



The Great Divide

The Nobel Committee Splits the Baby...
and That's OK

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Disclosures, In English

I'm Not Exactly Unbiased (But at Least in Both Directions)

I was Eugene Fama's Teaching Assistant for two years and he's still (along with Jack Bogle) one of my investing heroes

...But I wrote (with Fama's blessing) a dissertation on price momentum (and that it worked!)

...But I also think markets work very well (not perfectly) most (not all) of the time

...But as an "active manager" I try to beat markets on a daily basis (and at least somewhat for "behavioral" reasons)

Bottom line: I've learned to live with my schizophrenia – while I'm not a super hard-core efficient marketer, I do think markets are closer to efficient than most practitioners do



Outline

1. **What exactly does the Efficient Market Hypothesis say?**
2. **Challenges to market efficiency we knew about before we started managing money**
3. **Lessons from the trenches**
4. **A more reasonable start to the efficiency debate**
5. **What should the world do with all this?**



1. What Exactly Does the Efficient Market Hypothesis Say?

Let's Start With the Definition

“I take the market efficiency hypothesis to be the simple statement that security prices fully reflect all available information” (Fama, 1991)

Notice what market efficiency is not:

- A belief that security returns are normally distributed
- “Stocks for the long-run,” “Dow 36,000,” i.e., a love of equities
- An argument for free markets (though clearly related)
- Whether the “CAPM” is the right model
- Ex ante prices “reflecting all information” vs. ex post being always right (very different things)



1. What Exactly Does the Efficient Market Hypothesis Say?

The Joint Hypothesis Problem

You cannot directly test the Efficient Market Hypothesis

To determine if security prices fully reflect all available information, we need a model that says how prices are supposed to reflect this information

Thus, any test of market efficiency is a test of the joint hypothesis of market efficiency + a model

Model is right and Market is efficient	Model is wrong and Market is efficient
Model is right and Market is inefficient	Model is wrong and Market is inefficient



2. Challenges to Market Efficiency

What Does the Data Show?

Tests of market efficiency can be broken down to micro and macro

Micro: testing the cross-section (e.g., value versus growth stocks)

Macro: testing an overall market (e.g., S&P 500)



2. Challenges to Market Efficiency: Micro

Value: Compensation for Irrational Behavior or Risk?

Early Evidence: Stocks with High Book-to-Market Ratios Outperform the Average Stocks Sorted by Book to Market (July 1963–December 1990)



Behavioral explanation: cheap stocks are overlooked, investors have a preference for “glamour” stocks

Efficient markets explanation: compensation for risk, value stocks are distressed

Source: AQR, Chart adapted from Fama and French (1992)

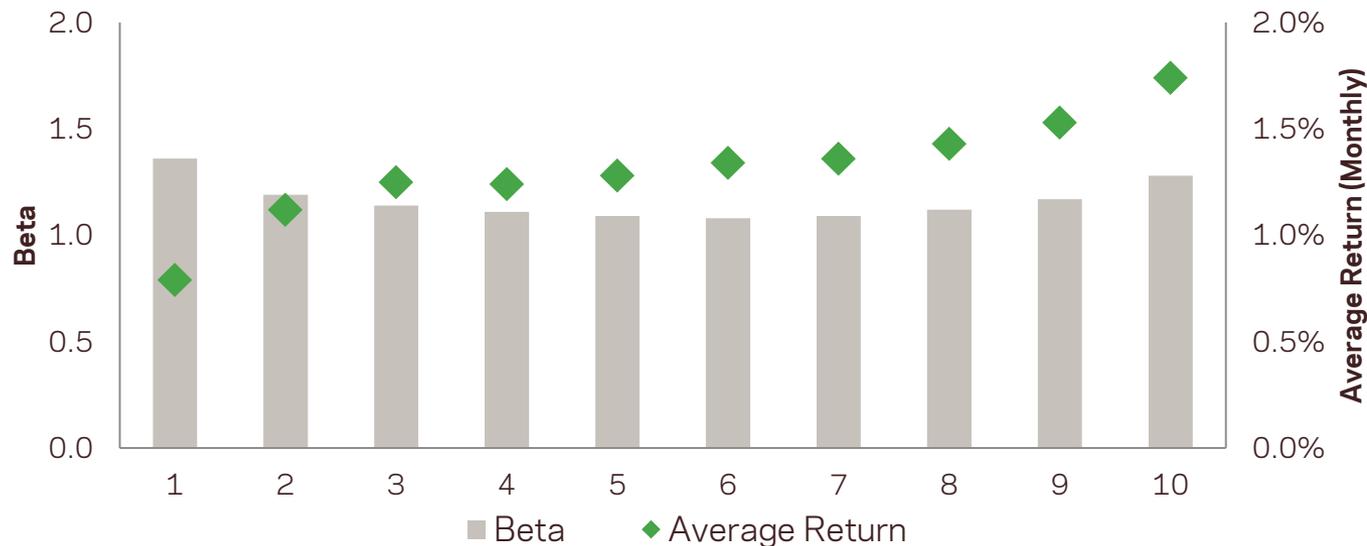


2. Challenges to Market Efficiency: Micro

Momentum: Compensation for Irrational Behavior or Risk?

Early Evidence*: Stocks with Attractive Momentum Also Outperform

Stocks Sorted by 6-month Lagged Returns (January 1965–December 1989)



Behavioral explanation: prices react too slowly to new information (among others)

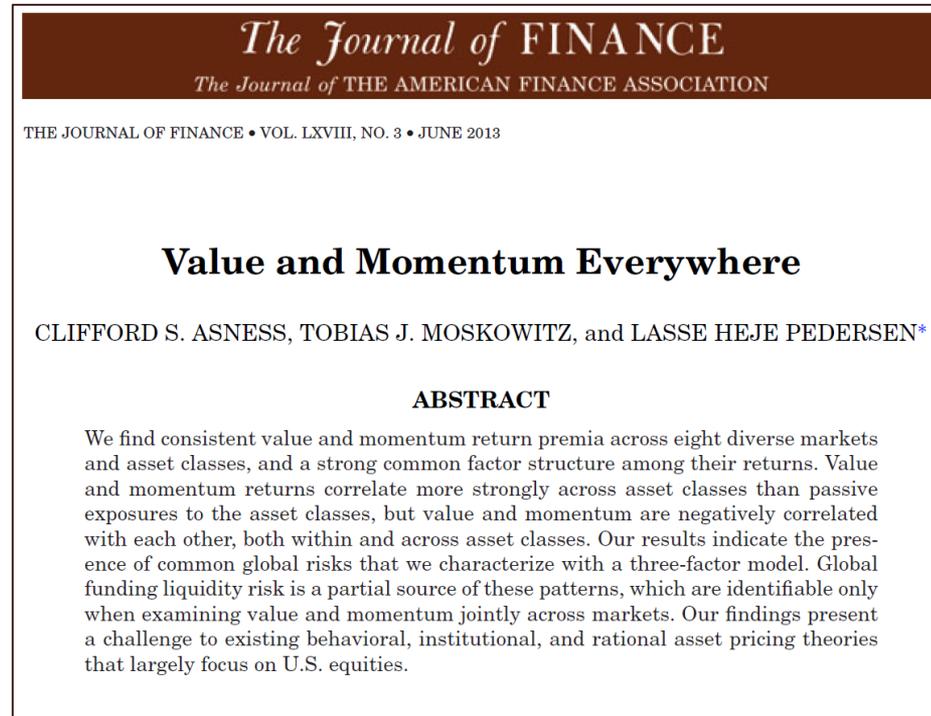
Efficient markets explanation: momentum stocks co-move, and there could be risks out there we haven't identified yet



*Bias Alert: Momentum was the topic of my dissertation, so while I'd love to show my own data, I will hold back (for one page)

Source: AQR, Chart adapted from Jegadeesh and Titman (1993). Portfolios are based on 6-month lagged returns and held for 6 months.

2. Challenges to Market Efficiency: Micro And Value and Momentum Aren't Restricted to U.S. Stocks



Behavioral explanation: the negative correlation between these clearly points to irrational markets as the returns on the combination are “too good”

Efficient markets explanation: there is a common factor structure across all these “anomalies,” which is a requisite of a risk factor

Source: AQR; Asness, Moskowitz and Pedersen (2013)

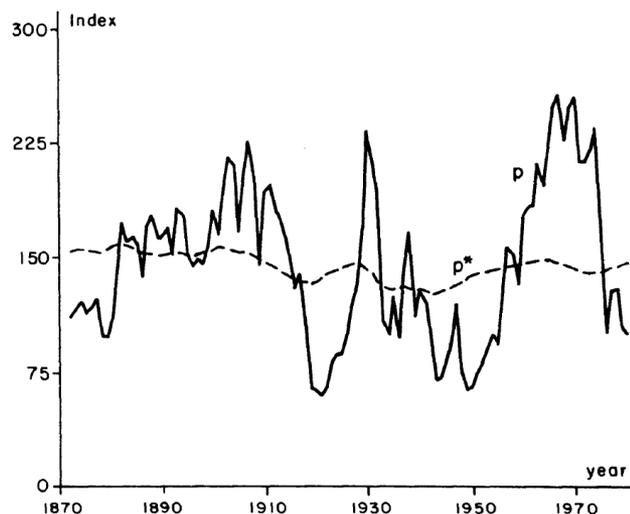


2. Challenges to Market Efficiency: Macro

The “Value” of the Stock Market

Do Stock Prices Move Too Much To Be Justified by Subsequent Changes in Dividends?

Real S&P Composite Price Index (solid) and ex post rational price (dashed), 1871-1979



Behavioral explanation: the market can swing (wildly) away from seemingly sensible prices

Efficient markets explanation: the discount rate can vary over time (more on this later) and the above graph absolutely ignores this

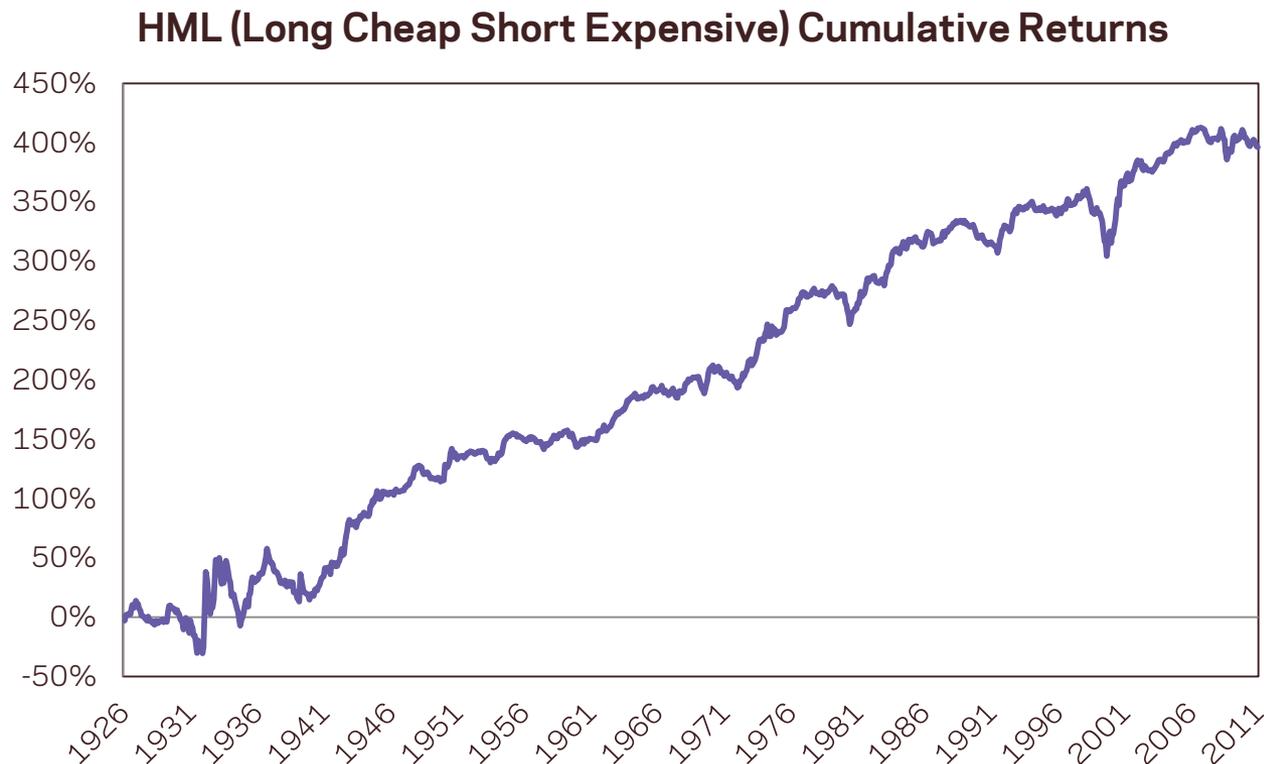
Source: AQR, Shiller (1981)



3. Lessons From the Trenches

Our Introduction to the “Real World”

Naturally, we had a good candidate to start with



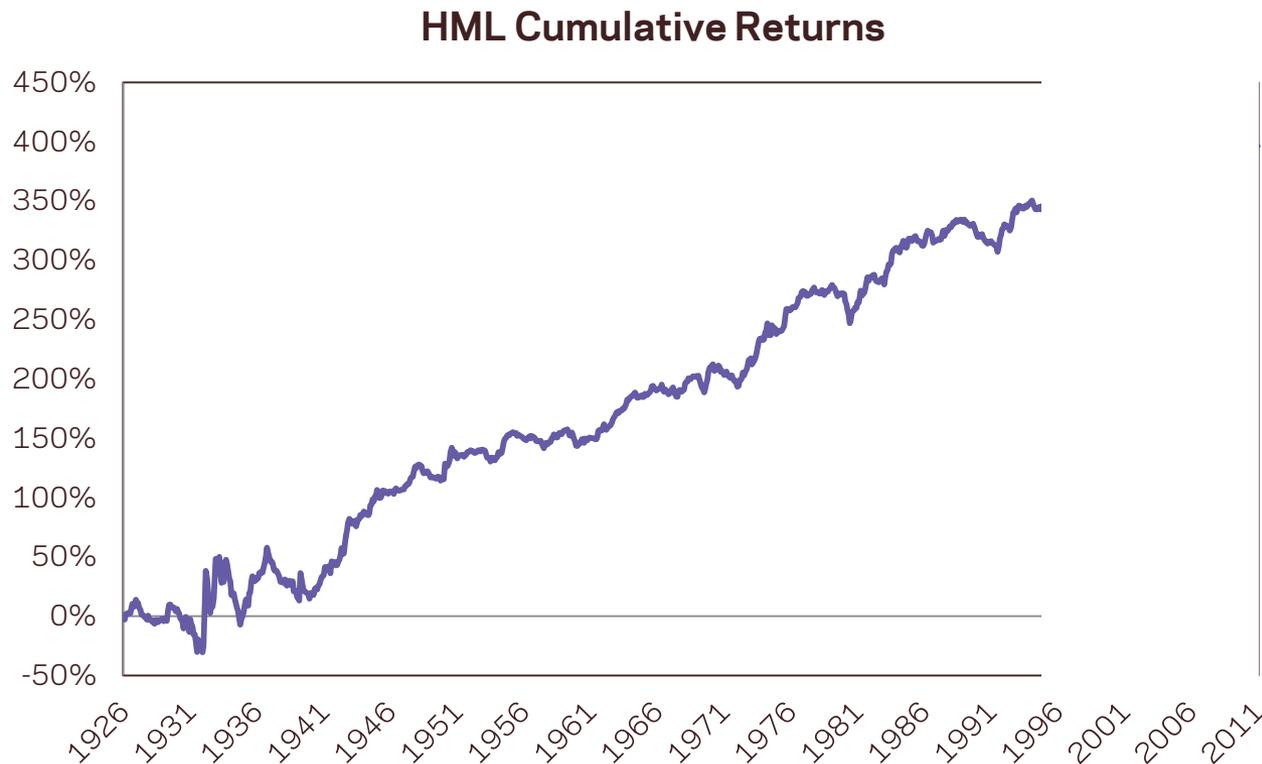
Source: AQR and Ken French data library. HML is defined as high-minus-low, where “high” is a portfolio of stocks with the 30% highest book-to-market values (i.e., “cheap” stocks), and “low” is a portfolio of stocks with the 30% lowest book-to-market values (i.e., “expensive stocks”). For complete methodology, see Fama and French (1993).



3. Lessons From the Trenches

Our Introduction to the “Real World”

Granted, this is what we knew when we were at Goldman Sachs in the mid-1990s



Source: AQR and Ken French data library. HML is defined as high-minus-low, where “high” is a portfolio of stocks with the 30% highest book-to-market values (i.e., “cheap” stocks), and “low” is a portfolio of stocks with the 30% lowest low book-to-market values (i.e., “expensive stocks”). For complete methodology, see Fama and French (1993).



3. Lessons From the Trenches

“Tech” Bubble Doesn’t Do It Justice

We were long cheap and short expensive right in front of the worst period for value since the depression (we were doing many things but this overwhelmingly dominated)

Value was suffering everywhere, the “risk” of being a value investor was undiversifiable



Source: AQR and Ken French data library. HML is defined as high-minus-low, where “high” is a portfolio of stocks with the 30% highest book-to-market values (i.e., “cheap” stocks), and “low” is a portfolio of stocks with the 30% lowest low book-to-market values (i.e., “expensive stocks”). For complete methodology, see Fama and French (1993).

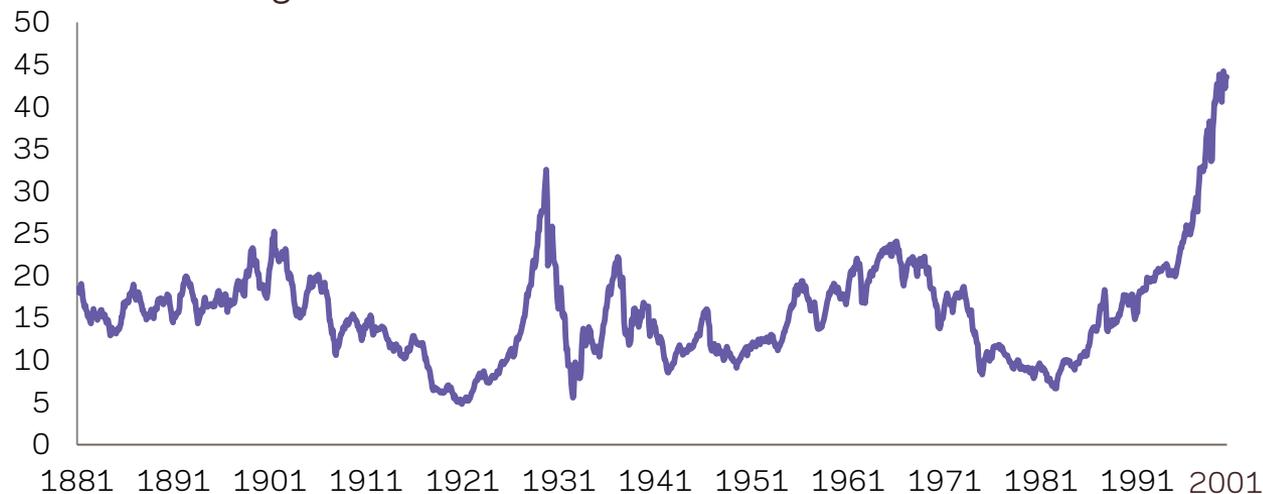


3. Lessons From the Trenches

And It Wasn't Just a "Micro" Phenomenon

The Scariest Chart Ever

Price-to-Earnings of the S&P 500



Even the most diehard efficient markets fan was having trouble explaining this

- Could a rational market ever be priced so high that it simply could not deliver an acceptable long-term risk premium without making absolutely incredible assumptions about future dividends?
- We think no. We think this one was a bubble.

So why didn't the canonical arbitrageur fix everything?

Source: AQR and Robert Shiller data library.



3. Lessons From the Trenches

Inefficiency in the Real World

Fama (1991) “The extreme version of the market efficiency hypothesis is surely false.”

- But that still doesn't make markets easy to beat!

At least two related versions of the story

- Limits of arbitrage (e.g., Shleifer and Vishny)
- Fixing errors is a risky bet (e.g., Fama and French); note this is far more general than just the limits of arbitrage of Shleifer and Vishny

And from our experience (this is just indicative, not the whole driver of value investing!)

- Many individuals and groups (particularly committees) have a tendency to rely on 3-5 year performance horizons
- Not coincidentally in our view, 3-5 years also happens to be the horizon over which we find securities most commonly become cheap and expensive
- Putting these together, you have a large set of investors acting anti-contrarian at 3-5 year horizons

“Offsetting actions by informed investors do not typically suffice to cause the price effects of erroneous beliefs to disappear with the passage of time.” Fama and French (2007)



3. Lessons From the Trenches

Efficiency in the Real World

But conversely, if markets were gigantically, obviously and often inefficient, people would come in and take advantage of all these inefficiencies in a far easier manner than seems to happen in real life

As much recognition as Robert Shiller has gotten for calling the stock market bubble, recall he was saying very similar things at least back to 1996 (remember “irrational exuberance” was Alan Greenspan’s statement inspired by Shiller and his colleague John Campbell’s analysis)

So what about “genius managers”

- Some geniuses are ex post lucky
- For some it’s pretty hard to reconcile their performance with efficient markets or luck
- But then again, can you invest with them? (we can’t!)
- In general, it seems like whenever we find managers with something we’d agree is truly special, they’re either 1) not taking new money, or 2) taking out so much in fees that *they’re* capturing much of the “special”
- Have you heard of the phrase “the exception that proves the rule”? How many dollars at stake?



4. A More Reasonable Starting Point

The “Reasonable” Joint Hypothesis Problem

So are markets efficient or inefficient?

To make statements about market efficiency, we should consider only the combination of market and *reasonable* models of how equilibrium prices are set

- With “reasonable” meaning passing some intuitive tests, and not baking in irrationality into the model itself
- I.e., “people just like losing money sometimes” doesn’t count; this matters, some do try to save efficient markets with stories like this

Here’s the kind of statement we’d like to see more of: “Our results cannot be reconciled with efficient markets and, to date, any model of how prices are set that assumes generally rational investors.”



4. A More Reasonable Starting Point

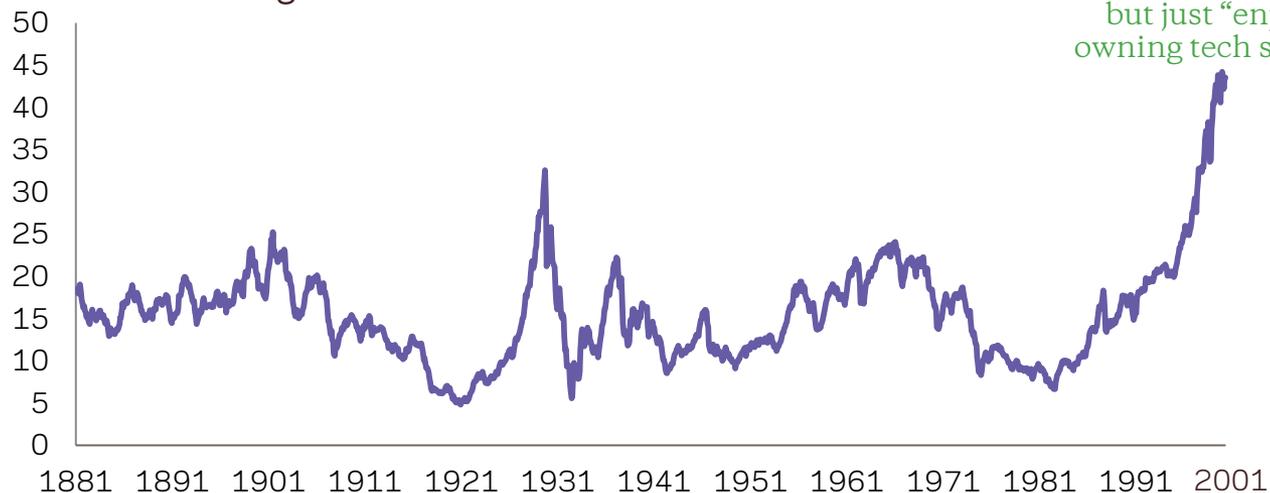
Applying the Reasonable Joint Hypothesis to “The Scariest Chart”

Some EMH proponents have proposed explaining prices with extreme and odd tastes, or discount rates that vary wildly

- Can a market that *efficiently* reflects these *irrational* prices save EMH?
- The “Reasonable Joint Hypothesis” says no; as these proponents miss the point and create an untestable hypothesis

The Scariest Chart Ever

Price-to-Earnings of the S&P 500



Source: AQR and Robert Shiller data library.



4. A More Reasonable Starting Point

So Where Do I Stand in the Great Divide?

Behavioralist?

- They often go too far — anomalies everywhere
- Many out-of-sample failures
- Even if markets are irrational, it doesn't make active management a good idea
- I do think there are behavioral effects, some important, and offering opportunities (though taking advantage still is not arbitrage!)
- Ultimately, the strength and weakness of behaviorism is its flexibility

Efficient Markets?

- Clearly, markets are not perfectly efficient (Gene Fama told us this a long time ago!)
- But, I believe market efficiency is the proper — and safer — starting point for thinking about markets and investing; then get fancy if you must!



5. What Should the World Do?

Individuals

If markets aren't perfectly efficient, but not grossly inefficient either, what does that imply for individual investors

- I believe the vast majority would be better off acting like the market was perfectly efficient
- Active management is hard, and so is deviating from the market (the market can stay solvent longer than you!)

Which is not to say that the index is the only portfolio worth holding

- Remember the “micro challenges” to efficiency
- Regardless of whether they work due to risks or inefficiencies, they may add value to a portfolio that has only market risk



5. What Should the World Do?

Central Bankers and Regulators

The government should certainly recognize that bubbles can happen, but:

- Markets being imperfect does not mean governments are any better
- Identifying them on time isn't easy (even Shiller was about half a decade early on tech and housing)
- False alarms aren't free — uncovering bubbles and pricking them with minimal pain, and not overreacting and hurting growth more than they help, is far from assured
- Somewhat paradoxically, fostering a belief that someone out there is diligently preventing bubbles could make bubbles that don't get pricked far more dangerous

But there are some relatively easier steps to take (forthcoming)



5. What Should the World Do?

Central Bankers and Regulators

Markets not being perfectly efficient means we need to work to design them better, and stop working against that

Do not eliminate the downside

- “Too big to fail” is an efficient market’s enemy
- Markets may be close to efficient if left alone, but may become hamstrung if the downside is banned

Similarly, encourage activities such as short selling and liquidity provision

- Markets should have the chance to reflect all information, not just positive or optimistic information
- More liquidity means lower costs to reflecting information in market prices

Mark more things to market, and punish true fraud more harshly

- It’s worse to disseminate false information by using prices you know are wrong/stale
- Recognize too that regulating to a fraud-free world is too costly (and impossible)

Have consistent laws and actions consistently applied

- Governments should not subsidize or penalize some activities over others
- Have reasonable and consistent accounting rules



Conclusion

EMH Is Still a Very Big Deal (and a Very Good Thing)

Would we know more or less without EMH and all it's led to?

Was there another null hypothesis for the whole field that would've been better?

- Rational market theories pushed aside a lot of terrible ideas
- Do we believe too strongly in rationality some times? Perhaps

Would anyone argue with the idea that markets, at least at some things (like pricing events, or making active management very difficult) are much more efficient than we thought before EMH?

- Prior to EMH they were thought wildly inefficient
- Index funds, and the general focus on cost and diversification, are perhaps the most direct practical result of EMH thinking, and the most welfare-enhancing financial innovation of the last 50 years
- You don't need EMH to get to index funds but the thinking and timing does coincide!

Markets not being perfectly efficient means we need to work to design them better, and stop working against that

