INVESTMENT BULLETIN

Keel Point

Volume VI, No. 6
November/December 2017

8065 Leesburg Pike, Ste. 300
Vienna, VA 22182
www.keelpoint.com

Capital Efficiency

Let's say you own a parcel of land on which you operate a successful family vineyard. Your goal each year is to maximize profits from the vineyard. In an average year profits are more than enough to support the family, but during especially rainy years they can plunge and, occasionally, you even come out of pocket to fix vine damage. The threat of rain makes for a stressful experience; you draw the conclusion that this uncertainty exceeds your tolerance and seek to reduce the risk to those profits by 25% (you've chosen a risk target). The vineyard will always be the growth engine of your "portfolio", but you want to explore ways to convert some land to a diversifying crop.

Olives and almonds are the two diversifying options in your region. There are a lot of sellers, so profits are quite small, but crucially both crops tend to thrive in rainy years. Olives are the steadier option, profits are mildly higher in rainy years and mildly lower in dry years. Almonds are much more volatile – they soar in rainy years, but the dry years are really bad, sometimes requiring fresh capital to replant a few trees. Both options require the same acreage to generate about the same amount of profits. What is the better option to diversify your portfolio?

We pick almonds. This may be counterintuitive – when choosing between two crops that deliver the same average yield why pick the more volatile one? The risk-adjusted olive return (yield divided by volatility) is better than the risk-adjusted almond return! It won't be any fun to see the almond business wheeze in a dry year as the vineyard is printing money (why did we diversify?) and your neighbor's olive profits are only slightly below average. But the almond business's job isn't to look the best on its own, rather it is tasked with most effectively diversifying the vineyard. And so long as the historical relationship between crop yields and weather holds, you should prefer to plant the crop with the bigger payoff when you need it most.

Almonds and olives both deliver the same risk exposure to you – the "I need something that will work in the rainy season" solution. Almonds muscularly deliver it while olives meekly deliver it. This can benefit your portfolio in two ways. First, it creates an opportunity to rebalance more effectively. A particularly wet year will produce more profits in the grapes/almonds scenario versus grapes/olives. Excess profits can be rebalanced into grapes at the end of the year (pretend you can buy a small interest in a neighbor's vineyard). The post rainy season exercise of selling almonds high and buying grapes low can work in reverse after a dry year too. Olives could accomplish a similar objective, but the sales will unlikely be as high and the buys will unlikely be as cheap, thus limiting longer-term growth.

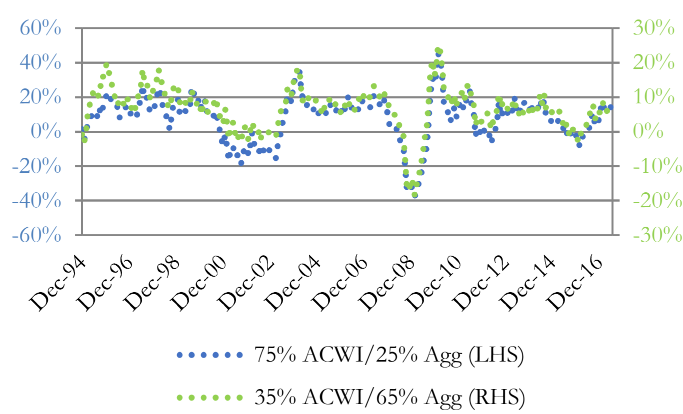
The second way is via capital, or in this case acreage, efficiency. You have a finite number of acres to plant. It behooves you to make each one count towards your profit maximization goal subject to your risk tolerance. You actually get about the same portfolio benefit by planting just half the diversifying acres (so 12.5% of your land) with almonds as you would by planting 25% with olives. True, your almond profits will necessarily be half on average, but remember profits in the diversifying crops were low to begin with. Most importantly you can use the other 12.5% of land to build a business whose fortunes are unrelated to your dominant dry/wet profit determinant. Let's say you can build an Amazon warehouse on that land. This is a profitable enterprise in its own right, but these profits are sensitive to the whims of the consumer rather than the whims of mother nature, and are thus likely to navigate their own business cycle agnostic to the weather.

The choice of almonds over olives is capital efficient. It is a concept that has moved beyond the vines to guide, in part, our September 2017 portfolio rebalance. Keep the characteristics and interaction of grapes, olives, almonds, and Amazon warehouses handy as we walk through how capital efficiency helps us build better portfolios.

From Grapes to Stocks

The vineyard in your portfolio is the stock market. It is the growth engine of portfolios at all levels, even the more conservative ones. This is perhaps an obvious point, but it is important to understand that the market is also the primary source of risk for all portfolios.

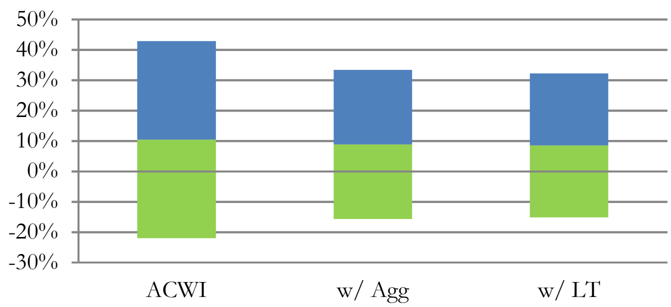
Figure 1: Equity is the Biggest Risk in a Portfolio
Trailing 12 Month Returns
Source: Bloomberg



Consider Figure 1. The blue line shows rolling twelve month returns for a growth oriented blend of global stocks (MSCI All Country World Index or "ACWI") and a traditional diversifier (U.S. bonds as represented by the Barclays Aggregate Bond Index or "Agg"). Blue corresponds to the labels on the left axis. The green line shows the same for a conservative blend and corresponds to the right-hand-side labels which are exactly halved in scale. What is striking about this graph is the lack of divergence in these two lines, especially this century. Sure, adding bonds reduces risk, but does so only by not spending dollars in the stock market. Bonds did not introduce a meaningfully different risk factor to the portfolio; if they had you would expect to see periods of separation. When it rains in your portfolio, traditional bonds aren't much help; they are olives.

Figure 2 shows how almonds can do olives' job more efficiently. The stacked bars on the left show you the annualized average and range of profits derived from an investment in the ACWI. The blue bar gives the range of profits, when *above* average, expected in 95% of years (we chop out the outliers). The green bar captures the *below* average portion of the distribution. They join at average profits.

Figure 2: Cutting Your Risk Efficiently
Data from June 2003 to December 2013
Source: Bloomberg



Capital Employed	**100.0%**	**100.0%**	**87.5%**

Note: We used data from June 2003 to December 2013 for these calculations to partially control for the secular decrease in interest rates over the past 30 years that flattered bond returns. Rates were down, but only slightly, over this period.

In our vineyard example you made the decision that you could only accept 75% of the uncertainty shown on the left. The middle stack and rightmost stack give you two options to cut the green bar by 25%. The average return is lower for both as you would expect: lower risk equals lower returns. The olive option is in the middle: we took 25% from stocks and invested in the Agg. The almond option is on the right: we invest just $12.50 in longer-term government bonds and get a similar average profit and distribution picture. Further, we have capital left over for alternative investments ("Amazon warehouses"). These are businesses like reinsurance and low market exposure hedge fund strategies that we expect to earn a meaningful return over the long-term, but with minimal or no coordination with stock and bond markets.

Parting Thoughts

A few more quick points on this topic:

- Diversification is best thought of as taking as many different prudent risks as possible in a meaningful way. We think many practitioners view it as a requirement to pair low volatility assets with high volatility assets. This can work, but isn't always the most efficient use of your capital.
- The concept of capital efficiency doesn't just apply to how we think about diversifying; it is also relevant to the equity side of the portfolio. We have implemented a few strategies that take on more risk than the ACWI such as small cap equities and volatility premium harvesting. In analogy terms, you can plant a new variety of grape that makes for a premium wine in the dry years, but suffers more when it rains.
- Interest rates are the obvious risk to using long-term bonds. We designed our process to understand interest rate risk level at the *portfolio* level. The point is that we can consider getting that diversifying risk with less capital via long-term bonds.
- Why not just hedge the vineyard with some sort of weather put option? This is a worthy thought exercise, but if hypothetical weather puts are priced the same way as equity puts they would likely dent profits more than the diversification methods proposed here.

Our portfolio design process asks clients to consider how much market risk they are willing to accept, and then endeavors to pivot non-market dollars most efficiently to drive the best possible result. Each dollar should execute on the portfolio's goal of profit maximization subject to the risk constraint. We believe this focus on capital efficiency, along with some of the other distinctive strategies we offer, are competitive advantages of the Keel Point portfolio construction process. □