

There is a standard piece of conventional investment wisdom that says that owning individual stocks is too risky as compared to owning a fund that invests in the entire market. If you own stock in 20 companies and one of these firms one goes bankrupt (and you lose 100% of your money), you have lost 5% of your portfolio. If you own a market index fund like the S&P500 and one firm goes bankrupt, you have lost 1/500th (or 0.2%) of your total portfolio. This argument is often used to convince individual investors that they have no business buying and owning anything less than hundreds or even thousands of individual stocks in the form of funds.

This argument sounds compelling and it is correct for the vast majority of individual investors who do not have the tools to capture default risk (think: bankruptcy) in their investment considerations. For these people, keeping allocations to individual stocks low is a reasonable defensive strategy against default risk in any specific firm. As Warren Buffett has famously stated:

Wide diversification is only required when investors do not understand what they are doing.

Buying some of every available stock in a market reduces default risk at any individual firm, but it exposes investors to plenty of bad firms at the same time that it reduces exposure to any single firm's risk of default.

Before continuing, I want to reiterate that for most investors—those who lack either the interest or resources to dig below the surface—buying a well-diversified portfolio of index funds (preferably in the form of ETF's)—is the best solution.

Risk of Bankruptcy

Part of the logic of owning only massively diversified funds rests solidly on the idea that there is no way to distinguish effectively between companies with higher default risk vs. those with lower default risk. If you believe this, the best approach is to buy only massively diversified ETF's.

This is not how the smart money does it. Institutional investors look at credit ratings as a measure of default risk at a company. Credit ratings are a standard tool in professional finance and there is sufficient history to show that credit ratings provide solid predictions of default risk. For an excellent overview of credit ratings and default risk, see the following article by Prof. Edward Altman at Stern School of Business, an expert in this area:

<http://pages.stern.nyu.edu/~ealtman/AboutCorporateDefaultRates.pdf>

As an interesting aside, Warren Buffett's Berkshire Hathaway (BRK) owns almost 19% of one of the top credit ratings firms, Moody's (MCO), making Berkshire far and away the largest investor in MCO.

Portfolio Allocations to Individual Stocks

In a range of analysis using Quantext Portfolio Planner (QPP), a portfolio planning tool that uses Monte Carlo simulation, I find that adding individual stocks can add considerably to portfolio performance. These results can be found in almost all of my articles. When I run Warren Buffett's famously concentrated equity holdings through QPP (Buffett has historically had about ¾ of assets in the top five to seven stocks in the Berkshire portfolio), the results suggest that Mr. Buffett has a very attractive return-to-risk ratio in the Berkshire portfolio on a forward-looking basis:

<http://seekingalpha.com/article/17192-monte-carlo-analysis-of-major-berkshire-hathaway-holdings>

QPP suggests that a fairly small number of securities can provide substantial diversification if those securities are chosen carefully. Ben Stein and Phil DeMuth provide a recent update of this analysis in *Yes, You Can Supercharge Your Portfolio* (Hay House, 2008).

Now we get to a big picture question. In using a model like QPP to include individual stocks in a portfolio, how do we account for default risk—the probability that one of the firms in which we hold stock will go bankrupt at a complete loss?

QPP Projections and Default Risk

Credit ratings have historically been solid predictors of default risk and there are enormous differences between the default risks associated with a low-rated company and a high-rated company. Moody's combines a range of available data into what they call Market Implied Ratings (MIR):

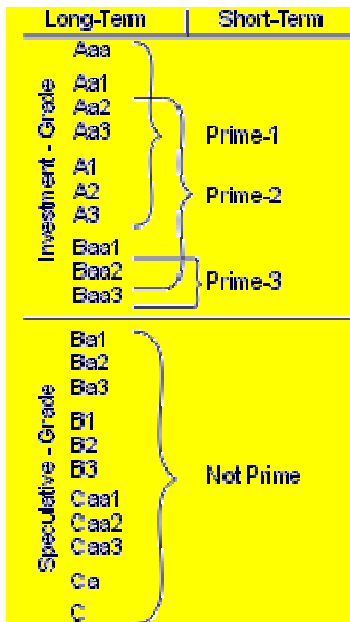
Moody's MIR® enables quick and easy comparisons between Moody's ratings and ratings implied from the bond, equity, and credit default swap markets, or from accounting ratios. These comparisons help credit professionals anticipate ratings changes, identify default candidates, and detect relative value trading opportunities.

Moody's has been especially successful via this process of integrating 'market' information into credit ratings—the following is a very useful overview—buts it's long:

<http://www.ieca.net/assets/IECCalgaryMay2007.pdf>

This presentation makes a very compelling case for the Market Implied Ratings, showing a series of cases in which the 'market implied data' predicted distress at a company well ahead of the traditional ratings models.

The hierarchy of ratings used by Moody's is shown below:



Source: Moody's

I have been comfortable with using QPP to calculate the portfolio impacts of individual stocks because I am confident in the market's aggregate ability to assess risk. In other words, I believe that QPP's projected volatility (which I have shown in a number of studies is consistent with *implied* volatility in options prices) provides a sufficient measure of risk. By managing total projected portfolio risk in QPP, I am confident that I can account for default risk fairly well. To make this connection more formal is quite easy. I have generated QPP projections for a range of stocks and compared these to the Moody's MIR credit ratings of these firms. If QPP is capturing default risk effectively, we should see a strong relationship between credit rating and QPP's projected 'worst case' risk.

To choose companies for this analysis, I have looked at a range of stocks. There are more than a few financial firms in this analysis because they have been a major topic of interest for a lot of investors. I have included a number of Dow components. I have also added a selection of firms from the residential construction industry that have recently seen substantial downgrades. This analysis was performed running QPP with all default settings and three years of trailing historical data through February 2008. The Moody's ratings were obtained from Moody's website on March 4-5, 2008. There are several available Market Implied Return (MIR) ratings and I have used the Credit Default Swap Implied rating. This is a credit rating derived from the levels at which Credit Default Swaps are trading:

<http://www.pimco.com/LeftNav/Bond+Basics/2006/Credit+Default+Swaps+06-01-2006.htm>

Moody's uses the default risk implied in credit default swaps to calculate the Credit Default Swap Implied rating.

The results of our comparison are shown below, sorted by Quantext Portfolio Planner's projected risk (lower risk at the top of the table, increasing downwards):

Ticker	Moody's		Quantext Portfolio Planner		
	Credit Default Swap Implied (MIR)	Investment Grade?	Projected 0.1% Percentile for 1 Year	Projected 1% Percentile for 1 Year	Percentile for 100% Loss
JNJ	Aaa	Y	-43%	-31%	
AXP	Baa3	Y	-43%	-31%	
KO	Aa1	Y	-47%	-34%	
USB	A1	Y	-51%	-37%	
BAC	Baa1	Y	-61%	-44%	
INTC	Aaa	Y	-62%	-45%	
DIS	Aa3	Y	-62%	-45%	
WFC	Baa1	Y	-67%	-48%	
BA	Aa2	Y	-70%	-51%	
HPQ	A1	Y	-81%	-59%	
COP	A2	Y	-87%	-64%	
NCC	Ba2	N	-89%	-65%	
C	Baa3	Y	-90%	-65%	
HD	Baa3	Y	-92%	-67%	
AA	Baa2	Y	-98%	-71%	
F	Caa1	N	-125%	-92%	0.5%
LEN	Ba1	N	-144%	-105%	1.5%
WM	B1	N	-177%	-129%	3.0%
GM	B3	N	-189%	-138%	4.0%
PHM	Ba1	N	-195%	-143%	4.5%
BZH	Caa2	N	-229%	-167%	6.8%

Moody's Rating vs. QPP Outlooks

The Moody's rating is shown in the second column, and we have noted whether the rating level is considered investment grade in the next column to the right. The first column in the Quantext Portfolio Planner section of the table is the *Projected 0.1% Percentile for 1 Year*. This is calculated from the standard percentile projection table in QPP, although I have changed the lowest percentile in the table to the 0.1% level. The next column to the right is the 1% percentiles projected by QPP—this is standard output on P. 6 of the QPP Report. Note that some of the tickers are projected to have negative returns less than 100%--i.e. like -125%. Obviously this is not possible in real life. That said, these serve to create a sufficiently high probability for total loss (i.e. -100% return). For each of these tickers, I have included the percentile at which a -100% loss occurs in the next column. QPP projects that there is a 3% chance that Washington Mutual (WM) will have a return of -100% over the next year, for example.

What is most notable about this table is that there is essentially a perfect segregation between investment-grade securities (as determined from the Moody's rating) and the projected worst percentile return from QPP. The only exception is NCC which is near investment grade (Baa2). These results show that QPP's volatility projection is a good proxy for default risk.

Another way to look at these data is by averaging the QPP-projected percentile returns by credit rating groups:

Ticker	Moody's		Quantext Portfolio Planner	
	Credit Default Swap Implied (MIR)	Investment Grade?	Average Projected 0.1% Percentile for 1 Year	Average Projected 1% Percentile for 1 Year
JNJ INTC DIS BA KO	Aaa Aaa Aa3 Aa2 Aa1	Y Y Y Y Y	-57%	-41%
COP USB HPQ	A2 A1 A1	Y Y Y	-73%	-53%
AXP C HD AA BAC WFC	Baa3 Baa3 Baa3 Baa2 Baa1 Baa1	Y Y Y Y Y Y	-75%	-55%
NCC LEN PHM GM WM	Ba2 Ba1 Ba1 B3 B1	N N N N N	-159%	-116%
BZH F	Caa2 Caa1	N N	-177%	-129%

Average QPP-Projected Loss by Credit Rating Cohort

This table simply provides another way to see that QPP projections of total risk in an individual stock are remarkably consistent with Moody's rating. For QPP users who wish to purchase individual stocks but wish to mitigate the risk of bankruptcy in individual stocks, the 1-year 1% percentile return could be constrained to levels at or below 50%-60%.

Discussion

We started this article by noting that much of what is written for individual investors suggests that investing in individual stocks is too risky because of the potential for any single company to go bankrupt. This advice may be appropriate for many investors, but it is important for more sophisticated investors and advisors to understand the limits of this advice. If individual investors have no way to distinguish between stocks with fairly high default risk and those with fairly low default risk, this advice is good. But this is 'low knowledge' investing. Given the success of credit ratings as predictors of distress, an investor with access to credit ratings can dramatically reduce the probability of experiencing a default in individual stock holdings. What we have shown in this analysis is that the same effectiveness in capturing default risk is achieved within Quantext Portfolio Planner. A QPP user who constrains the total forward-looking risk (generated by QPP) in his/her portfolio is, in effect, managing the default risk because of the strong relationship between QPP's projected risk level and the credit rating.

Consider the other side of this argument. If you own the entire S&P500, you are largely protected from bankruptcy in any single firm. Consider, however, the implications of the fact that owning the S&P500 index means that you also own Ford (F) and General Motors (GM), both of which are speculative grade (i.e. at fairly high risk of default) according to Moody's MIR. Washington Mutual (WM), another firm with a poor credit rating, is also an S&P500 component, as are Pulte Homes (PHM), and Lennar (LEN). So, while the impacts of a single bankruptcy are relatively small, you are holding a number of stocks that the credit ratings suggests have fairly high probability of bankruptcy. Further, because GM and F have certain business factors in common, it is probably not a stretch to suggest that if one of these firms defaulted, the other would probably be in very bad shape, too. The same could be said of PHM and LEN.

Now, it is certainly true that some companies that fail have had 'investment grade' ratings up until very shortly before default (see the overview presentation by Moody's linked earlier in this article for examples). That said, credit ratings have proven their worth over long periods of time, as discussed the article by Edward Altman (linked earlier in this article). Moody's has noted that purely statistical models based on market data have tended to perform better in these cases, so I believe that QPP has some advantages here. In future articles, I will show how QPP's outlooks have performed as a leading indicator of the potential for downgrades by Moody's.

My intent in writing this article has been to explore the degree to which QPP's outlooks for risk in individual stocks can mitigate the stock-specific risk of default in a portfolio with allocations to individual stocks. The results suggest that investors who screen stocks using the QPP-projected 1% percentile can, in fact, dramatically lower this source of risk. This risk is also further reduced by combining stocks with fairly low correlation. For my financial exposure, I have purchased BAC (and not C or WM) because BAC provided access to the banking sector with less risk (and according to Moody's less default risk). Would I be better off getting my financial exposure from the S&P500, in which I would also own WM and C (which have substantially higher default risk according to Moody's and QPP)? I think not.

Quantext Portfolio Planner is a portfolio management tool. Extensive case studies, as well as access to a free extended trial, are available at <http://www.quantext.com>

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