Price, Risk, & Return Relationships

What is Price?

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The Price of a stock is what you pay to buy / sell the asset in the market.

Also referred to as the Market Price, Market Value

What is Return?

Return refers to the amount of money you make from your investment, expressed in % terms.

What is Risk?

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Risk can have many meanings and measures.

Ricciardi (2008) lists 188+ types of risk in the traditional & behavioural finance literature.

Ricciardi, V. 2008. 'Risk: Traditional Finance versus Behavioral Finance.' In *Handbook of Finance, 3: Valuation, Financial Modeling and Quantitative Tools,* pp. 11 – 38. Hoboken, NJL John Wiley & Sons, Inc.

What is Risk?

The general consensus is that it's the likelihood or value of you losing your money.

Price, Risk, and Return share incredibly powerful relationships.

Knowing and fully understanding these relationships is crucial for great Investment Analysis & Portfolio Management.

Consider 2 identical stocks

	Arthur Plc	**Conan Plc**
Expected Return	10%	10%
Risk	15%	15%
Price	$100	?

How much would you pay for Conan Plc?

Consider 2 identical stocks

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	Arthur Plc	Conan Plc
Expected Return	10%	10%
Risk	15%	15%
Price	$100	$100

Since the stocks are identical, their prices should be equal.

If prices aren’t equal, an “arbitrage” opportunity exists.

Strictly speaking, it means that one can earn money with 0 investment, risk-free.

Consider 2 identical stocks

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	Arthur Plc	Conan Plc
Expected Return	10%	10%
Risk	15%	15%
Price	$100	$110

We can conclude that either Conan Plc is Overvalued, or Arthur Plc is Undervalued.

Rational investors would either 'go long' (buy) Arthur Plc at $100, or 'short' (sell) Conan Plc at $110.

Or hedge their risk by doing both.

Either way, the prices will change because of demand & supply.

And both stock prices will ultimately converge.

Price convergence

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	Arthur Plc	Conan Plc
Expected Return	10%	10%
Risk	15%	15%
Price (if Conan was overvalued)	$100	$100
Price (if Arthur was undervalued)	$110	$110

Consider 2 similar stocks

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	Conan Plc	Doyle Inc.
Expected Return	10%	10%
Risk	15%	20%
Price	$100	?

How much would you pay for Doyle Inc.?

Consider 2 similar stocks

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	Conan Plc	**Doyle Inc.**
Expected Return	10%	10%
Risk	15%	20%
Price	$100	< $100

The fair price for Doyle Inc. should be lesser than $100 because riskier assets are worth less than safer assets.

Consider 2 similar stocks

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	Conan Plc	**Lock Inc.**
Expected Return	10%	10%
Risk	15%	8%
Price	$100	?

How much would you pay for Lock Inc.?

Consider 2 similar stocks

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	Conan Plc	Lock Inc.
Expected Return	10%	10%
Risk	15%	8%
Price	$100	> $100

The fair price for Lock Inc. should be greater than $100 because safer assets are worth more than riskier assets.

An important relationship

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The ‘value’ of an asset increases as the ‘risk’ decreases.

An important relationship

And conversely, the **value of an asset decreases as the risk increases.**

An important relationship

Risk and (expected) return however, maintain a proportional relationship.

An important relationship

As ‘risk’ increases, the ‘expected return’ increases.

And vice versa.

Know this relationship

As Risk...	Expected Return	Price
Increases	Increases	Decreases
Decreases	Decreases	Increases

Summary

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Any 2 assets with identical risks and rewards must be priced equally, failing which an ‘arbitrage’ opportunity exists.

Generally speaking, safer assets are worth more than riskier assets.

Risk and value maintain an inverse relationship so that value increases as risk decreases, and value decreases as risk increases.

Risk and expected return maintain a proportional relationship so that expected return increases as risk increases (and vice versa).

Now have a go at the quiz!