

Editors Update

A framework for building debt portfolios

With interest rates at record lows, it is a really good time to revisit how we build debt portfolios. The old days of simply investing in a bond fund and then getting to work on the more interesting task of picking equity managers are long gone. Today's low rates demand a much more thoughtful approach. As with most things in life, it is really useful to start out with an assessment of what we are trying to achieve with our debt portfolios; if we don't know where we want to go, it's not likely that we are going to get there.

What do we need from our debt portfolio?

In this case it is helpful to rule out a few red herrings that often get in the way of making good decisions. The debt portfolio should not be about generating income. Yields on risky assets are generally much higher than those available on debt assets. If it is income we are after then there are much better ways to get it than by investing in secure assets. Secondly, the debt portfolio is not there to generate high returns; again, there are much better ways to do that with riskier assets.

From farrelly's perspective, debt assets are first and foremost about risk reduction and by that we mean both the risk that we don't meet our long-term goals and the risk of short-term volatility. Of the two, we would put the risk of not meeting goals as the first order risk to manage, but that may vary from investor to investor. These concepts have been discussed extensively in these pages over time. A useful summary can be found in the Guide to Risk Tolerance which can be found on farrelly.com.au.

Debt assets can also have a role in providing liquidity to meet cash flow needs and to provide funds in the event we want to buy more risky assets or to take advantage of other investment opportunities that may arise from time to time. Only after these key objectives are met can we start thinking about getting the best return out of our debt portfolios.

A three box approach to building debt portfolios

Actuaries would describe this as an asset/liability approach. You work out your liabilities - that is, what you need the money for and when you need it - and then you arrange your assets so as to best meet those liabilities. More commonly, this is described as a bucket approach - different buckets are created to meet different needs and the portfolio is then the sum total of the buckets.

We prefer to think of boxes rather than buckets - boxes into which we put assets and which we then open from time to time. Critically, we do not want to have any unpleasant surprises when the time comes to open up one of these secure boxes. By way of contrast, when we put capital into an equity box, wherever we open that box, be it in one year,

five years or 10 years, the contents will be a surprise - either pleasant or unpleasant, but a surprise nonetheless.

We suggest three different boxes in which to allocate the secure part of the portfolio. The first box is to provide for cash flow needs; known living expenses. The second is to provide an investment reserve; a pool of funds which is ready to be deployed if equity markets decline and become more attractive or perhaps to take advantage of opportunities that may present themselves from time to time. Whatever remains after we have filled our first two boxes goes into our long-term debt box. We don't need the contents of this box to be liquid as we do not expect to have to open this box for five or more years. Volatility should not be too important in this box either, as long as the assets are genuinely secure in the long-term.

Figure 1 : The three box approach to building debt portfolios

	Debt portfolio box		
	Cash Flow	Investment reserve	Long-term
Purpose	Meet day to day living expenses	Reserve to fund unplanned purchases of assets.	Maximise returns given security
Investment characteristics	Security Liquidity No volatility	Security Liquidity Negative equity correlation a bonus	Long-term security (Liquidity, volatility, equity correlation not important)
Amount allocated	2 years' cash flow	Enough to rebalance portfolio in event of a downturn.	Remainder of the secure portfolio

How do we invest each box?

The investment strategy for each box will be driven by the function each box is required to perform. The only thing each box has in common is that in each case the contents must be secure in the long-term. That is, all must produce reasonable long-term returns in the event that the risky assets perform much more poorly than our base assumptions. If these assets can't do that then there is no point in having a secure portfolio at all. Secure assets must be secure - over the appropriate time horizon.

Once we have satisfied the security criterion, we can start to think about what other criteria will drive how the capital in each box is invested.

The cash flow box

The key characteristics required for this box are liquidity and no surprises. When this box is opened, the funds required to meet living expenses simply must be there. Having said that, the assets here do not have to be completely liquid. If two years' living expenses are set aside, then only the next six months must be in cash. Some could also be in a mixture of six month, 12 month and 18 month term deposits (TDs) if they offered the

prospect of higher returns than cash. While we are not primarily chasing returns in this part of the portfolio, once we have satisfied the liquidity and stability criteria, then we should look for the best returns available.

The investment reserve

The key characteristics here are that the assets have sufficient liquidity and do not have positive correlation with equities. If they have a negative correlation with equities then that is a bonus. The idea here is that we do not know when we will need to open this box, but when we do, we need fast access to the funds inside and that there should be at least as much money in there as we put in at the start.

We can rule out securities such as BBB funds or bank hybrids, which, as is discussed elsewhere, may be secure in the medium term, but are quite likely to fall in value during a major bear market. We do not want to decide to buy some assets and open this box only to find less capital in there than we had expected.

On the other hand, government bonds are a good asset to have in the investment reserve; if bought when reasonably priced. The great strength of government bonds is that they tend to be negatively correlated with equities. If they have been bought at a reasonable price, we can expect these bonds to increase in value if equity prices fall. This creates the potential for a pleasant surprise. When we open the box, not only is there as much money as we originally put in, but there will often be even more than we expected, enabling us to buy more equities than we had perhaps envisioned.

However, while conceptually attractive, the bonds should only be bought at reasonable valuations. As is outlined in the Forecasts in Focus section, this means bonds bought with yields above 3.5% per annum for Australian investors and yields above 4.5% for NZ investors. In the meantime, cash and, if you like to stagger purchases in falling markets, perhaps some short-term TDs are the way to go.

The long-term box

This is the box that only needs to be opened rarely; perhaps every five years or so. This means that the liquidity constraints applied to the other two boxes are not necessary for this box which opens up a world of possibilities. Assets that can be considered as good candidates for this box include:

- Term deposits and annuities where the interest rates are superior to those available on government bonds;
- BBB type securities when the increased yields more than offset the likely range of losses due to credit failure. (This is discussed in more detail below);
- Government bonds;
- Bank hybrids - which do carry some credit risk (see the Crockpot for a brief discussion) but which are extremely unlikely to fail and offer returns well above BBB securities;
- Lifetime annuities - particularly given their favourable assets test treatment that can be worth up to 2 to 3% per annum in increased pension benefits.

As with the other boxes, long-term security is paramount with this part of the portfolio. When we open the box in five years' time there must be at least as much in the box as we would get with government bonds. In the meantime, the box can shake, rattle and roll, as much as it likes. Reducing overall portfolio volatility is not the chief aim of this box.

Of course, you may choose to make it a requirement that no assets that are positively correlated to equities are allowed in this box so as to minimise overall portfolio volatility. If this were the case, you would eliminate the BBB securities and hybrids as candidates.

If choosing TDs, the TD analyser in the Implementor and Wizard are recommended to help determine which is the best part of the curve in which to invest. The June 2014 Handbook covered how you may approach this task in some considerable detail. As a result of the analysis back then, we strongly recommended five-year term deposits that were then fetching 4.6% per annum - a rate that seems amazing today, but was freely available 12 months ago. The TD Analyser is a very useful tool.

If looking at BBB securities, the key is looking at the rate compared to TDs after making an adjustment for likely and possible credit losses, as is discussed below in the note on BBB securities.

Finally, other types of credit risk securities such as big bank hybrids can be considered. We know they can be volatile, we know they do carry genuine credit risk, nonetheless, our understanding of the regulatory environment gives us a high level of confidence that the banks will be forced to recapitalise well before reaching any trigger points where hybrids must be converted into equity. We like the bank securities; both the hybrids and the sub-ordinated debt. Perhaps not for all of the secure portfolio, but, for a part of a portfolio, we think they represent good value.

How much should be put in each box?

The cash flow box

We suggest that this box has sufficient funds to meet two years cash flow. But that's just a rule of thumb. The idea is that the rest of the portfolio can freeze or fall in value and for at least two years the investor will still continue to have their living standards protected without being a forced seller of assets. Depending on the nature of the rest of the portfolio, this box could be designed to meet cash flow needs for a longer or shorter timeframe but we think that two years is a good starting point.

Hence, if a retiree is drawing 5% of their capital each year, then 10% of the overall portfolio should be invested in this box. We suggest that all income earned on the remainder of the portfolio is directed towards this box to keep it replenished.

Obviously, if an investor is in accumulation mode, this box would be empty.

The investment reserve

This box contains sufficient funds to do any re-balancing or to take advantage of any new opportunities. Working out how much to put in this box is not straightforward. To calculate how much may be needed, we need to know the neutral allocation to risky assets (R_n), the current allocation to risky assets (R_c) and the fall in share prices (f) we need to be ready to adjust for - 33% is a good starting point.

As an example, if a \$100,000 portfolio with a 60% neutral exposure to risky assets was 30% exposed to equities at a point in time, how much would be needed in the investment reserve? If the market fell 33% then the risky assets would be worth \$20,000 and the overall portfolio would be worth \$90,000. Bringing that back to a 60% weight in risky assets would mean buying \$34,000 worth of the risky assets to get the overall exposure up to \$54,000 or 60% of \$90,000. In other words, we would need to have \$34,000, or 34% of the portfolio in the investment reserve. It is a high allocation because, in this example, there is a substantial underweight to risky assets.

If, on the other hand, the same investor was 66% invested in risky assets then the investment reserve would work out to be just 3%.

Fellow geeks will no doubt be fascinated to learn that the formula to calculate the size of the investment reserve is $(R_n - R_c) + (1 - R_n) \times R_c \times f$. Readers with a life will be relieved to learn that the new Three Box Assistant in the Implementor will do the calculation for you.

The Long-term debt box

This contains everything that is not in the first two boxes. Assuming our investor has 70% in secure assets, with a 10% allocation to the cash flow box and a 34% allocation to the investment reserve, then the long-term secure box would have the remaining 26% of the portfolio.

Using the Three Box Assistant

This is a new tool in the Implementor. It lets you decide how you would like to allocate to each of the boxes and then calculates the overall exposure to each type of security. An example is shown below.

Figure 1. The Three Box Assistant from the Implementor

Portfolio number

3

Neutral Allocation to risky assets

55%

60%

Recommended weight to risky assets

30%

Suggested Investment Reserve

34%

34%

Allocation to Cash Flow box

10%

Policy portfolios

Cash Flow

Investment Reserve

LT Debt

Total

Allocation

10%

34%

26%

70%

Cash

25%

50%

0%

20%

6 months TDs

25%

0%

0%

3%

12 month TDs

25%

0%

0%

3%

18 month TDs

25%

0%

3%

2 year TDs

10%

3%

Government bonds

0%

0%

Govt ILBs

50%

17%

Big 4 Hybrids

30%

8%

BBB credit risk funds

40%

10%

Annuities

20%

5%

Sum

100%

100%

100%

70%

Guide to the Three Box assistant

1. The key inputs are the Neutral Allocation to risky assets, the Recommended Allocation to risky assets and the amount allocated to the investment reserve.

2. Entering a portfolio number will generate a suggested Neutral Allocation. This can be overwritten in the blue box if desired.

3. Enter the amount required in the Cash Flow

4. The Assistant will calculate the suggested allocation to the Investment Reserve based on the Neutral and Recommended Allocations to risky assets and the amount allocated to the Cash Flow box.

5. Enter the desired allocations to different types of securities within each of the three boxes and the Assistant will calculate the overall allocation to each type of security.

The Three Box Assistant takes as its inputs the neutral weight to risky assets, the current weight to risky assets and the amount allocated to the cash flow box to calculate the amounts to be allocated to each of the three boxes. The allocation to securities within each of the three boxes is then set by the user and the overall allocations to secure assets is shown in the dark blue, right hand column. The Assistant suggests neutral weights based on the portfolio chosen and the amount to be directed to the investment reserve, both of which can be overridden if desired.

A note on BBB and Hi Yield debt

In the past, we have classified both BBB and High Yield debt (BB and lower ranked debt) as At Risk debt. The logic was straightforward. The instance of credit failure on BBB and lower ranked debt was just too high for it to be considered secure. Figure 2 below illustrates average and worst case failure rates for five years for BBB and Hi Yield debt.

The potentially high failure rates of even BBB debt (1 in 17 securities failed during the five years from 1986 to 1991) has made farrelly's wary of classifying investment grade BBB as secure debt. This caution served us well during the GFC when many BBB securities failed - largely, the synthetic securities such as CDOs and other leveraged debt where the ratings agencies utterly failed investors. However, while the ratings agencies were earning buckets of much deserved opprobrium for their rating of individual securities, in the background, their performance in rating companies was outstanding. The failure rates of actual companies, as opposed to manufactured securities, was entirely within expectations as shown below.

Figure 2 : Five year defaults on corporate bonds (1970-2013)

	BBB	Hi Yield
Average 5 year cumulative default rates	1.9%	22.3%
Cumulative default rates (2007– 2012)	1.4%	23.6%
Worst case cumulative default rates (1986 –1991)	5.8%	38.9%
Average impact on returns	-0.22%pa	-2.8%pa
Impact on returns (2007 –2012)	-0.17%pa	-2.9%pa
Worst case impact on returns (1986 –1991)	-1.3%pa	-9.5%pa

Source: Moody's

When it comes to assessing broad portfolios of vanilla debt securities, it turns out that the rating agencies assessments are highly reliable which enables an accurate assessment of the long-term risk associated with these securities and, critically, use that assessment to determine if the securities are good value.

The premium on BBB securities more than compensates for risk

The spreads paid on BBB securities compared to government bonds are generally well above both the average impact of credit losses but also the worst credit losses we have

seen since 1970. Currently spreads on BBB securities are around 1.9% per annum, well in excess of the 1.3% per annum impact of credit losses on BBB securities experienced from 1986 to 1991 - the worst five-year period since 1970.

This means that we can invest in well diversified portfolios of BBB securities and be very confident that they will outperform government bonds over time horizons of five years or more and can therefore be considered part of a secure portfolio.

Caveats on BBB securities

BBB securities cannot always be considered as secure. This comment does not apply:

- to portfolios where the number of different securities is less than 50;
- to portfolios that contain an appreciable number of non-vanilla issues where our trust in the ratings agencies begins to diminish;
- if the investor is sensitive to short-term volatility; and,
- if the investor's time horizon is not at least five years.

In these situations they remain in the at risk part of the portfolio.