



William T. Ziemba and John Swetye

Using Zweig's Monetary and Momentum Models in the Modern Era

By William T. Ziemba with guest writer John Swetye¹

Background

Marty Zweig was a regular panelist on *Wall Street Week* with Louis Rukeyser. He was a technical trader and researcher and was one of the original data/anomaly researchers in an era of simpler stock-market analysis. He tested and invented concepts like the put-call ratio. He had a PhD from Michigan State. He was a follower of legendary investor Jesse Livermore (Livermore, 1940). His newsletter the *Zweig Forecast* ran for 26 years and during its last 15 years it was rated the best in risk-adjusted performance according to the *Hulbert Financial Digest*. In 1997 he stopped the newsletter and went into mutual funds and money management. That was so successful that he was able to purchase a 16-room penthouse with 23-foot ceilings and 17th-century fixtures atop the Pierre Hotel on 5th Avenue in New York, worth \$70 million in 2004. Following his death, Zweig's widow sold the apartment, which had a \$47,000 monthly maintenance fee, for \$125 million.

Ziemba recalls his appearance on *Wall Street Week* the Friday before the 1987 stock-market crash, on Monday October 19, 1987. His face white as a sheet, he said "I don't know how much the market will fall on Monday but it will be a lot," and it did. He was given credit for calling the crash. Ziemba's colleague Blair Hull is given some credit for stopping the crash with clever buying to boost prices. Zweig summarized his models and results in his books (Zweig, 1986, 1987).

Zweig died on February 18, 2013, so he did not have the chance to revise his theories in light of modern markets with very low interest rates and considerable programmed and high-frequency trading. Ziemba's colleague John Swetye has been using Zweig's ideas in this recent era, and this paper



is meant to describe the ideas and see how well they work in our current markets with low interest rates and much programming and high-frequency trading. Reese and Forehand (2009) and Lefevre (2014) discuss this era.

Zweig's model

Zweig describes the development of monetary and momentum models that are used to make buy and sell decisions.² The monetary model is based on indicators consisting of the prime rate, the discount rate, reserve requirements, and installment debt. Each indicator is given a numerical score. The scores are combined to yield a "composite reading on monetary conditions." Zweig developed a set of rules to use with the monetary model to make buy and sell decisions.

Zweig's momentum model is based on the price and volume of NYSE listings, as well as the price of the Value Line (VL) index. Each indicator is given a score. The combined scores of the various indicators give a reading on the momentum of the market. A set of rules are used to make buy and sell decisions.

The composite scores of the two models are then combined to form what he calls the "super model." His simple system suggests being 100 percent invested or 100 percent in cash, but he says it could be used in any number of more complex ways. For example, being 75 percent invested and 25 percent in cash when the model shows a slightly lower than peak reading.

Prime rate indicator

The first monetary indicator is based on the movement of the prime rate. Zweig uses 8 percent as an arbitrary dividing line for the prime rate. He wrote that small decreases in the prime rate when it is below 8 percent are enough to give a bullish signal, but somewhat larger increases are required for a bullish signal if the decrease comes from above 8 percent. Conversely, small increases when the rate is above 8 percent are enough to give a bearish signal, but below 8 percent somewhat larger increases are needed to give a bearish signal. He wrote that his studies showed that the trend in the prime rate is more significant than the level itself.

Zweig wrote that the Fed averaged of 10.7 prime rate changes per year from 1964 to 1993. The Fed averaged 3.9 changes per year from 1994 through the end of 2008. The prime rate was kept at 3.25% from January 2009 to November 2015 – nearly 7 years – which shows the great lengths the Fed was willing to go to avoid another Great Depression.

Buy signal:

1. Any initial cut in the prime rate if the prime's peak was less than 8 percent.
2. If the peak is 8 percent or higher, a buy signal comes on either the second of two cuts or on a full 1 percent cut.

A buy signal is worth two points.

Sell signal:

1. Any initial hike in the rate if the prime's low is 8 percent or greater.

2. If the prime's low is less than 8 percent, a sell signal comes on the second of two hikes or a full 1 percent hike.

A sell signal resets the indicator to zero points. This factor only has two values, 2 or 0.

Fed indicator

The discount rate and reserve requirements are graded separately and then combined. It is important to know that the bank reserve requirements have been effectively abolished since the 1990s. The discount rate is the only factor now used in the Fed indicator.

Negative points

An increase in either the discount rate or reserve requirements is bearish. A hike in either one receives minus one point for that component. Every six months, if there are no changes, the indicator becomes stale and one point is added back on to the indicator until it reaches zero. It remains at zero until there are positive or negative changes in the rate.

Positive points

Zweig wrote: "Moves by the Fed toward easing have a greater positive impact on stock prices than the negative effect created by tightening moves." So an initial cut in either the discount rate or reserve requirements wipes out all negative points that may have accumulated, but it also adds two positive points. An initial cut is the first one following a rise in that component. Or a cut is initial if it marks the first change in that instrument. In at least two years. As the initial change grows stale, one point is lost after every six months of no changes.

If a second cut were made in the discount rate it would add one more point for a total of three points. That point becomes stale after six months and would drop out. Each consecutive cut is treated the same way.

Calculating the Fed indicator

Add together the points of the discount rate indicator and reserve requirement indicator.

- Extremely bullish = +2 or more points.

Table 1: Fed indicator gradings

Indicator points	Rating	Model points
+2 or more points	Extremely bullish	4
0 or +1 points	Neutral	2
-1 or -2 points	Moderately bearish	1
-3 or fewer points	Extremely bearish	0

- Neutral = 0 or 1 point.
- Moderately bearish = -1 or -2 points.
- Extremely bearish = -3 or more points.

There is no moderately bullish rating.

Installment debt indicator

Zweig personally used a complicated consumer installment debt factor, but said that a simple one does very well at calling market moves. He used the non-seasonally adjusted number. Expansion of installment debt is bearish.

Find the consumer installment debt for this month. Divide it by the same factor from the same month a year ago and then subtract 1.000. This gives you the non-seasonally adjusted change in installment debt.

Buy signal: A buy signal is given when the year-on-year change in installment debt has been falling

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and drops to under 9 percent.

Sell signal: A sell signal is given when the year-on-year change in installment debt has been rising and hits 9 percent or more.

Monetary model

The monetary model is a market-timing tool that combines the four factors above: prime rate, discount rate, reserve requirement, and installment debt. To make the model ratings, the various indicator points must first be graded (see Table 1). To grade them, start by adding together the discount

rate indicator points and the reserve requirement points.

Installment debt gradings:

Buy signal = 2 model points

Sell signal = 0 model points

Buy and sell signals from the monetary model

The monetary model is the addition of all model points. The maximum score is 8 and the minimum is 0. There is no way to get to 7 points because the Fed indicator can never be 3, it can only be 0, 1, 2 or 4. The other two indicators are either 0 or 2.

When the monetary model reaches 6 points, it triggers a buy signal. That buy signal remains in effect until the model falls to 2 points, which is then a sell signal. The sell remains in effect until 6 is reached again, which triggers a buy.

The 4 percent model

The 4 percent model is a momentum indicator, which gives continuous bearish or bullish signals. To calculate the model, Zweig used the Value Line Index.³ Zweig found that the S&P 500 and other indicators do not work as well because they are less

volatile. Find the most recent VL index peak or low. A buy signal is given when the VL index rises 4 percent from a recent low. A sell signal is given when the VL index falls 4 percent from a recent high. A buy signal counts two model points. A sell signal resets the model to zero points.

The points from the 4 percent model are added to the monetary model to create the super model, which can range from 0 to 10. If the sum of the points of the super model is 6 or greater, then a buy signal is given. If the sum of the points is 3 or less, then a sell signal is given.

Zweig observed that from 1966 to 1993, the super model gave 13 buy signals and 14 sell signals. \$10,000 invested only during the buy-signal periods would have become \$176,270 in a total of 199 months (16.5 years) for an 18.9 percent annualized return. Trading 12 of the 13 buy signals produced a profit. One buy signal produced a loss of 1.6 percent.

Other momentum indicators

Zweig's most bullish buy signal is when the ratio of up stocks to down stocks over a 10-day period is 2:1. It is a rare signal that happened 11 times from 1953 to 1993. It happened over the 10-day period from July 10, 2009 to July 23, 2009. There were signs as early as December 8, 2008 that a bull market was on the horizon when the indicator reached 1.73:1. On January 6, 2009 the indicator reached 1.96:1.

The market has been very strong since then. He wrote that on average the market rises 7.5 percent per quarter after this indicator occurs and 10 percent or more in virtually every case. The 10-day average hit 1.97:1 on February 18, 2014 but the last time it actually exceeded 2:1 was on three consecu-

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tive days in July 2009 which preceded a strong bull market. On October 15, 2015 the ratio was 1.70:1. That, in my opinion, is a bullish indicator because it is still relatively rare.

If the ratio of the advancing stock volume to the declining stock volume is 9:1 or greater, that is a rare and bullish signal that occurs about twice per year. The ratio was 15.92:1 on October 5, 2015. Zweig says that if there is one more day in the next three weeks where the ratio is 9:1 or greater without an intervening 9:1 down day, that is even more bullish. He calls it a "double 9:1."

A 9:1 down ratio is moderately bearish, but not to the degree that a 9:1 up ratio is very bullish. One sees a lot of Kahneman and Tversky behavioral finance in this (Kahneman and Tversky, 1979).

Bull markets

There is an astute passage in Zweig's book where he writes about the beginnings of a bull market:

I have found that strength does indeed tend to lead to great strength. Every single bull market that I've seen has started with a tremendous rally.

He continues:

For a raging bull market, you need falling interest rates, probably an economic recession (that helps the Fed to loosen up and rates to fall), lots of cash on the sidelines, good values in market – namely, low price/earnings ratios – and a great deal of pessimism because, as we'll see later, pessimism means there's an abundance of cash. If all these conditions converge, the market should rally very, very strongly, and the first rally of the bull market should be the best one.

The S&P 500 closed on October 29, 2007 at 1540.98, and due to worsening economic conditions, by October 29, 2008 it had fallen to 930.09. It bottomed on March 9, 2009 and closed at 676.53.

Despite the gloom, and even though the bottom would not be reached for three more months, green shoots had started to appear as early as December

2008 when the advance/decline ratio reached 1.73:1. The advance/decline ratio hit 1.96:1 on January 6, 2009, which was very close to Zweig's bull market signal of 2:1. A week after the March 9, 2009 bottom, the S&P 500 had rallied by about 17 percent – 120 points. The advance/decline ratio hit 2.17:1 on July 23, 2009 and remained above 2:1 for three straight days and was "bookended" by 1.91+ days. The S&P 500 had already risen to 976 – about 44 percent from its low. All the ingredients were in place for the kind of tremendous rally that Zweig predicted. The S&P 500 would more than double over the next several years.

The Zweig 2:1 momentum indicator reached 1.97:1 on February, 2014 – close enough to show that there was a significant amount of buying. The

S&P 500 closed on that day at 1838.63. According to Zweig's research, on average the market will increase by 15 percent in the next six months. This suggested that it would not be unreasonable for the S&P 500 to have reached 2114 by August 17, 2014. Six months later, on August 18, 2014, the S&P 500 closed up 133 points for a 7 percent gain. The S&P 500 needed an additional six months to break through the 2114 target. It closed at 2115.49 on February 24, 2015. Even though the timing wasn't perfect, the Zweig indicator pointed to the direction the market would most likely move – higher.

Example

Two of the Zweig model indicators since mid-April, 2015 – right before "Sell in May" – the Zweig 4 percent model and the ratio of declining volume to rising volume indicator:⁴

- Prior to May 1, the Zweig super model had been indicating that an investor should be long stocks. The VL index hit a cyclical high of 519.05 on April 10, 2015. A sell signal would occur after a 4 percent drop from the most recent high. The VL index would need to fall to 498.29 in order for a sell signal to be triggered.
- The VL index reached 519.88 on April 24. This was a new high. The trigger for a sell signal was increased so that the VL would have to fall 4 percent to 499.08 to trigger a sell.
- The VL index remained in the range of 519.88 to about 506 through Friday, July 3. Note that a new high had not been breached significantly since the April 10 cyclical high of 519.05.
- Monday, July 6 a sell signal was triggered when the VL index closed at 497.73 – more than 4 percent below a recent peak. The next buy signal would be triggered if the VL closed at 517.64 – 4 percent above the recent low of 497.73.
- The VL index kept falling and reached 443.06 on Monday, August 24 – more than 10 percent below the level of the previous sell signal and nearly 15 percent below its recent peak. The VL would need to rise 4 percent to 460.78 in order to show a buy signal.
- A sell indicator was triggered on August 24

when the ratio of down volume to up volume on the NYSE was greater than 9:1. This sell indicator is not as powerful as the 4 percent model, but adds value.

- The next day, on Tuesday, August 25, the VL index fell to 439.18 – more than 15.5 percent below its recent peak. The next buy signal would be at 456.75.
- Two days later, on August 27, the VL index reached 462.28 – more than a 4 percent rise. This 4 percent rise triggered a buy signal. The next sell signal would be at 443.79.
- Then, on Tuesday, September 1, a sell indicator was triggered when declining volume outpaced buying volume by more than 9:1. In seven trading days there were two sell indicators triggered and one buy signal. This whipsaw WWW-type action made it difficult to know which way the market was headed. Since the 4 percent model is a stronger signal than the declining/advancing ratio, it seemed better to stay long stocks.
- The VL index kept falling and a double sell indicator was triggered on Friday, September 25. The declining stock/advancing stock ratio was greater than 9:1 and the VL fell more than 4 percent below a recent high to 444.77. The next buy signal would be at 462.56.
- On Monday, September 28, another sell signal was received, but it was just a continuation of Friday's action. The declining stocks outnumbered the advancing stocks by more than 9:1. The VL index fell to a new low of 432.32 – nearly 17 percent below the spring peak. The buy signal was reset to a new level of 449.61. The VL fell to 431.31 the next day and the buy signal was reset to 448.56.
- It didn't take long for a rally to occur. On Monday, October 5 a very strong Zweig buy indicator appeared when the ratio of advancing stocks to declining stocks was 15:1. (The ratio of advancing stocks to declining stocks indicator is more predictive than the ratio of declining stocks to advancing stocks.) A buy signal based on the 4 percent model was also triggered when the VL closed at 456.59 – a 5.6 percent rally.
- After the October 5 advance/decline volume buy signal of 15:1, the weekly closing price

of the S&P 500 was higher than the previous weekly closing price for five weeks running.

- Zweig's indicator of a 2:1 ratio of up stocks to down stocks over a 10-day period was nearly triggered when the ratio hit 1.81:1 on Monday, October 12. This was further proof that the buyers dominated the market. The ratio remained strong the rest of the week, with ratios of 1.74, 1.72, and 1.61 on Tuesday, Thursday, and Friday, October 13, 15, and 16.
- The October rally continued and the VL index subsequently reached new cyclical highs on five occasions. The peak occurred on November 3, 2015 at 475.8 – a more than 10

This whipsaw WWW-type action made it difficult to know which way the market was headed

percent rally from the 9:1 sell signal received on September 28. The sell signal was reset to 456.77.

- The VL index fell to 455.27 on Thursday, November 12 and a sell signal was triggered. The buy signal was reset to 473.48. Two points were deducted from the super model, giving it a score of 6. A super model score of 6 or above is bullish.
- The VL index fell again the next day to 451.13 and the buy signal was reset to 469.18.
- Monday, November 16 was the start of a small rally and by Tuesday, December 1 the VL index reached 470.63 and a buy signal was triggered. The sell signal was reset to 451.80.
- Zweig warned that the 4 percent model can sometimes have a whipsaw effect, but in the long run the model helps the investor stay in sync with the trend of the market. The investor who follows the super model will experience less of a whipsaw effect.
- The rally was short lived. The VL index closed at 450.94 on Thursday, December 10. The buy signal was reset to 468.98.
- There was another big down day on Friday, as the VL index fell to 441.21. The buy signal was reset to 458.86.

- There was a second Zweig sell signal on Friday. The ratio of down volume to up volume was 9:1.
- The VL index continued to fall the following week and by Friday, December 18 a new low of 436.84 was reached. The buy signal was reset to VL 454.31. There was a slight rally as the end of 2015 got nearer to 453.65 on December 29, but that just narrowly missed the buy target.
- The VL index fell to 411.12 on January 11, 2016 after eight straight trading days of losses and the buy signal was reset to 427.56.
- The VL index fell to 400.58 two days later and

a Zweig sell signal was triggered when the NYSE declining volume/advancing volume ratio exceeded 9:1.

- The VL index ended the week at 398.23 – the first time it was below 400 since April 2013. The buy signal was reset to 414.16.
- The VL index fell to a new cyclical low of 392.58 on January 20. The buy signal was reset to 408.28.
- The VL index began to climb the following day and the advancing volume exceeded the declining volume most days over the next week and a half.
- A buy signal was given when the ratio of advancing volume to declining volume reached almost 11:1 on January 26. This was followed by another advance/decline ratio of a little over 11:1 on January 29 and the VL index closed out the week at 413.98 with a buy signal given by the 4 percent model. The new sell signal was reset to 397.42.
- The VL index reached a peak in the spring of 2015 when it hit 519.88, about 20 percent higher than the January 29, 2016 closing price.

This story of the period is to be compared with the VIX-related story in Ziemba's column in the November 2016 issue (Ziemba, 2016).

Where does the model sit as we go to press?

Zweig's monetary model stands at 4 points and his 4 percent model has 2 points. The sum of the two models creates a super model worth 6 points, which is a buy signal (see Table 2).

Buy at 6 or more points.

Sell at 3 or fewer points.

Update

Update for the period January 16, 2016 to October 14, 2016 along with a six-month prediction:

- The VL index fell by 5.3 percent to 392.24 on February 8, 2016. This triggered a 4 percent model sell signal. The new 4 percent model buy signal was reset to 399.17. About a week later, on February 17, the VL rose by 5.2 percent and a buy signal was triggered. The sell signal was reset to 393.34. The up volume/down volume ratio indicator was almost hit on February 17 when it reached 8.46:1. The market remained strong for the next week and the advancing stocks/declining stocks indicator was almost triggered in the same week when it reached 1.90:1. It stayed in the range of 1.70:1 to 1.90:1 over the next two weeks, which indicated a strong upward momentum. Over the next four months a series of new highs in

His Zweig Forecast was one of the most highly regarded investment newsletters in the country

the VL were reached. It finally topped out at 473.73 on June 8 and the sell signal was reset to 454.78.

- June 24 saw a selloff and the VL index fell to 449.48, triggering a sell signal. The buy signal was reset to 467.36.
- Four days later, on June 28, a buy signal was triggered on the Zweig 9:1 up volume/down volume indicator when the ratio reached 9.3:1. It reached 9.3:1 on June 29 also. The VL index closed at 442.54 on the first of those days.
- A series of new VL index highs were hit and the

Table 2: Super model

2	Prime rate indicator
0	Fed indicator
2	Installment debt indicator
4	Total points for the monetary model
2	Total points for the 4 percent momentum model
6	Total points for the super model

sell signal was reset each time. The up volume/down volume signal hit 15.6:1 on July 8 – probably a continuation of the previous week's momentum. The sell signal was increased to 448.26 as the VL closed out the week at 466.94.

- The 4 percent model was triggered when the VL index increased from a recent low by 4.8 percent to 470.75 on Monday, July 11.
- The next day, July 12, Zweig's strongest signal was given when the up stocks/down stocks ratio over a 10-day period exceeded 2:1.
- The VL index saw a series of new highs throughout July and August and reached a new peak on September 7 when it closed at 489.19. The 4 percent model sell signal was reset to 469.62.
- September is often a weak month for the stock market. The VL index was relatively flat for the rest of the month. The 9:1 signal was nearly hit on September 21 when the up volume/down

volume indicator stood at 8.15:1, but a rally did not materialize. The VL closed at 471.14 on Friday, October 14 – slightly below the peak of 489.19 on September 7.

- Zweig's research showed that after his 2:1 up stocks/down stocks ratio is triggered, the market increases on average by about 15 percent over the next six months. The S&P 500 closed at 2152.14 on July 12 – the day the 2:1 ratio was reached. This suggests that the S&P 500 could reach 2475 by January 12, 2017.
- The S&P 500 closed at 2132.98 on October 14, 2016.

Postscript on using Zweig's methods for equity selection

Professional investor John Reese has also followed Zweig's methods, focusing on stock portfolios as opposed to index movements like Sweteye and I (Reese and Forehand, 2009). In an October 7, 2016 post at validea.com/hl/hotlistissues/A-Look-at-the-Investment-Strategy-of-Martin-Zweig-2016-10-7, asp he wrote as follows:

Our portfolio based on his book *Winning on Wall Street* has almost doubled the market's return since its inception in 2003.

Zweig was also an avid collector of a variety of different kinds of memorabilia. The *Wall Street Journal* has reported that he owned such one-of-a-kind items as Buddy Holly's guitar, the gun from *Dirty Harry*, the motorcycle from *Easy Rider*, and Michael Jordan's jersey from his rookie season with the Chicago Bulls...

Zweig called the 1987 crash, as noted above. Reese reminds us that Zweig predicted a quick recovery, reaching pre-crash levels in about a year:

Zweig was a growth investor, and his methodology was dominated by earnings-based criteria. He looked at a stock's earnings from a myriad of angles, wanting to ensure that he was getting stocks that had been producing strong growth over the long haul and even better growth recently – and he wanted their growth to be coming from the right sources.

Zweig's thoroughness paid off. His *Zweig Forecast* was one of the most highly regarded investment newsletters in the country, ranking number one for risk-adjusted returns during the 15 years that the *Hulbert Financial Digest* monitored it. It produced an impressive 15.9 percent annualized return during that time. Zweig also managed several mutual funds, and was co-founder of Zweig Dimenna Partners, a multibillion-dollar New York-based firm that has been ranked in the top 15 of Barron's list of the most successful hedge funds.

Zweig may have spent his cash on some flashy, fun items, but the strategy he used to compile that cash was a disciplined, methodical approach. His earnings examination of a firm spanned several categories, and Sweteye has incorporated them into the

Zweig-inspired model I base on his book, *Winning on Wall Street*. They include:

Trend of earnings. Earnings should be higher in the current quarter than they were a year ago in the same quarter.

Earnings persistence. Earnings per share (EPS) should have increased in each year of the past five-year period; EPS should also have grown in each of the past four quarters (vs. the respective year-ago quarters).

Long-term growth. EPS should be growing by at least 15 percent over the long term; a growth rate over 30 percent is exceptional.

Earnings acceleration. EPS growth for the current quarter (vs. the same quarter last year) should be greater than the average growth for the previous three quarters (vs. the respective three quarters from a year ago). EPS growth in the current quarter should also be greater than the long-term growth rate. These criteria made sure that Zweig wasn't getting in late on a stock that had great long-term growth numbers, but which was coming to the end of its growth run.

While Zweig's EPS focus certainly put him on the "growth" side of the growth/value spectrum, his approach was by no means a growth-at-all-costs strategy. Like all of the gurus Swetye follows, he included a key value-based component in his method. He made sure that a stock's price/earnings ratio (P/E) was no greater than three times the market average, and no greater than 43, regardless of what the market average was. (He also didn't like stocks with P/E less than 5, because they could be indicative of an outright dog that investors were wisely avoiding.)

In addition, Zweig wanted to know that a firm's earnings growth was sustainable over the long haul. And that meant that the growth was coming primarily from sales – not cost-cutting or other non-sales measures. Swetye's Zweig model requires a firm's revenue growth to be at least 85 percent of EPS growth. If a stock fails that test but its revenues are growing by at least 30 percent a year, however, it passes, since that is still a very strong revenue growth rate.

Like earnings growth, Zweig believed sales growth should be increasing. My model thus

requires a stock's sales growth for the most recent quarter (vs. the year-ago quarter) to be greater than the previous quarter's sales growth (vs. the year-ago quarter).

Finally, Zweig also wanted to make sure that a firm's growth wasn't driven by unsustainable amounts of leverage (a key observation given all that's happened in recent years). Realizing that different industries require different debt loads, he looked for stocks whose debt/equity ratios were lower than their industry average.

He ... relied on technical factors to adjust how much of his portfolio he put into stocks, and the indicators he used are quite relevant given today's environment. Some included the Federal Reserve's discount rate; installment debt levels; and the prime rate. His mottos included "Don't fight the Fed" (meaning investors should be more bullish when interest rates were low or falling) and "Don't fight the tape" (which related to his practice of getting more bullish or bearish based on market trends).

Those rules are tough for an individual investor to put into practice; Zweig used what he called a "super model" that meshed all of his indicators into a system that determined how bullish or bearish he was. But over the years, Swetye found that using only the quantitative, fundamental-based criteria Zweig outlined in his book can produce very strong results. His Zweig-inspired 10-stock portfolio has been a very strong performer since its July 2003 inception, returning 315.1 percent, while the S&P 500 has gained 199.2. Here are the portfolio's current holdings:

CUSTOMERS BANCORP, INC. (CUBI)
WALKER & DUNLOP, INC. (WD)
AMTRUST FINANCIAL SERVICES, INC. (AFSI)
ENTERPRISE FINANCIAL SERVICES CORP. (EFSC)
HAIN CELESTIAL GROUP, INC. (HAIN)
LGI HOMES, INC. (LGIH)
FRANKLIN FINANCIAL NETWORK, INC. (FSB)
SERVISFIRST BANCSHARES, INC. (SFBS)
BANCO MACRO SA (ADR) (BMA)
UNITEDHEALTH GROUP, INC. (UNH)

Zweig's strategy is a growth approach. It examines earnings growth from various angles, making sure that it is "strong, improving, and sustainable."

ENDNOTES

1. This column is written jointly by John Swetye of Hypernormal Enterprises, Darien, CT and William T. Ziemba and an earlier version was published in: John Swetye & William T. Ziemba (2016) Using Zweig's monetary and momentum models in the modern era, *Quantitative Finance Letters*, 4:1, 35–39, DOI: 10.1080/21649502.2015.1165917. A version of this article will also appear in *Stock Market Crashes: Predictable and Unpredictable and What to do About Them* (World Scientific, 2017).
2. Our discussion follows the book closely, with much in Zweig's own words. We have edited as necessary.
3. The VL is a small cap index of about 1650 stocks equally weighted. Ziemba (2012) used the VL in the 14 turn-of-the-year trades for 1982/83–1995/96. Subsequently, the past seven years are with the Russell2000, a value-weighted small cap index. (All of the 21 produced profits except this past year. The 1/4 point Fed interest rate rise plus expectation of the many more raises led to the January–February deadline and a failure of this trade.)
4. For an update on "Sell in May and Go Away," see Dzhabrov and Ziemba (2016).

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