



## Module 1

### Alternative Approaches to Valuation and Investment

Alternative Attitudes Towards Risk  
(I don't hate risk, I'm just averse to it...)

Presenter: Sean Pinder



THE UNIVERSITY OF  
MELBOURNE



BNY MELLON

## Motivation

*Which of these investments would you prefer to invest in?*

Asset	Risk ( $\sigma$ )	Expected return $E(r)$
Treasury Bills	0	2%
Kellogg's	17.14%	7.41%
American Airlines	38.53%	13.13%

## Motivation

Which of these investments would a **risk-averse** investor prefer to invest in?

Asset	Risk ( $\sigma$ )	Expected return $E(r)$
Treasury Bills	0	2%
Kellogg's	17.14%	7.41%
American Airlines	38.53%	13.13%

- a) Treasury Bills
- b) Kellogg's
- c) American Airlines
- d) Need more information.

## Alternative attitudes towards risk

There are three alternative attitudes towards risk that we are going to consider:

1. Risk-aversion
2. Risk-neutrality
3. Risk-seeking.

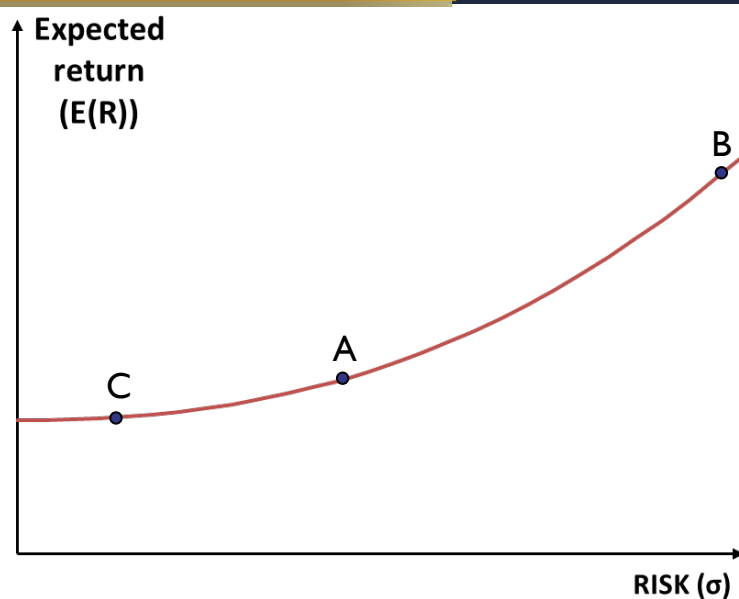
To demonstrate these different attitudes we are going to talk about the impact of risk and return upon an investor's **utility** (i.e. their satisfaction).

An investor's **utility function** describes the way in which risk and return interact to drive utility.

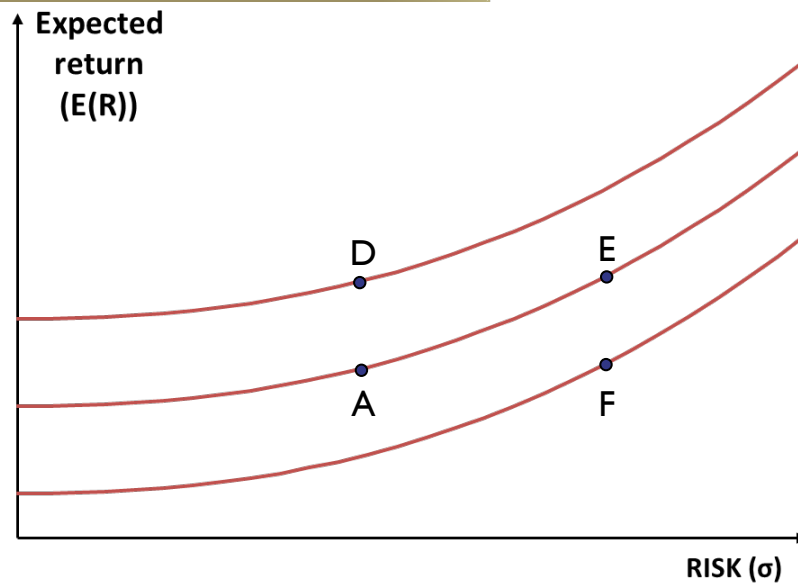
## Risk aversion

- A risk-averse investor demands compensation, in the form of higher expected returns, for bearing risk.
- At any specific level of expected return, risk averse investors would prefer to minimize risk.
- To demonstrate how risk and return combine (via the investor's utility function) to deliver a specific level of satisfaction; we can draw **indifference curves**.
- **Indifference curves** provide an illustration of the mix of risk-return combinations that generate the **same** level of utility (and hence a specific investor is **indifferent** between each of these combinations).

## Risk aversion



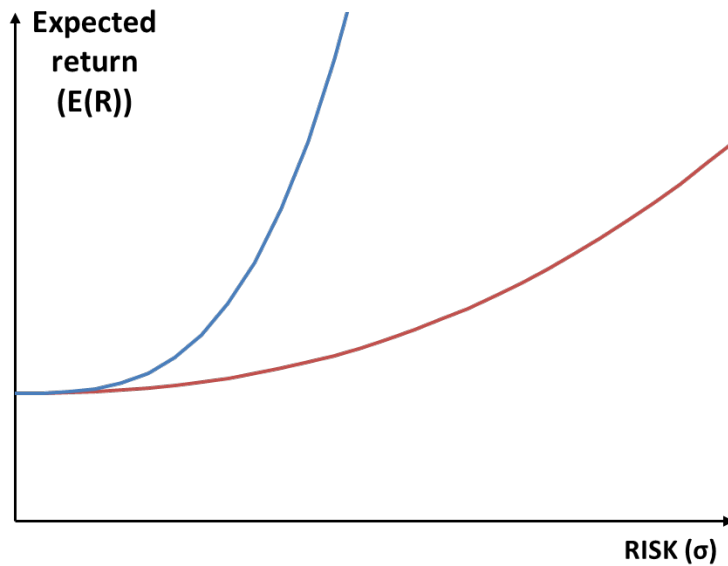
## Risk aversion



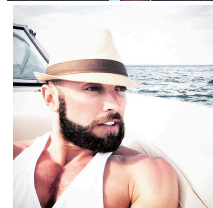
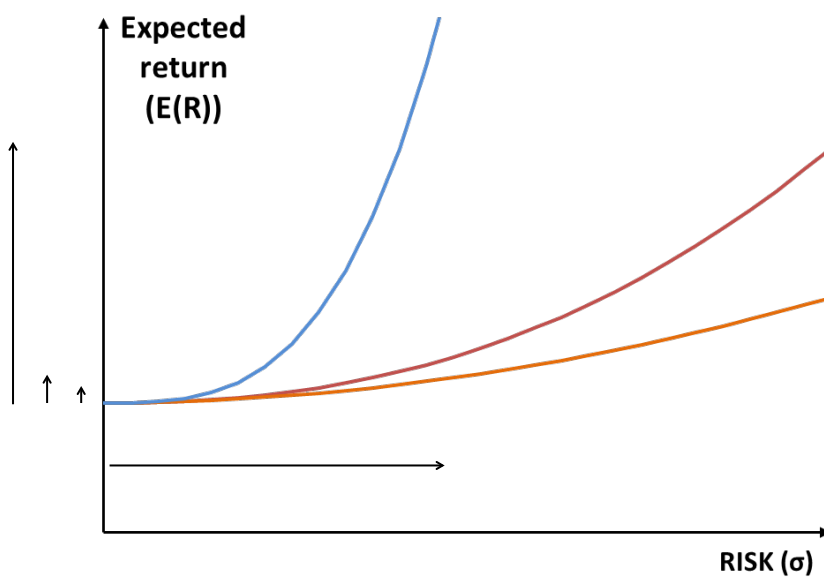
## Risk aversion

- Risk-averse investors can exhibit different levels of risk aversion.
- This is simply another way of saying that different risk averse investors will demand different levels of compensation – in the form of higher expected returns – to take on additional risk.
- This will be reflected in different sloped indifference curves.

## Risk aversion



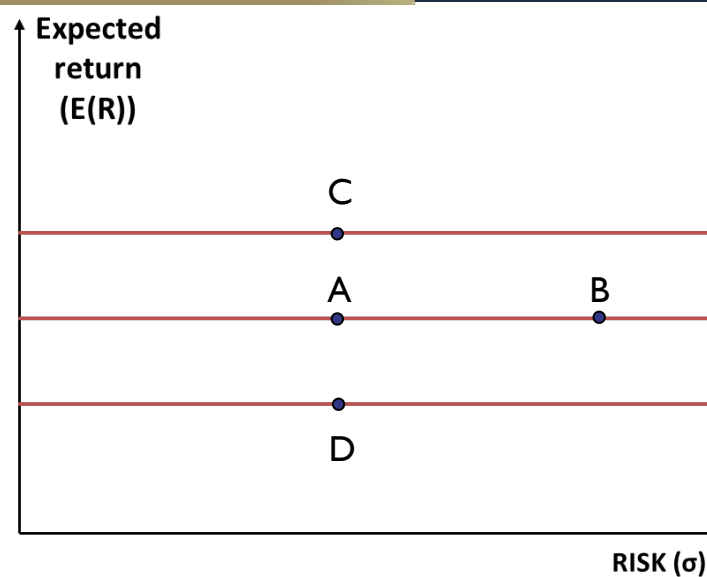
## Risk aversion



## Risk neutral

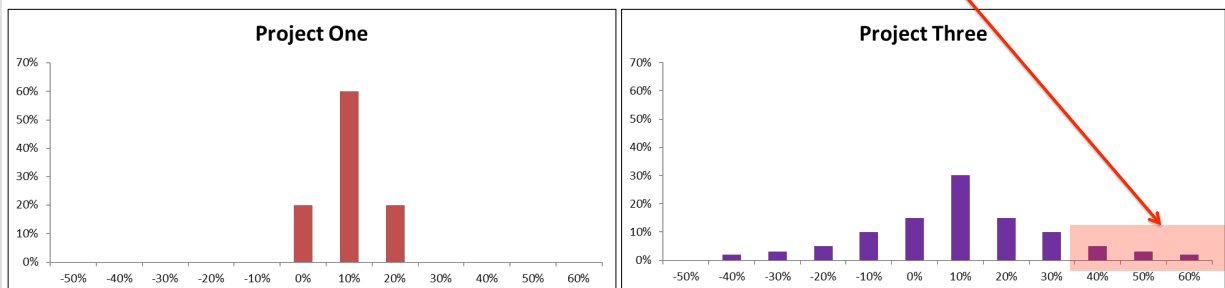
- Risk-neutral investors have a utility function that is not affected by risk.
- They make their investment decisions solely based upon expected return.
- We commonly make an assumption about risk-neutral investments when dealing with derivative securities.
- An alternative interpretation is that a risk-neutral investor is a naïve investor who doesn't understand risk.

## Risk neutrality

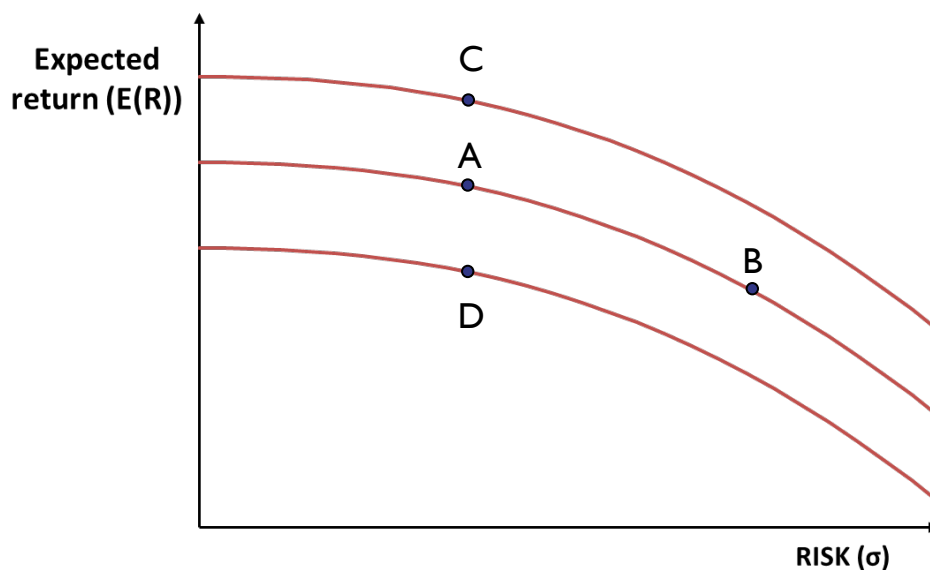


## Risk seeking

- A risk-seeking investor derives utility from **both** expected return **and** risk.
- The risk-seeking investor may even be willing to give up some expected return in order to be exposed to risk.
- The risk-seeking investor is concentrating on the far-right tail of the probability distribution of returns.



## Risk seeking



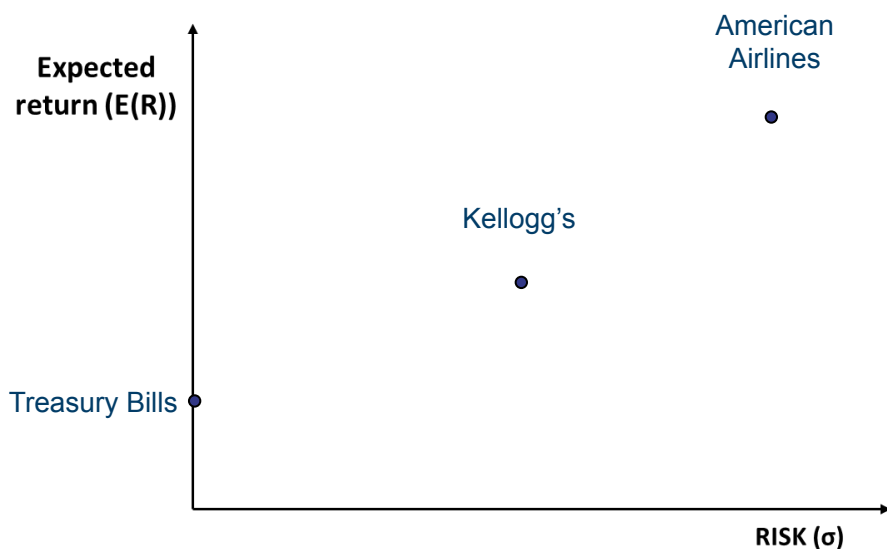
## Back to the question...

Which of these investments would a *risk-averse* investor prefer to invest in?

Asset	Risk ( $\sigma$ )	Expected return $E(r)$
Treasury Bills	0	2%
Kellogg's	17.14%	7.41%
American Airlines	38.53%	13.13%

- a) Treasury Bills
- b) Kellogg's
- c) American Airlines
- d) Need more information.

## The question...







## Summary

We have defined three alternative attitudes towards risk:

1. Risk-aversion
2. Risk-neutrality
3. Risk-seeking.

We have demonstrated how the risk-return tradeoff is made for different types of investors by reference to **indifference curves**.

Indifference curves provide a set of portfolios with particular risk-return characteristics that each generate the same level of **utility**.

## Source list

Slides 2, 3, 15 and 16:

Figures and tables created by Sean Pinder © The University of Melbourne, using data sourced from Yahoo! Finance (June 2015, [au.finance.yahoo.com](http://au.finance.yahoo.com)).

Slides 6, 7, 9, 10, 12, 13, 14:

Tables and figures created by Sean Pinder © The University of Melbourne, using fictional data.

Slide 9:

Top: Photo by Frank Clarke, used with permission. Middle: Photo © The University of Melbourne.

Slide 10:

Top: Photo by Frank Clarke, used with permission. Middle: Photo © The University of Melbourne. Bottom: Photo by Luke Taylor, used with permission.