.3 in March of 2009; so the depths of the great recession after the financial crisis. Since then it's gradually risen, and as mentioned, hit a recent high of 38.3 at the end of 2021.

Michael Klein:

Eric, in your recent Econofact memo you discussed the tendency for a high CAPE ratio to be followed by decline in stock prices. But you also warn that this is not a certainty. It's not a hard and fast rule.

Eric Zitzewitz:

Yeah, that's right. Part of why people are interested in tracking CAPE is there is this tendency for CAPE to predict future stock returns. In particular when CAPE is high, future returns tend to be disappointing. Robert Schiller has actually built a data set all the way back to 1872, and you can download all this data from his website. But even in that 150 years of data, we only have two episodes with a CAPE above 30. 1929 and 1999. After both of those periods, we had disappointing stock returns, as many of you will know.

Michael Klein:

So does the current high CAPE ratio mean that we're in for a protracted decline of stock prices?

Eric Zitzewitz:

Well, not necessarily. As mentioned, we only have two episodes in the past data.

Michael Klein:

How is it that there are only two episodes when we have 150 years of data?

Eric Zitzewitz:

Well, so we actually have a bit less data than 150 years makes it sound, because we want to measure future returns over a fairly long window. 10 years is what most people look at. And so in some sense, we really only have 15 non-overlapping 10 year periods, two of which, those starting in '29 and '99, began with very high CAPE ratios and had very negative returns subsequently.

Michael Klein:

So what do you think about the current situation? Do current earnings look sustainable? And how does inflation and the risk of a recession factor into all of this?

Eric Zitzewitz:

So I think that's really the key question. As I talk about in the memo, there are reasons to think that a higher CAPE might be appropriate in 2022. One of the main reasons is that earnings have surged. They've more than doubled since 2016. CAPE benchmark stock prices against 10 year average earnings, and that implicitly treats that big increase between 2016 and 2021 as a cyclical blip that we should be smoothing out. If instead we think this increase in profits is permanent, we should use a simpler measure like the PE ratio, which just compares stock prices to current earnings. If we use this ratio, the stock market currently looks, more or less, fairly valued.

Michael Klein:

So even when we're trying to look at different measures of the stock market, we could get different answers. It's very far from an exact science.

Eric Zitzewitz:

Yeah, I think that's right. Really the key uncertainty right now is, are the 2021 earnings sustainable or not? So there's multiple views out there. First quarter earnings for 2022 were quite strong, helped by the energy sector. And analyst forecasts, which only go out about two years -- analyst forecasts for the rest of '22 and '23 are strong as well, and indeed have even strengthened over the course of this year.

Michael Klein:

Well, you're comparing the PE ratio and the CAPE ratio. Are there alternatives as well for the views of what's going to happen with earnings?

Eric Zitzewitz:

Well, so one indicator that shows a little bit more concern that I like to follow, are the dividend futures that are traded on the Chicago Mercantile Exchange. Dividend futures payoffs are tied to the dividends paid per unit of the S&P 500 in a future calendar year, and they go out 10 years. So this is a market that's tracking future dividend payments, which are pretty closely tied to future profits. Those dividend futures have fallen by 10 to 15%, at least for the years 2024 out to 2031. So that suggests that these dividend futures markets at least are unconvinced by the equity analysts' current optimism. So I think that illustrates the two views that are out there.

Michael Klein:

And there's no way to give more credence to one view than another. I imagine that sometimes one way to look at it is better, and other times another way to look at it is better.

Eric Zitzewitz:

I think that's right. Given a choice between experts who may have lots of different incentives when they're constructing their forecasts, and markets where the participants are trading with real money, I tend to favor the markets. But these dividend futures are relatively thin markets, so I think it makes sense to look at both. And more importantly, I think it makes sense to watch the news as it arrives, and try to figure out who turns out to be right. And I think that's what we see right now. I think that's why we see so much volatility. People are scrutinizing every earnings release as it comes out. And say, Amazon's earnings are not just affecting Amazon's stock price, they're moving the rest of the stock market, because people are looking at Amazon's earnings for clues about this broader question; are the 2021 earnings going to be sustainable?

Michael Klein:

I guess underneath all of this is the fact that the world is very volatile right now. We have the war in Ukraine, we have constraints to supply chains. We have these new variants of COVID emerging. So in some ways the volatility of the stock market is reflecting the way events are jerking us back and forth, right?

Eric Zitzewitz:

Yeah, absolutely. And also expectations about what's going to happen in the future, which as we touched on earlier can move even faster than events on the ground.

Michael Klein:

So clearly one of the events that's going on right now that has been both volatile and uncertain, is what's happening with inflation. What do you think is the effect of inflation on these markets, and what do you see happening?

Eric Zitzewitz:

Yeah, that's a big topic of discussion right now. How is inflation going to affect earnings and the economy as a whole? And how is the fight against inflation -- the actions the fed are taking -- how is that going to affect earnings and the economy?

Eric Zitzewitz:

So some people want to draw lessons from the '70s, when high inflation was accompanied by stagnant earnings. But my own view is that it's dangerous to draw too close of a parallel. It matters whether inflation is driven by the costs that are faced by S&P 500 firms, as it was in the '70s, or whether inflation's also driven partly by the ability of those firms to mark up their costs by more than they have in the past. Which there's some evidence that's going on. It also matters what form any recession that's induced by the inflation fighting takes. How deep will the recession be, what the recession does to labor markets, and to wage pressures. All of that is uncertain, and something that people are very aggressively looking for clues to right now.

Michael Klein:

So what does this mean for the CAPE, do you think?

Eric Zitzewitz:

Well, so that's the key question. If these earnings turn out to be persistent, if that's the new normal, then a high CAPE is justified, and the market is probably fairly valued. On the other hand, if the 2021 and early '22 earnings turn out to be a post pandemic cyclical blip, and they mean revert back towards their long run levels, then CAPE is doing what it should in smoothing those earnings out, and we're going to see a declining stock market, or at least the stock market currently is a bit overvalued, and we should expect disappointing future returns.

Michael Klein:

So Eric, I'm not sure if you have this experience, but when I tell people I'm an economist, often the conversation goes to, "Well, should I be buying stocks or selling stocks?" And knowing about efficient markets theory, I tell them, "Well, I don't really know. The market does what the market does," which doesn't make me really popular. I imagine you have a similar response, and you get the same level of popularity from that response that I do.

Eric Zitzewitz:

Yeah, and it's probably deserved in both of our cases. I think at the end of the day, predicting the market particularly over very short horizons is very difficult. It's hard to predict what's going to happen in the Ukraine. It's hard to predict what sort of a recession we're going to get. And all of that's going to be important for the short run path of equity prices. I think that the best predictor that we've developed over the years is honestly this CAPE metric. But sadly, the relationship between CAPE and future returns changes over time. It's not fully stable. And so it's not as good of a predictor as it would be if it were a more stable relationship.

Michael Klein:

Yeah. You have a nice graph in your memo that illustrates that quite clearly.

Eric Zitzewitz:

Well, thanks.

Michael Klein:

So on an earlier podcast I had with Maury Obstfeld he quoted Yogi Berra, who said, "predictions are hard, especially about the future." And I think that wisdom, Yogi Berra, is relevant here. But you have, I think, helped our listeners understand better what does drive the stock market, what are the outcomes and why do they occur -- Even if we can't predict the future, perhaps we can understand things that are going on now a little bit better. So thank you very much for speaking with me today, Eric. And also thank you for that very nice memo that you've contributed to Econofact.

Eric Zitzewitz:

Well, thanks very much. It's been a pleasure.

Michael Klein:

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