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Investment Consulting

What is Risk?

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Your objective is to get from Point A to Point B, alive. From Point A to Point B stretches a 5 cm diameter, taut, tightrope. You examine your options and quickly realize that there is a high chance of falling if you take to the tightrope.

The risk of falling can be significantly reduced by a number of means: changing shoes and using a balance are two. The consequences of suffering a fall might be mitigated by the use of a safety net.

An objective has been set and a method or strategy to achieve that objective has been identified and analysed. It involves some risk of failure but this risk can be reduced both in terms of avoiding failure in the first place and also by altering the consequences of failure.

You now re-examine the situation, looking for an optimal strategy. Point A, Point B and the rope, you note, are all only 30 cm above the ground.

Your perspective of the risk associated with achieving your objective is crystallised. You might decide now to take to the tightrope for the challenge, safe in the knowledge that a fall would be of little consequence and it might be more 'fun' to take the route with the slightly higher 'risk'.

Risk is a subjective concept. An exact definition of risk will depend on who is defining it and to whom it applies. In an investment-oriented context, risk may be taken to mean the variability in returns of a particular investment. This way of defining risk leads to all sorts of more technical or quantitative based statements of what constitutes risk. The use of standard deviations away from an average return to show the volatility or 'risk' of an investment is one example of a range of measures used to illustrate this concept.

Despite the various ways in which risk is typically defined, the true risk applicable for an investor will always depend on the objectives they have set out to achieve. There are countless 'risks' that can be identified for each and every investor, but risk management should focus on identifying and controlling the risks that are important. This subjective nature of risk arises because each investor has a set of objectives that are specific and which vary across investors as well as over time.

This subjectivity can be accounted for by defining risk to be the chance that a given set of objectives will ***not*** be met.

It is then up to the investor to examine objectives and alternative strategies to meet those objectives. The chance of failure, the degree of potential failure and the consequences of failure can then be used to help the investor decide on the optimal strategy to meet the set objectives.

Over the long term, the return on stocks has outperformed other asset classes and there are good reasons for assuming that this will be generally true in the future. However, it is important not to promote the impression that the stock market is a consistently high performing investment. The stock market has been a high performing investment in the long run but also has produced highly inconsistent returns over the short term. There is a statistical probability that stock markets will post negative returns more often than many other asset classes.

Therefore, an investor with a stated objective that does not tolerate negative returns over the short-term will assume a very high risk by investing in stocks compared to money market securities. Another investor, who does not mind negative returns being generated in the short run in order to achieve higher long run returns, actually may be assuming a lower risk by investing in the stock market. This difference in risk faced by each investor occurs despite the two investment strategies being identical. The reason for the difference is that their objectives and time horizon for investment differ. This fundamentally alters the perception of risk and, therefore, the tools necessary to control risk. Sensitivity to risk will depend on the extent to which the investor can tolerate not achieving a particular objective and, if the objective is not met, the degree of failure.

The above perspectives of risk can also be considered in relation to the Central Provident Fund. Consider a CPF member who is currently aged 40 and has an account balance of $S50,000. The member is expecting to retire at age 60. Let us assume that the member has three investment options; namely:

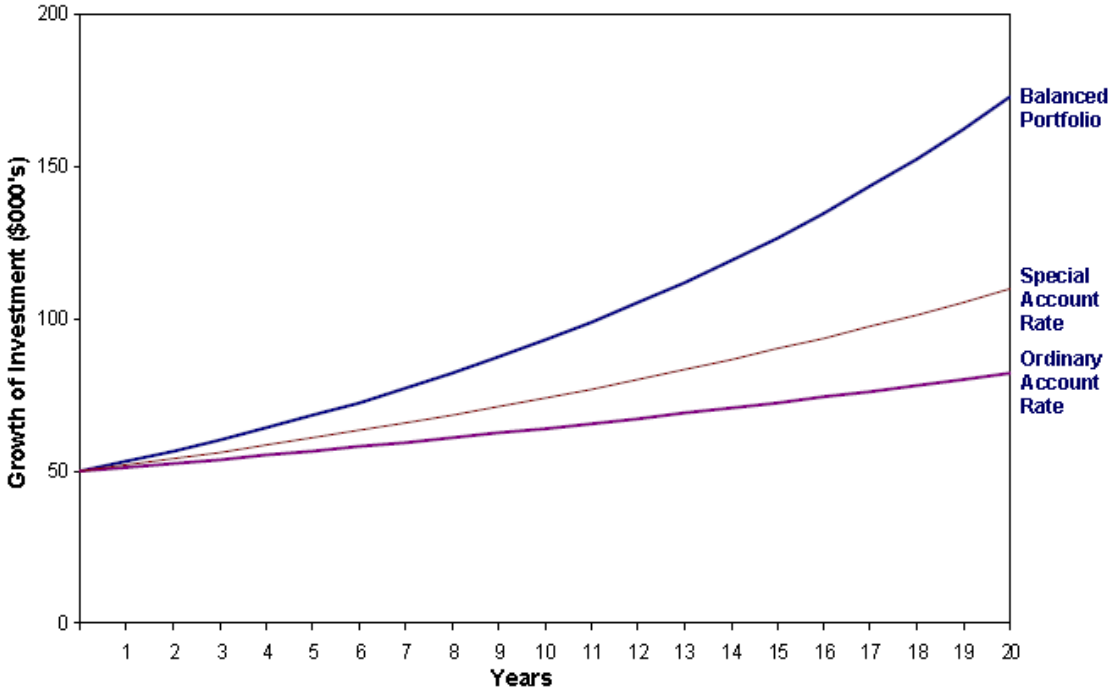
- to keep the money invested within the CPF and earn the Ordinary Account rate – this is currently 2.5% per annum;

- to keep the money invested within the CPF but earn the Special Account rate – this is currently 4% per annum; or

- to invest the full amount in a balanced fund with a medium to high risk profile, which we assume will earn around 6.5% per annum.

We will also make the somewhat simplistic statement that the CPF interest rates will remain unchanged over the 20-year period, which in all probability is an unlikely outcome.

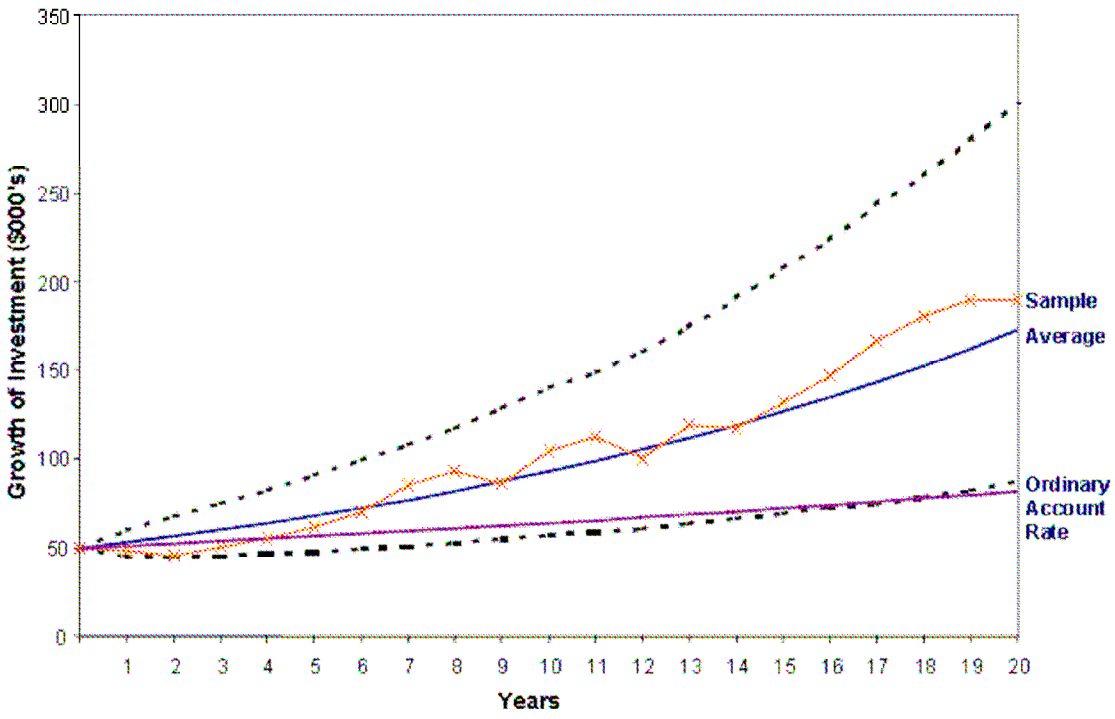
The following chart plots the growth in this member's account balance over the 20-year period.



As will be seen, investment in the balanced portfolio produces the highest expected outcome. In fact, the S$50,000 at age 40 has increased to around S$173,000 at age 60. In contrast, remaining in the CPF and earning the safer but lower interest rates credited by CPF would result in accumlated balances of S$82,000 in the case of the Ordinary Account rate or S$110,000 in the case of the Special Account rate.

Of course, the smooth pattern of the balanced portfolio shown above is very unlikely to arise in practice. The balanced portfolio will be exposed to equity markets and therefore the actual returns achieved will experience quite a bit of variability from year to year.

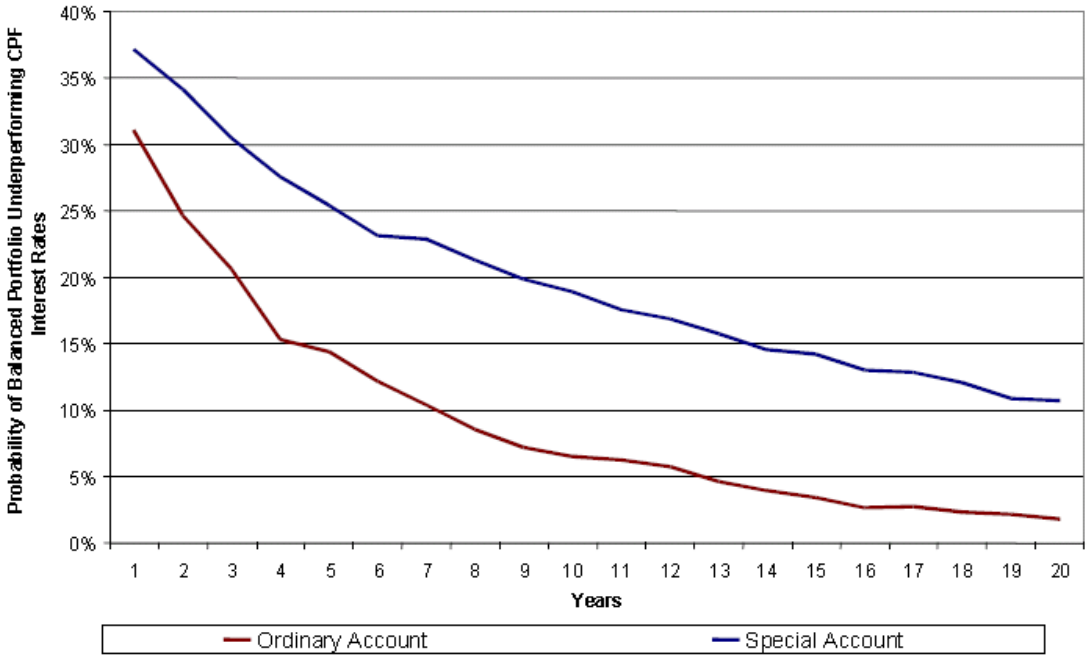
To demonstrate this point, we have simulated 1500 possible outcomes of annual returns over the 20-year period. That is, we have aimed to cover a large number of possible outcomes that might be expected to arise over this period. We then examined the return pattern of each of these 1500 sample outcomes. These are summarised in the following chart.



The **blue line** represents the accumulated sum that arose on average at the end of each year from investing in the balanced fund. The **two dotted lines** represent the range within which 95% of the outcomes at the end of each year fell. For comparison with the earlier chart, the purple line represents the accumulated sum from achieving the Ordinary Account rate each year.

The **orange line** shows the actual pattern of annual returns from one of the 1500 outcomes, chosen at random. This particular outcome results in an accumulated sum of S$190,000 at the end of 20 years – slightly above the average outcome. However, the pattern of returns is quite variable. In 6 of the 20 years, a negative return was actually achieved. In fact, negative returns were experienced in each of the first two years and it took until the end of the fourth year before the balanced fund in this sample actually was above what could have been achieved through earning the Ordinary Account rate. Still, by the end of 20 years, the accumulated sum produced by this sample is over S$100,000 higher than would have been produced from the Ordinary Account rate.

A definition of risk in relation to the balanced fund in this instance could be the likelihood that the accumulated sum at the end of each year may be below the sum that could be achieved through earning the CPF interest rates. This is shown in the next chart. This shows the probability of the accumulated sum at the end of each year from the balanced fund being below the sum derived from achieving either the Ordinary Account rate or the Special Account rate.



By way of explanation, of the 1500 sample outcomes that we derived, in only 98 instances was the accumulated sum from the balanced fund at the end of the 10th year below the accumulated sum from the Ordinary Account interest rate. Therefore, the risk measure in this instance is a probability of 6.5% (98/1500).

In the case of the Special Account interest rate, 284 of the 1500 samples resulted in a accumulated sum from the balanced fund below that derived from achieving the Special Account rate. The risk measure in this instance is a probability of 18.9% (284/1500).

The above chart shows that the probability of the balanced fund producing a lower accumulated sum than the two alternatives after 20 years is quite small – around **2%** in the case of the Ordinary Account rate and around **10%** in the case of the Special Account rate.

Conclusion

We would like to stress that the key message from this article is that risk is a subjective concept and will differ from one individual to the next. The key risk consideration, in our view, is the risk that the investor does not achieve his or her own personal investment objectives.

In the case of the CPF, leaving your money in the CPF and earning the Ordinary Account rate or the Special Account rate will minimise volatility risk – that is, the risk of an unpleasant short-term outcome such as a fall in the value of your retirement savings from one year to the next. However, this approach is not a riskless one. It depends upon your definition of risk.

If the real risk consideration in relation to your CPF savings is that your accumulated sum on retirement may be inadequate, then a strategy of leaving your money in the CPF could actually involve high longer-term risk. This highlights, in our view, the importance of taking a long-term view on your retirement savings and structuring a portfolio that aims to maximise those savings, within a level of variability from year to year that is acceptable to you.