BUBBLE LOGIC AT FIVE YEARS OLD

Our Bouncing Baby Bubble Is Growing Up

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Introduction

- This presentation is based on three papers, some very bad poetry, and liberal borrowing from smart people:
  - Bubble Logic (working paper June 2000)
  - Surprise! Higher Dividends = Higher Earnings Growth (FAJ 2003)
  - Fight the Fed Model (JPM 2003)
  - Bubble Reloaded (AQR Quarterly Letter 4Q 2003)

- The goal is to examine the prospects for long-term stock returns from here.

- The conclusion is that because of still very high valuations the prospects are for far lower than normal long-term returns in nominal terms, vs. inflation, and vs. bonds. Or, alternatively, short-term very bad returns followed by a return to normalcy.

- Traditional Wall Street reasons to call stocks cheap at these high levels are shown to be either confusion on their part (or my part, but this is my presentation), or naked hucksterism undaunted and unashamed by 1999 and its aftermath.
Just for Fun - The Bad Poetry (Haiku)

Bubble Reloaded*

Bubble back big time
Price does not matter once more
People do not learn

Earnings do improve
But prices discount much more
Do not buy the hype

Trend P/E too high
Earnings not even at trend
Future returns low

Economy up
But that does not make stocks cheap
Math is a tyrant

Pundits say stocks cheap
But Fed model is voodoo
Do not trust the street

Best they can argue
Not as high as ninety nine
Faint praise is damning

Wait for a bargain
Do not get fooled once again
Investor wasteland

Tech stocks lead the pack
While bulls talk up dividends
Hypocrites galore

The Net is white hot
“They are real companies now”
New bubble mantra

Dot coms soaring high
Yahoo! taken serious
Are you people nuts?

Amazon is back
Price-to-sales is hitting 5
Wal-Mart at 1, wow

Cannot believe it
I am really typing this
Chinese Internet

Quality is out
Speculation rides again
Casino open

Day traders are back
Like cockroaches hard to kill
Unfair to roaches

Fed pumping money
But goes straight into tech stocks
Poor old Alan G

"Price targets" rising
Why, are things that much better?
No, old targets hit

CNBC back
All the old salesmen are on
Oldest profession

Wall Street commercials
Say they have learned their lessons
Huh, are they kidding?

Accounting honest?
Pro-forma is still thriving
Pro-forma a lie

Options not expensed
FASB passes on ruling
Inexcusable

Overconfidence
Investors turning bullish
While insiders sell

Last time blame Wall Street
This time you should know better
No sympathy now

* Source: AQR Quarterly Letter 4Q 2003. This was written as the long-term case for stocks being overpriced changes so slowly that I just couldn’t bear to do it “straight” again. I snapped.
Valuation: Still Crazy After All These Years ♫ ♪ ♫

S&P 500 P/E (price divided by 10-year real earnings)

<table>
<thead>
<tr>
<th>P/E Range</th>
<th>Real Stock Market Return in the Next 10 Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Median (Annual)</td>
</tr>
<tr>
<td>5.2</td>
<td>10.9%</td>
</tr>
<tr>
<td>10.1</td>
<td>10.7%</td>
</tr>
<tr>
<td>11.9</td>
<td>10.0%</td>
</tr>
<tr>
<td>14.6</td>
<td>7.6%</td>
</tr>
<tr>
<td>17.2</td>
<td>5.3%</td>
</tr>
<tr>
<td>19.9</td>
<td>-0.1%</td>
</tr>
<tr>
<td>31.7</td>
<td>..............................................</td>
</tr>
<tr>
<td>46.1</td>
<td>..............................................</td>
</tr>
<tr>
<td>High</td>
<td>Worst (Total)</td>
</tr>
<tr>
<td>10.1</td>
<td>46.1%</td>
</tr>
<tr>
<td>11.9</td>
<td>32.0%</td>
</tr>
<tr>
<td>14.6</td>
<td>4.0%</td>
</tr>
<tr>
<td>17.2</td>
<td>-20.9%</td>
</tr>
<tr>
<td>19.9</td>
<td>-32.0%</td>
</tr>
<tr>
<td>31.7</td>
<td>-35.5%</td>
</tr>
</tbody>
</table>

*P/E’s are for the S&P 500 and are based on current price divided by the average of the last 10-years earnings adjusted for inflation. Table covers 1/1927-2/2004.
Valuation: Not a Perfect Forecaster, Especially Short-term

<table>
<thead>
<tr>
<th>P/E Range Low to High</th>
<th>Real Stock Market Return in the Next 10 Years Median (Annual)</th>
<th>Worst (Total)</th>
<th>Best (Total)</th>
<th>Next 1 Year Best (Total)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2 to 10.1</td>
<td>10.9%</td>
<td>46.1%</td>
<td>473.5%</td>
<td>173.6%</td>
</tr>
<tr>
<td>10.1 to 11.9</td>
<td>10.7%</td>
<td>32.0%</td>
<td>372.1%</td>
<td>85.6%</td>
</tr>
<tr>
<td>11.9 to 14.6</td>
<td>10.0%</td>
<td>4.0%</td>
<td>316.4%</td>
<td>55.7%</td>
</tr>
<tr>
<td>14.6 to 17.2</td>
<td>7.6%</td>
<td>-20.9%</td>
<td>353.2%</td>
<td>47.7%</td>
</tr>
<tr>
<td>17.2 to 19.9</td>
<td>5.3%</td>
<td>-32.0%</td>
<td>298.6%</td>
<td>55.1%</td>
</tr>
<tr>
<td>19.9 to 31.7</td>
<td>-0.1%</td>
<td>-35.5%</td>
<td>130.2%</td>
<td>57.2%</td>
</tr>
<tr>
<td>31.7 to 46.1</td>
<td>...</td>
<td></td>
<td></td>
<td>Here Be Dragons</td>
</tr>
</tbody>
</table>

* P/E’s are for the S&P 500 and are based on current price divided by the average of the last 10-years earnings adjusted for inflation. Table covers 1/1927-2/2004.
Estimating Future Long-term Stock Market Returns

- Method #1: Examine long-term average stock market returns
  - While popular, this is a very strange method since when valuations end higher than they began, it raises your estimate of future returns, when it probably should lower them, and vice versa.
  - At short horizons it’s called momentum investing

- Method #2: Just ask Wall Street
  - “12% long-term with some reason or another why the short-term looks even better and you should buy now!”

- Method #3: First principles, the Gordon Model
  - \[ R = \frac{D}{P} + G \]
The Gordon Model

- $R = \frac{D}{P} + G$

- Intuition is simple.
  - $R$ is the expected long-term return on stocks.
  - You get paid $D/P$ for waiting.
  - Dividends (and earnings) increase by $G$, so your price return is $G$.
  - Assuming unchanged valuations (the speculative component), it all adds up.

- It does not rely on actual payment of dividends. Thus you can think of the formula in terms of what dividends could be paid if firms wanted to. Restating in terms of earnings below, PAYOUT is the actual payout, or the payout that could be sustained without harming growth:
  - $D = \text{PAYOUT} \times E$
  - $R = \text{PAYOUT} \times \frac{E}{P} + G$
The Gordon Model Estimate

\[ R = \text{PAYOUT} \times \frac{E}{P} + G \]

\[ \approx 6-7\% \]

(about historical average)

\[ \approx 50\% \]

(a P/E of 25)

\[ \approx 4\% \]

(2% real growth plus 2-3% inflation)

\[ \approx 4-5\% \]

➢ Estimate is about 6-7% nominal expected return for stocks, or 4% real, or a risk premium of 2-3% over nominal bonds.

➢ This is very low versus history.

➢ To believe anything else, you must disagree with PAYOUT, E/P, or G.
Which Numbers to Quibble With?

➢ To quibble with G you must assume, all else equal, firms are going to grow real earnings faster going forward than they have in the past.

➢ To quibble with PAYOUT you must believe that firms will, or could, payout more than the historical average and achieve the same growth rates.

➢ To quibble with E/P (or P/E) you must think current accounting standards are very conservative versus history, or that “low interest rates support a high P/E”, or worse, you must believe Wall Street.
Will Very High “G” Save the Market?

Some possible reasons for forecasting very high real earnings growth

- Productivity / technological advancement
  - Siegel (JPM, 1999), “Optimists frequently cite higher growth of real output and enhanced productivity, enabled by the technological and communications revolution, as the source of this higher growth. Yet the long-run relationship between the growth of real output and per share earnings growth is quite weak on both theoretical and empirical grounds.”

- High P/Es and market efficiency (i.e., it is a tautology - we are paying a lot, so earnings must grow faster in the future as the market is always right)

The above are empirically weak, so any belief in them is largely wishful thinking.
So far, if we are in a world of permanently higher real earnings growth, it has yet to consistently show up.
How About Payout Ratios, Will They Save Us?

If we could pay out more without slowing down growth it would help a lot.

- Of course, payout ratios for last 10 to 20 years have been lower than historical experience not higher.

- But, maybe that’s only because dividends are tax inefficient, and companies really could pay out more, but instead find it superior to retain the cash for productive investment on behalf of shareholders.

- The historical evidence for this is not just missing, it’s strongly backwards.
Payout Ratios and Future Earnings Growth


Are P/E Ratios Really Better Than They Look?

- We used a P/E of 25 earlier, about a 10% discount to the Shiller 10-year trailing P/E meant to approximate a 1-year number at trend earnings (true 1-year P/Es are flighty).

- Wall Street’s “forecast 2004” “operating” P/Es are more like the high teens which they often say are only mildly expensive vs. “long-term average P/Es of about 15-16”. They hope you don’t notice they are comparing apples-to-oranges. This is conscious trickery or unforgivable confusion. P/Es calculated consistently are very high by any measure:

<table>
<thead>
<tr>
<th></th>
<th>Forecasted</th>
<th>1-Year Trailing</th>
<th>10-Year Trailing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td>12.1</td>
<td>16.0</td>
<td>16.9</td>
</tr>
<tr>
<td>12/31/03 Value</td>
<td>17.7</td>
<td>27.9</td>
<td>27.2</td>
</tr>
<tr>
<td>12/31/03 Percentile</td>
<td>81%</td>
<td>84%</td>
<td>80%</td>
</tr>
</tbody>
</table>

- A host of accounting issues (e.g., options expensing) make it hard to believe today’s “E” is conservative vs. the past.

- So, we are left with low interest rates / inflation. Does that justify today’s high P/E?
The “Fed Model” says stocks are fairly valued when the inverse of P/E (or E/P) equals the 10-year Treasury Yield. Common sense says that when the yield on one falls or rises, so must the other, as they are “competing assets”.

Empirically the market seems to follow the Fed Model in setting P/Es (at least since 1965).

* The above is figure 1 from Asness “Fight the Fed Model” in the Journal of Portfolio Management, Fall 2003.
The Fed Model – Common Sense Run Amok

A Simplified Example

Inflation Falls

Bonds Fall In Yield (= future return)

Stocks Must Also Fall In Yield + Growth (= future return)

Fed Model says this is accomplished by falling stock yields or rising P/Es.

In reality it is accomplished all or mostly from falling growth.
Many, correctly, believe stocks are a good hedge for future long-term inflation. That’s one of the reasons for owning stocks.

This is true precisely, and only, because long-term inflation and long-term nominal earnings growth move together.

If this is true, P/Es cannot move with inflation/interest rates, or it’s a “double whammy” as their attractiveness has already moved the right amount from changes in earnings growth.

To believe in stocks as a long-term inflation hedge, and to believe in the Fed Model as a tool for long-term investors (not traders), is deeply contradictory. Pick one, you can’t have both.
The Fed Model – Recommending An Error On Precedent

S&P 500 Decade-Long Real Return Sorted By Interest Rates

- The market does set P/Es using the Fed model, but seems to do so only in error.
- Many Wall Street strategists seem to recommend this error based only on precedent!
- Of course, Wall Street also loves this model as it’s been more bullish than other alternatives.

Are Investors Willing to Accept Low Stock Returns?

- Say we’ve proven stocks have a 6-7% expected return and a very low historical risk premium. Do investors “get it” or are they in denial?

- We saw earlier (the “still crazy” slide with the dragons) that stocks have averaged near zero 10-year real returns when starting from today’s valuations, not 6-7% as we derived.

- This zero result came both from a low initial expected return and from P/Es “regressing to the mean”, another double whammy.

- If P/Es stay high this time, expected returns are not worse than the 6-7% long-term estimate we derived earlier with the Gordon Model.

- Thus, the possibilities are:
  a) Investors “get it” and accept lower returns and P/Es stay permanently high thus future returns are low but positive (6-7%).
  b) Investors don’t “get it” and “don’t like it” and P/Es (and prices) fall sharply in the short-term but future returns are more historically normal (after the fall).
The Equity Premium Puzzle May Have Been Figured Out

Investors may have figured out the “equity premium puzzle”, a theory from economists that stock returns have been far stronger historically than investors should rationally require, and thus investors may and should be willing to accept 6-7% returns from here.

- This can’t be rejected, and may be rational.

- Also, increasing knowledge, demographic shifts, cheaper methods of gaining market exposure, taxation changes, better and more available forms of diversification, and a reduction in economic risk itself (e.g., the conquering of inflation, smoothing of business cycles, globalization) all might lead investors to accept a lower risk premium today than in the past.

- Note, unfortunately there is also an argument that the world might be riskier on some dimensions than in the past (e.g., terrorism).

- Even if investors have figured this out, it is not an argument for why the bull will roar again, only an argument for why investors now will accept low stock returns. Sometimes this argument is circularly twisted to be bullish.
Are Investors Willing to Accept Low Stock Returns?

Some signs investors are now accepting lower future returns:

- The “returns in the future won’t match the past” argument is getting more play.
- “Strategist” forecasts for 2004 are less insane than in the past.

Some signs they might not be “getting it”:

- The “more play” above might only be various FAJ authors writing for, and then congratulating, each other! CNBC doesn’t feature this story too often.
- Flows into mutual funds are gigantic, hard to believe it’s not momentum driven.
- Anecdotally stock market “chatter” is back.
- Options expensing is still a “debate”.
- Dot coms are still at a price-to-sales of 20, and they are jealous of nano-tech.
- Day trading is back, TV commercials getting stupid again.
- Fed Model fallacies still accepted as conventional wisdom.
By the way, you cannot just say “I’ll take less return on stocks, because at least I’m guaranteed to win over the long-term...” Stocks always winning over the long-term is a false lesson that must be unlearned in a world of a low risk premium.

- Using historical (1871-2001) estimates for real stock returns (average of 6.9% per year, volatility of 16.6% per year), simulations show:
  - 15% of 10-year periods are negative
  - 7% of 20-year periods are negative

- Using ½ the historical estimate for average returns, simulations show:
  - 37% of 10-year periods are negative
  - 29% of 20-year periods are negative

- Arguments like those in Dow 36,000 dangerously confuse expected return and risk (and worse, shouted “fire” in a crowded 1999 NASDAQ). Likewise (but a much better book), the Stocks for the Long Run argument is intimately tied to an historically high risk premium.
The Consequences of Low Future Returns

- Investors may, and perhaps should, be ready to accept lower long-term stock returns (measured against anything) going forward.

- However, if true, please note:
  - Anyone retiring or retired (or running a pension plan) better use those assumptions not historical average.
  - It’s not a lower guaranteed return; it’s a lower expected return that is still risky and comes with a higher chance of long-term disappointment.
What Is An Investor To Do?

➢ The boring simple things are more important than ever.
  • Diversification
  • Rebalancing
  • Cost minimization

➢ Perhaps market-time a bit in the Samuelson/Bernstein sense.

➢ The hurdle for adding diversifying alternatives is lower than normal (but be forewarned, many of those are expensive too).

➢ Do no harm! There does not have to be a magic bullet. Little can change the fact that expected returns are low versus history, and “levering up” (explicitly or implicitly) low expected returns to make them high is not usually a great idea. Spend less, save more, make less heroic assumptions.

➢ Stop watching the stock markets like they’re ESPN and spend more time with your families.
What Have We (Perhaps) Learned From The Bubble?

- Prices going up today, all else equal, means lower not higher long-term expected future return going forward.

- Equities are a “real” not a “nominal” asset, the Fed Model must be fought.

- Dividends are good.

- Wall Street exists to sell stocks, not to make intellectually honest arguments. Similarly, the media exists to sell media. Both generally know they do better in a bull market. There are, of course, many exceptions to the above. But the exceptions prove the rule.

- The general public can be confused by numbers, and have a tendency towards gambling. I am politely avoiding the word “innumerate”.

In other words, not a damn thing we weren’t supposed to know already, but had perhaps forgotten! Now, have we really learned them this time?