



# Timor-Leste Petroleum Fund

## Markets and Investment Returns

**Peter J Ryan-Kane CFA**  
**Head of Portfolio Advisory, Asia-Pacific**

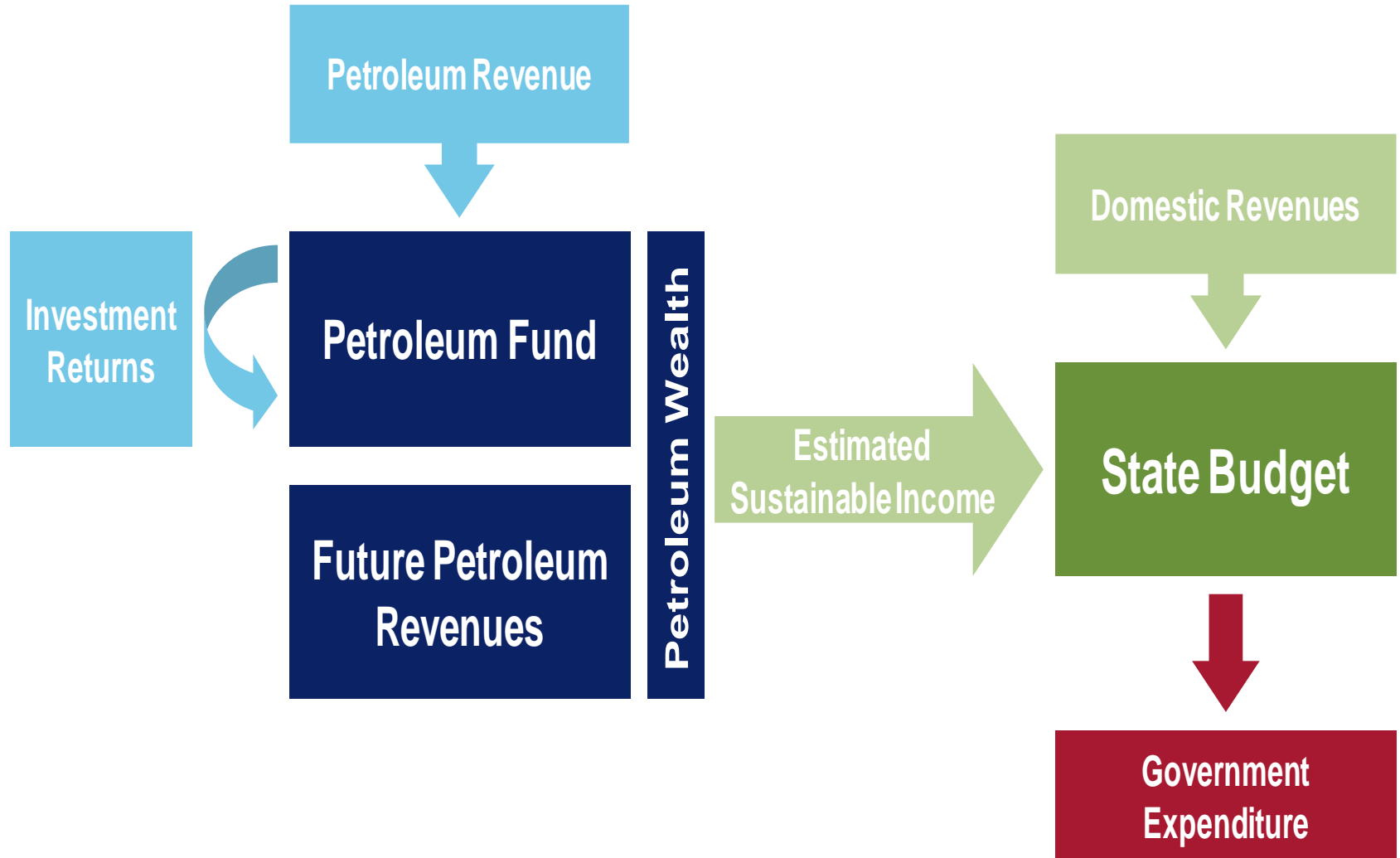
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# Agenda

- Financial markets
- Investment returns

# Petroleum Fund

# Petroleum Fund



# Financial Markets

# Equity and Debt – basics

- Suppose you want to start a company that produces shipping containers
  - In order to purchase plant and equipment, hire labour etc..., you require capital
  - Therefore, you and some friends inject your own personal capital into the company
  - By providing **equity capital**, you are entitled to share in the profits of the company, but also take on the risk that the company may fail
- Later on, you want to expand your company, but have no additional capital
  - You therefore approach a bank to lend you money
  - The bank wants certainty about its returns, so in return you issue a bond to the bank
  - By providing **debt capital**, the bank is entitled to receive fixed interest payments, and repayment of the amount of capital provided at a known future date
- Ultimately, you want to expand your company globally and require significant additional capital
  - You then approach other individuals to provide further **equity capital**, and issue them with **shares** in your company
  - The company could be **publicly listed**, where the general public is given the opportunity to purchase shares in the company

# Equity and Debt – risk and return

	Equity	Debt
Returns	<ul style="list-style-type: none"> <li>• Company profit = Revenues less cost of production less debt servicing</li> <li>• Part of the profits may be distributed to equity holders as <b>dividends</b></li> <li>• Share price = present value of future cashflows to equity holders               <ul style="list-style-type: none"> <li>• Changes in the market's view of the company's prospects will cause the share price to fluctuate</li> <li>• This can result in <b>capital gains or losses</b> to equity holders</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Fixed <b>interest payments</b>, as a percentage of the amount of capital provided</li> <li>• <b>Repayment of capital</b> amount on maturity of the bond</li> </ul>
Risks	<ul style="list-style-type: none"> <li>• Dividend payments are not guaranteed</li> <li>• Company share price can be highly volatile</li> <li>• In the event of company wind-up, equity holders have the last claim on assets</li> </ul>	<ul style="list-style-type: none"> <li>• If a company is unable to meet its debt servicing obligations, it may <b>default</b> on its debt</li> <li>• Debt holders have a priority claim over assets, but the sale of assets may not be sufficient to repay debts</li> </ul>

# Equity and Debt Explained – A Fundamental Law

Assets – Liabilities = Equity

That is, what they owe minus what they own equals what they are worth...

So.....buy the assets

Or.....buy the liabilities

Or.....buy the equity

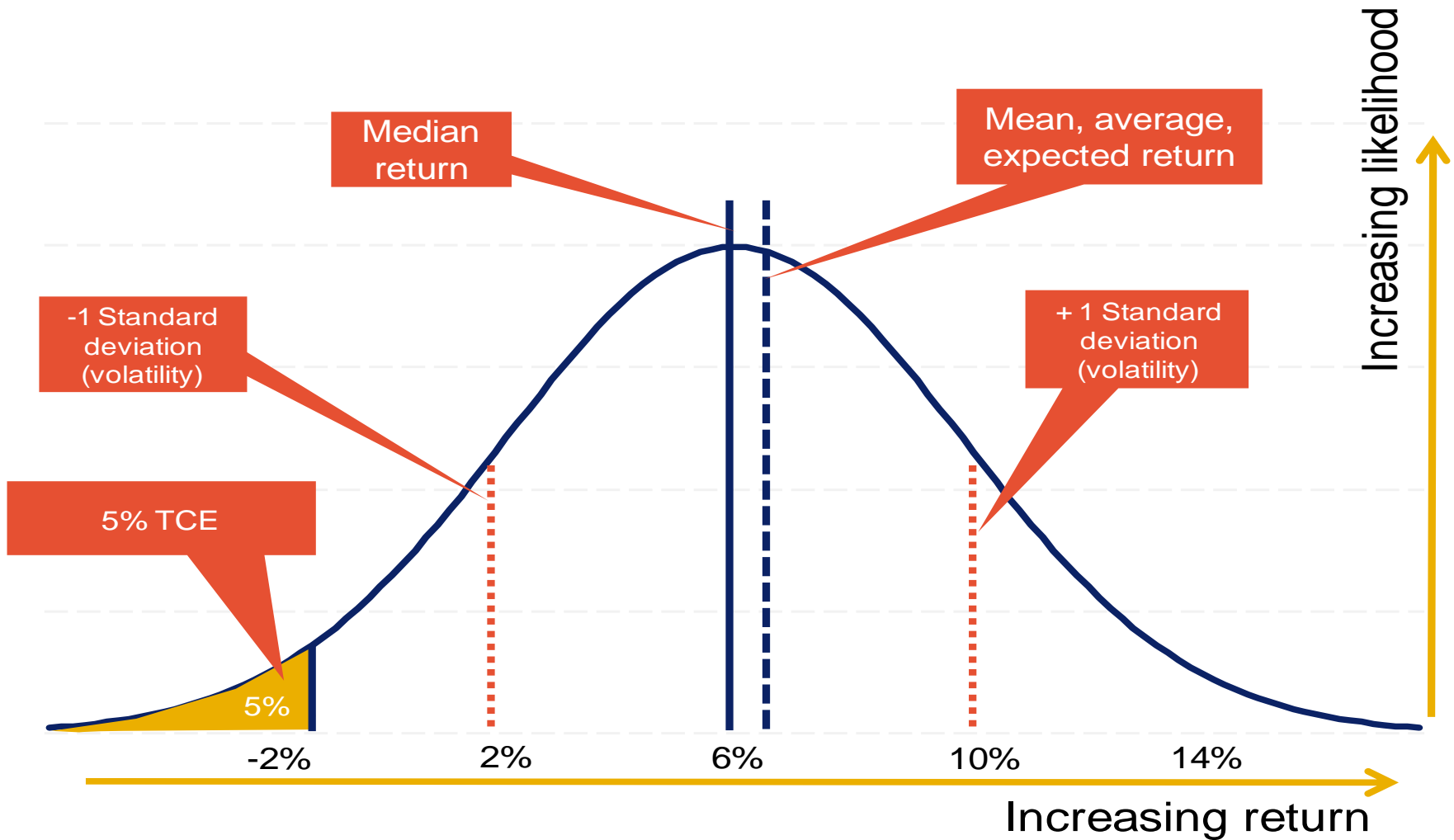
- ⇒ But, for many investors buying the assets (plant, equipment, mastheads, patents, brands etc) is not very practical (or smart)
- ⇒ So, buy the cashflows generated by servicing the liabilities – i.e. the debt
- ⇒ Or, buy the cashflows generated by the business after all costs – i.e. the equity



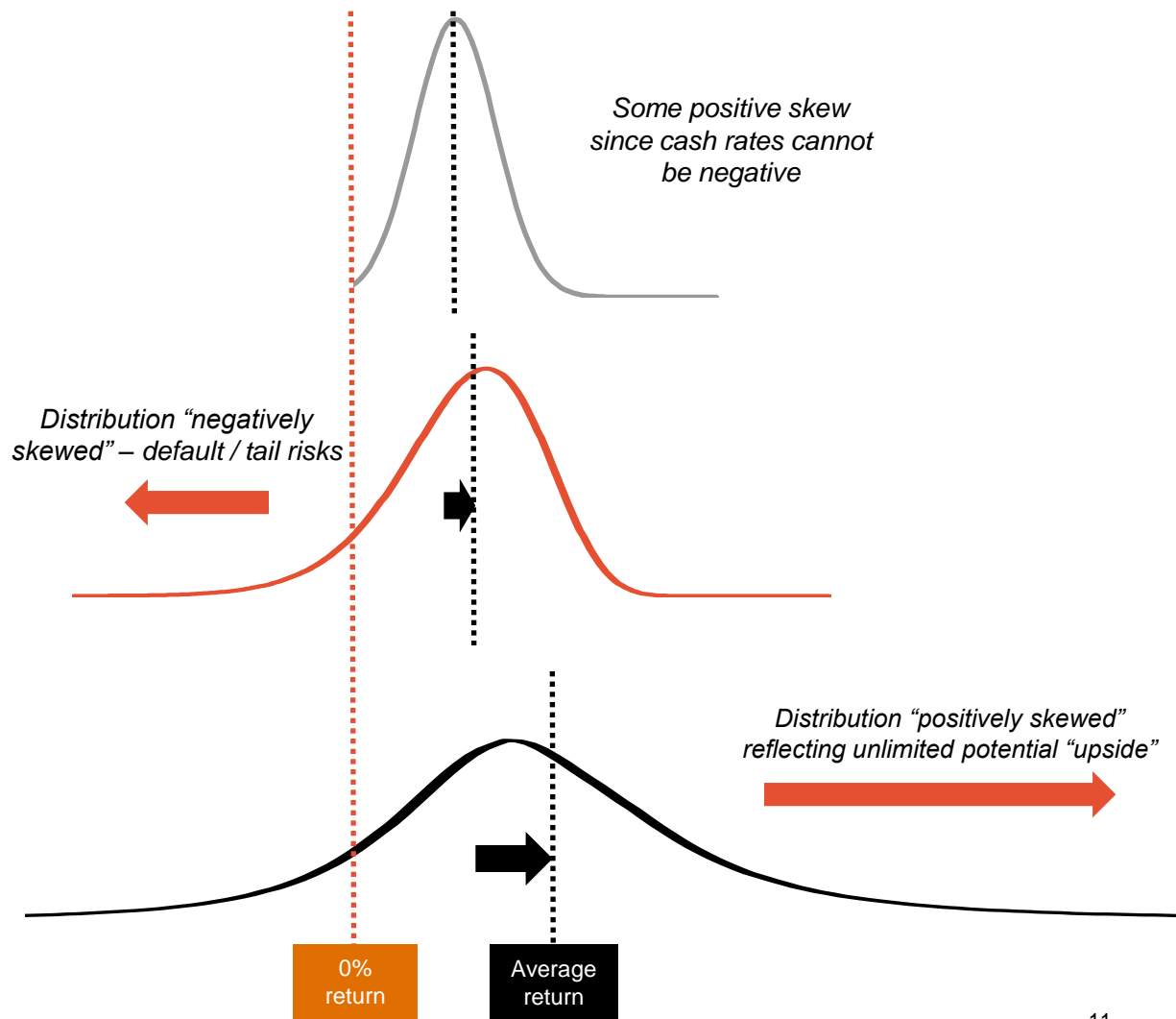
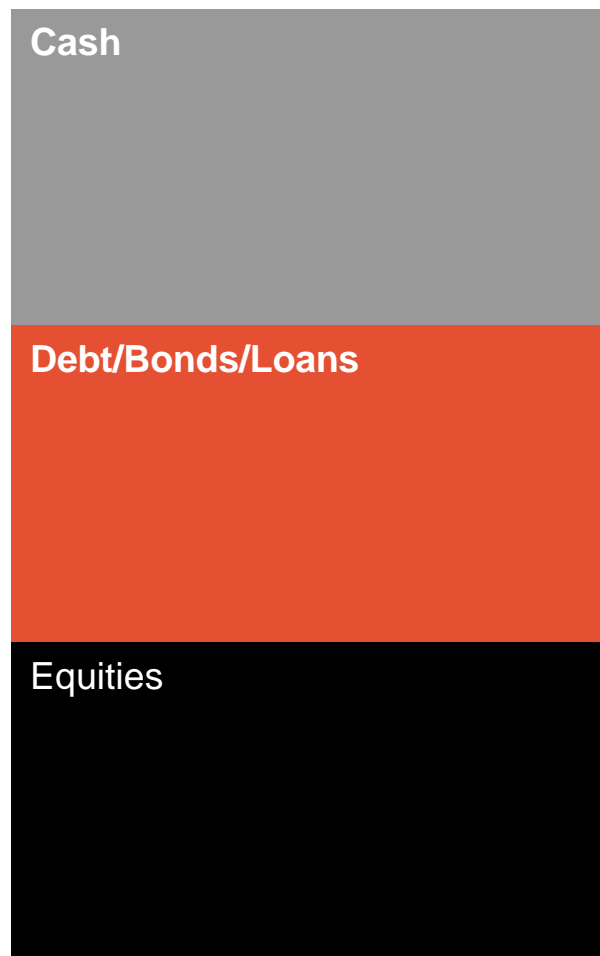
# Key investment terms

- **Equity:** a security representing partial ownership of a company, for example Microsoft shares on the New York Stock Exchange.
  - A portfolio of equities may consist of hundreds of equity stakes in different companies around the world.
- **Bond:** a bond is a loan to a government or company who promises to pay back the lenders some time in the future, for example a US Treasury Bond.
  - A portfolio of bonds may consist of bonds issued by different companies or governments and the time over which the money is repaid may vary from (say) 1 to 30 years.
- **Investment return:** the increase (or decrease) in the value of an investment, plus any income received over a given period. Often expressed as a percentage of the funds invested, for example a 5% return indicates \$5 profit for each \$100 invested.
- **Investment risk:** the uncertainty of the investment return, often measured as 'volatility', though there are many measures of investment risk. It is important to define investment risk in a way that is relevant to the investor's investment objectives.
- **Investment objectives:** what the investor wants to achieve from their investments – may be expressed as target level of return, but be subject to a risk tolerance.

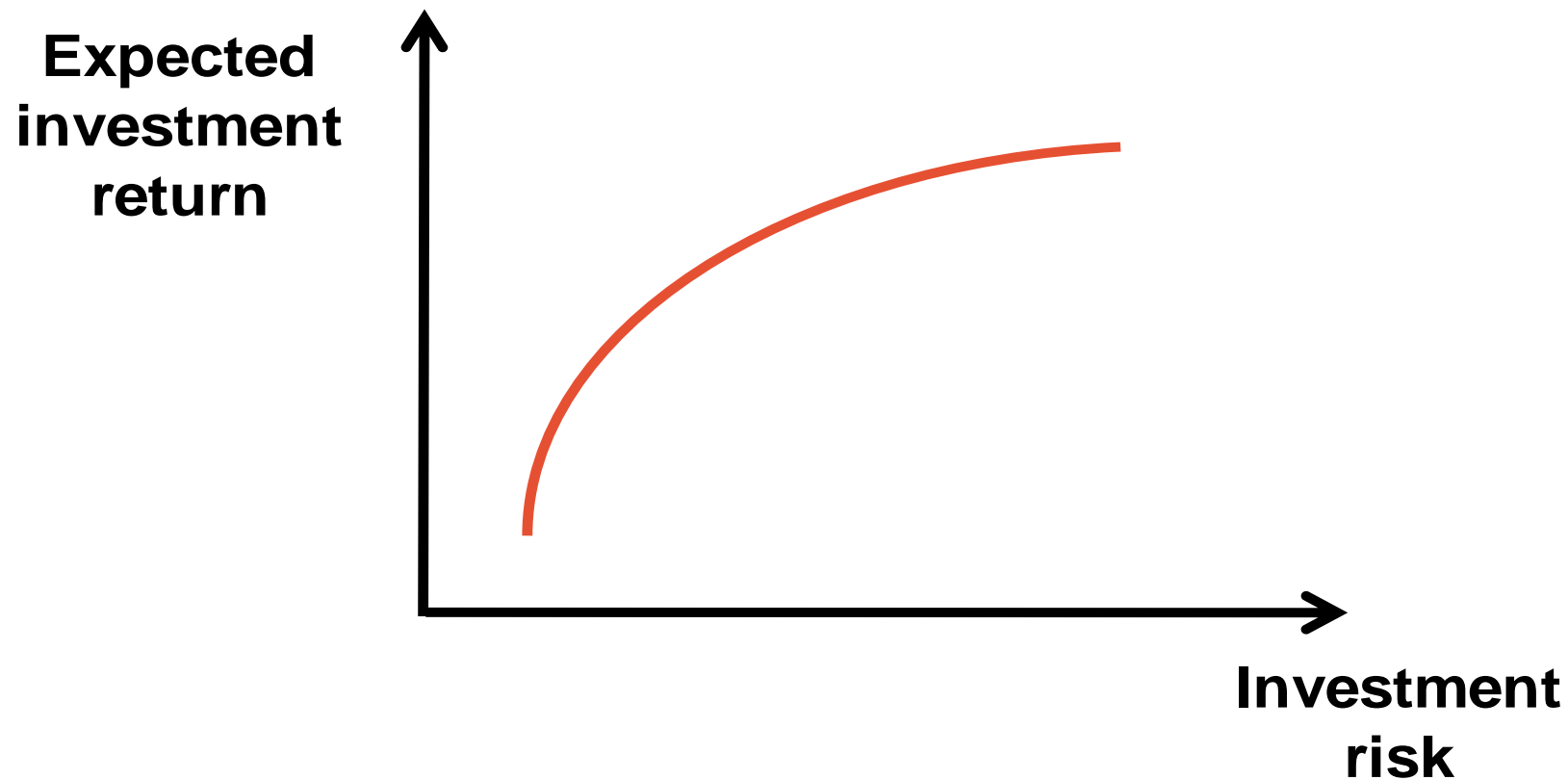
# The investment return distribution



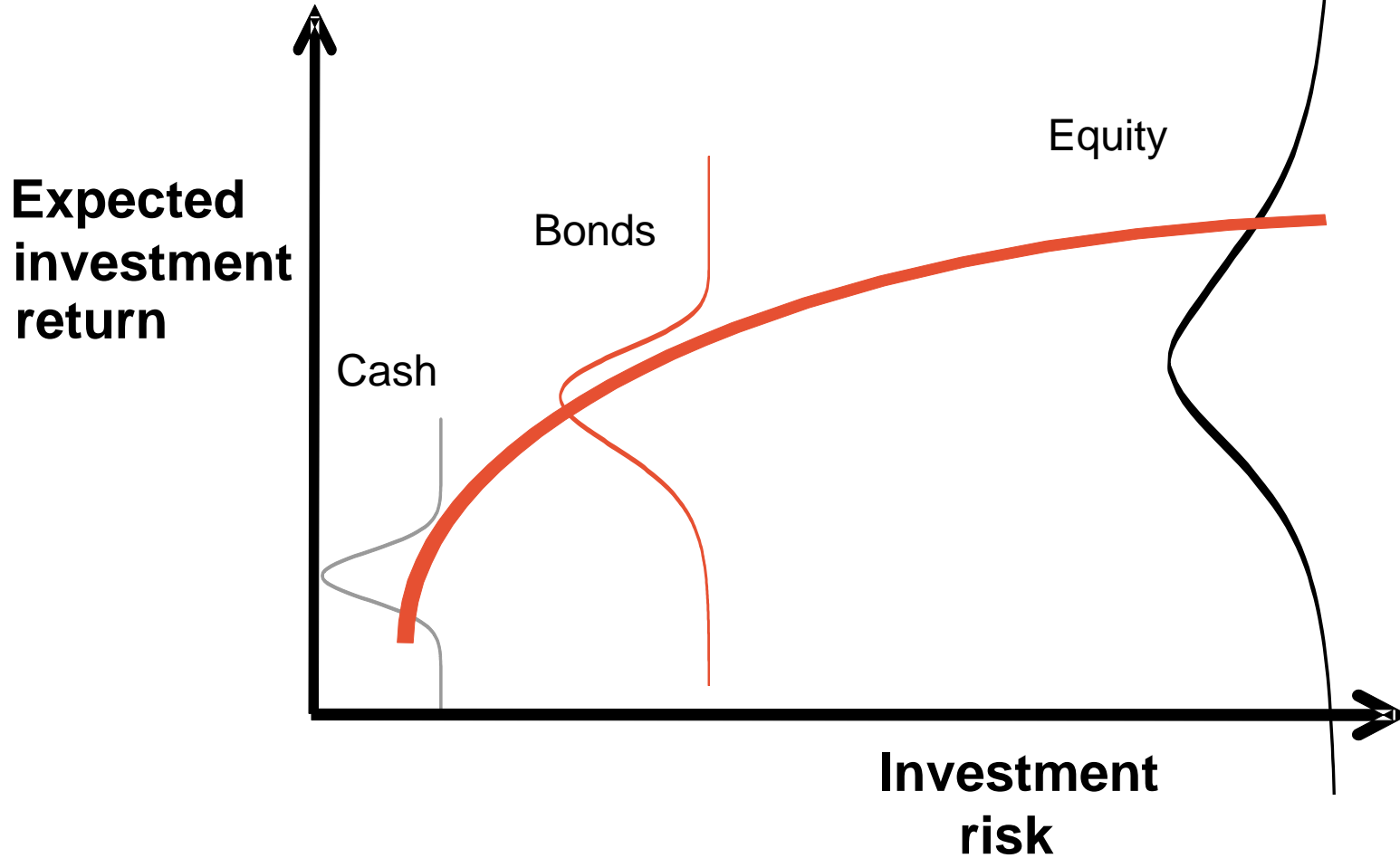
# Return Profiles



# Higher Returns means Higher Risk



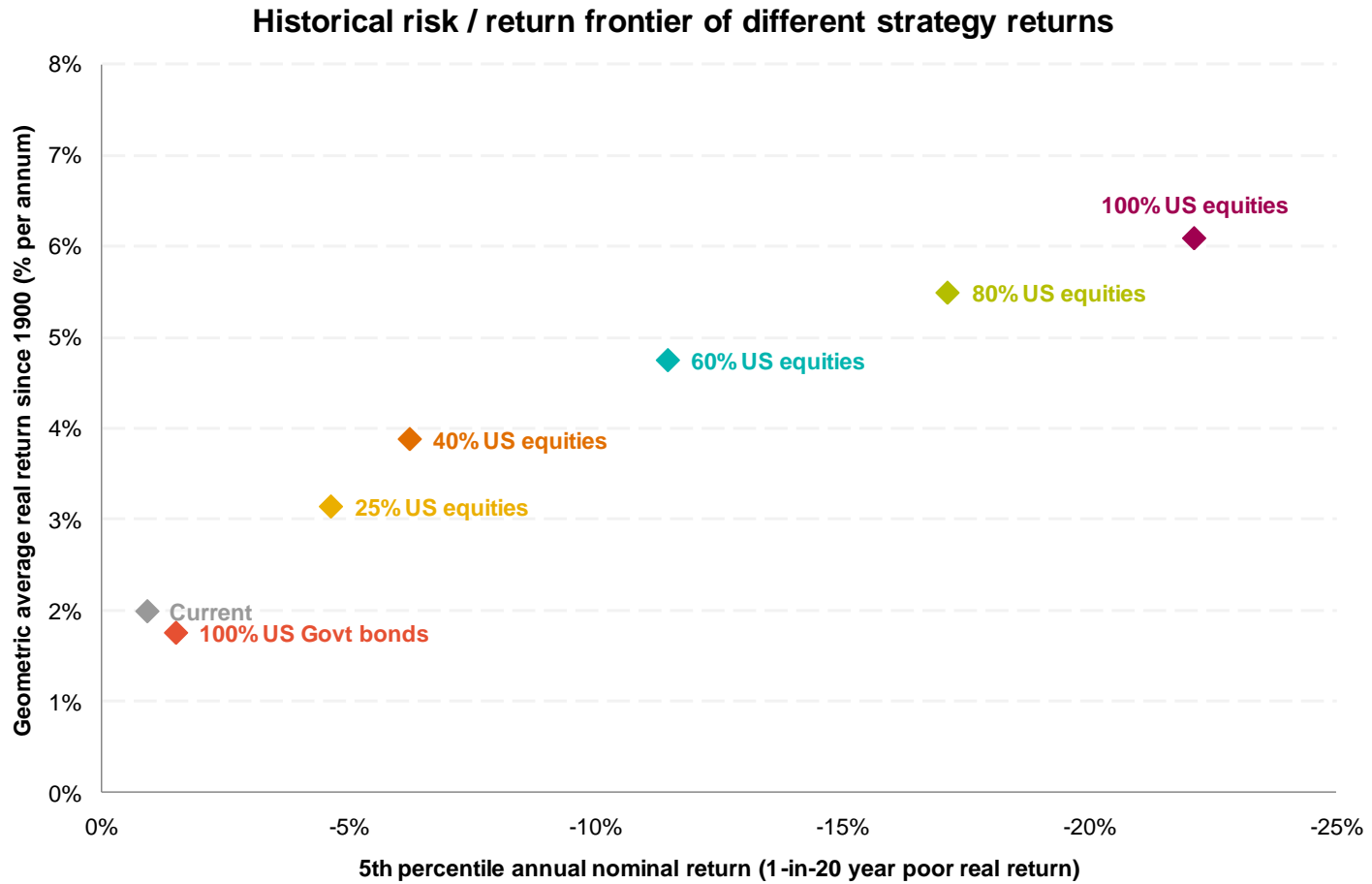
# Higher Returns means Higher Risk



# Fund Strategy

# Different investment strategies – historical analysis

# Historical risk / return trade-off





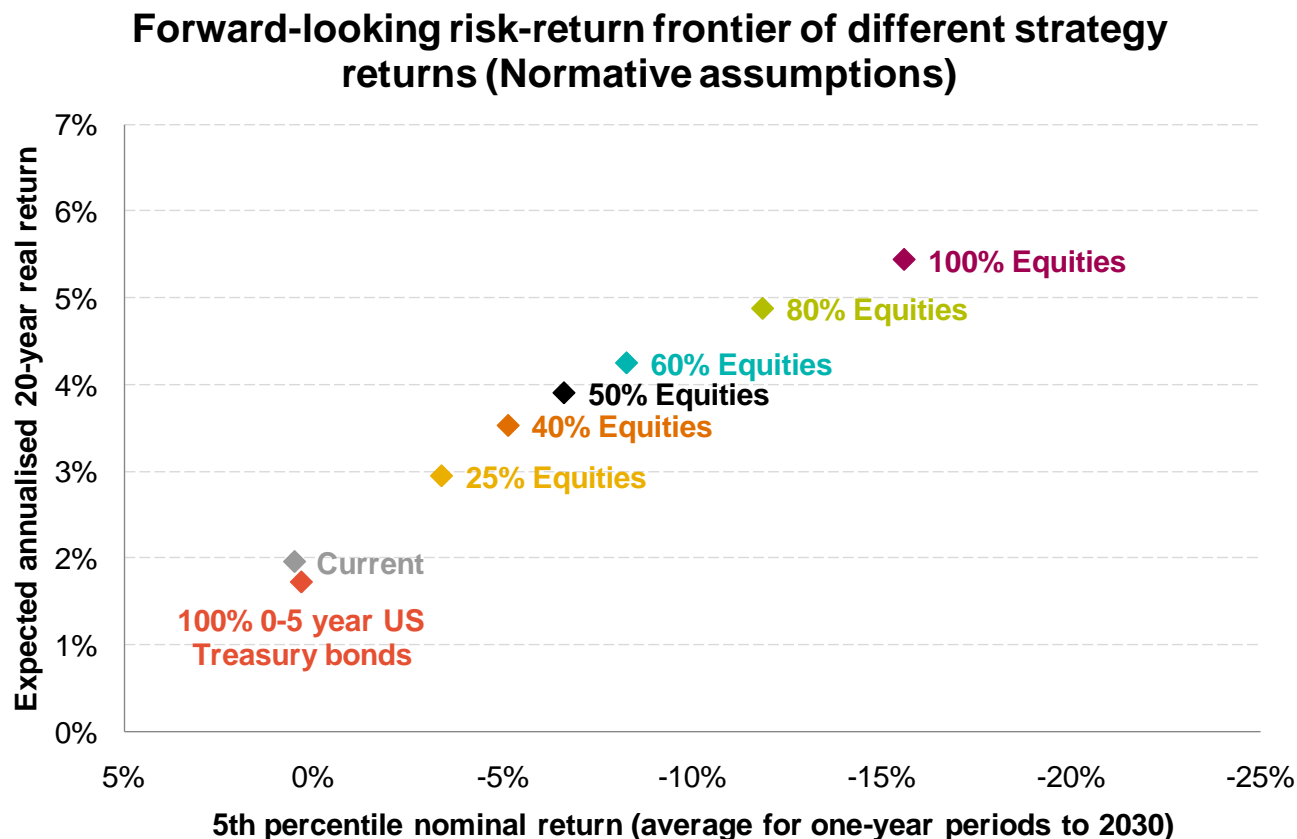
# Historical measures of risk for a range of investment strategies since 1900

Investment Strategy	Range of returns in two out of every three years		Frequency of negative returns (years in every 100)	Poor outcome return (5 years in every 100)	
	% pa	USD millions*		% pa	USD millions*
<b>100% 0-5 year US Treasury bonds</b>	-0.1% to 10.2%	-9 to 676	9	Return of -1.5% or worse	Loss of USD -100 million or worse
<b>Current</b>	0.2% to 10.4%	13 to 686	9	Return of -0.9% or worse	Loss of USD -60 million or worse
<b>25% Equities</b>	0.0% to 13.1%	2 to 863	12	Return of -4.6% or worse	Loss of USD -307 million or worse
<b>40% Equities</b>	-1.3% to 16.2%	-83 to 1069	19	Return of -6.2% or worse	Loss of USD -411 million or worse
<b>60% Equities</b>	-3.5% to 21.0%	-233 to 1385	26	Return of -11.4% or worse	Loss of USD -756 million or worse
<b>80% Equities</b>	-6.1% to 26.1%	-400 to 1723	29	Return of -17.1% or worse	Loss of USD -1131 million or worse
<b>100% Equities</b>	-8.7% to 31.4%	-576 to 2075	30	Return of -22.1% or worse	Loss of USD -1460 million or worse

\* Based on an assumed Petroleum Fund balance of USD 6.6 billion

# Different investment strategies – forward-looking analysis

# Forward-looking risk / return trade-off



*There is a clear trade-off between risk and return – strategies with higher allocations to equities are exposed to higher risk of poor and negative returns in the short to medium term, but are expected to outperform less risky portfolios in the long term.*

# Forward-looking measures of risk for a range of investment strategies (normative assumptions)

Investment Strategy	Range of returns in two out of every three years		Frequency of negative returns (years in every 100)	Poor outcome return (5 years in every 100)	
	% pa	USD millions*		% pa	USD millions*
<b>100% 0-5 year US Treasury bonds</b>	1.8% to 6.8%	120 to 446	4	Return of +0.3% or worse	Gain of USD 21 million or worse
<b>Current</b>	2.0% to 7.0%	133 to 465	3	Return of +0.5% or worse	Gain of USD 34 million or worse
<b>25% Equities</b>	0.1% to 11.3%	4 to 743	16	Return of -3.4% or worse	Gain of USD -223 million or worse
<b>40% Equities</b>	-0.7% to 13.4%	-46 to 884	19	Return of -5.1% or worse	Gain of USD -338 million or worse
<b>50% Equities</b>	-1.4% to 15.0%	-94 to 993	21	Return of -6.6% or worse	Gain of USD -437 million or worse
<b>60% Equities</b>	-2.3% to 16.8%	-149 to 1108	23	Return of -8.3% or worse	Gain of USD -546 million or worse
<b>80% Equities</b>	-4.1% to 20.4%	-269 to 1349	26	Return of -11.9% or worse	Gain of USD -782 million or worse
<b>100% Equities</b>	-6.0% to 24.2%	-399 to 1599	28	Return of -15.6% or worse	Gain of USD -1029 million or worse

\* Based on an assumed Petroleum Fund balance of USD 6.6 billion

# Historical vs forward looking risk-return outcomes

- Our forward looking expected real return on equities is different to history because:
  - The historical inflation spikes that depressed real cash returns have similarly impacted real bond returns
  - Whilst we don't know what the future holds, we observe that the past 100 years was punctuated by 2 world wars, 2 depressions, 2 periods of hyper-inflation and we – perhaps naively- would expect economic volatility to be somewhat lower over the next century
  - With information technology, disclosure regulation, capital management etc, the valuation exercise for companies should be less complex, and uncertain, so investor should demand (and consequently receive) a lower uncertainty premium
  - The costs of transacting, exchange fees, brokerage etc are lower and it is easier to diversify a portfolio, so this should require a lower risk premium
  - Dividends and earnings yields are now lower than the average over the past century

# Key statements to support Petroleum Fund Law amendments

- The Petroleum Fund's current investment strategy is expected to deliver an annualised real return of around 2% pa over a 20-year horizon
- The current investment strategy is expected to produce a negative absolute return 1 year in every 100
- The expected range of real returns for the current strategy in two out of every three years is 0% to +5% pa
- A 25% Equities strategy is expected to deliver an annualised real return of around 3% pa over a 20-year horizon
- A 25% Equities strategy is expected to produce a negative absolute return 17 years in every 100 (or around 1 year in every 6)
- The expected range of real returns for a 25% Equities strategy in two out of every three years is -3% to +9% pa
- A 50% Equities strategy is expected to deliver an annualised real return of around 4% pa over a 20-year horizon
- A 50% Equities strategy is expected to produce a negative absolute return 22 years in every 100 (or around 1 year in every 5)
- The expected range of real returns for a 50% Equities strategy in two out of every three years is -5% to +13% pa

# Impact of changing investment strategy on projected ESI

Investment Strategy	Projected ESI in 2030 (USD m, 2010 dollars)
100% US Treasuries	422
Current	438
25% Equities	512
40% Equities	562
60% Equities	630
80% Equities	696
100% Equities	760

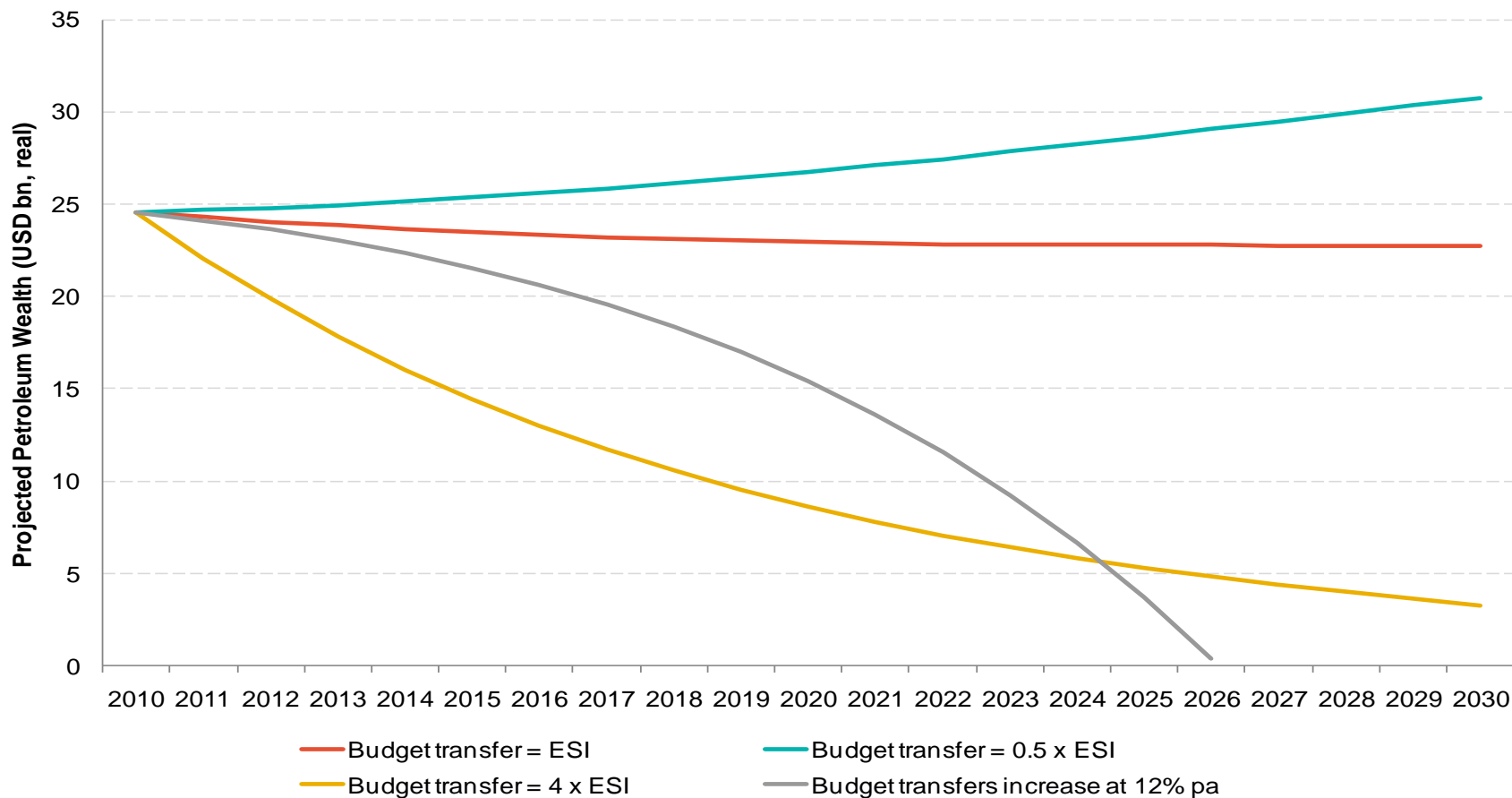
**Notes:**

1. Based on a Petroleum Fund balance at 2010 of USD 6.6 billion

***Increasing the amount of investment risk in the Petroleum Fund portfolio increases the amount of expected ESI, however, increasing investment risk will also increase the variability of ESI***

# Projected Petroleum Wealth under different spending approaches

Projected Petroleum Wealth under different spending approaches  
25% Equities Strategy





## Some common questions...

- Why does equity return more than bonds
- Why do people invest?
- Why do people talk about the “long term”
- Why do we need to diversify?
- What kind of investment approach should we use?
- Why shouldn't the Fund invest domestically?
- Why do people outsource or use experts?
- What if we lose the money?
- Are there better ways?

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