

Chapter 11

Some Lessons from Recent Capital Market History

Hillier, Fundamentals of Corporate Finance
4e

Fundamentals of Corporate Finance

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Fourth Edition

Chapter Overview

Returns

The Historical Record

Average Returns: The First Lesson

The Variability of Returns: The Second Lesson

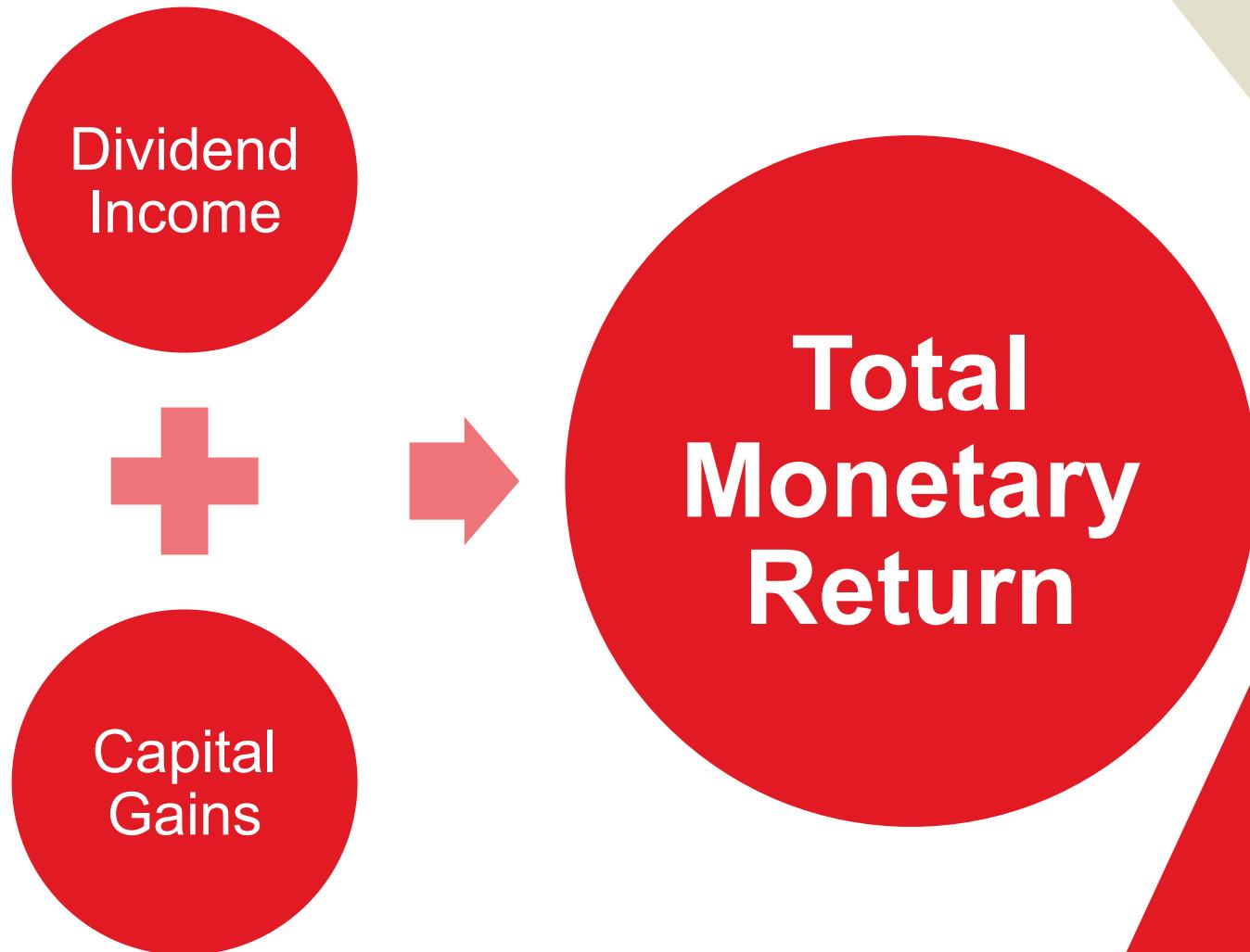
More about Average Returns

Capital Market Efficiency

Returns

Cash Returns

Percentage Returns



Monetary Return

You purchase 100 shares at £37 each

Total Investment = £3,700

Scenario 1:

Dividend: £1.85 per share

Share price = £40.33

Total Cash Return =

$$(\text{£1.85} + \text{£40.33} - \text{£37}) \times 100 = \text{£518}$$

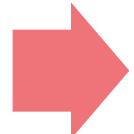
Scenario 2:

Dividend = £1.85 per share

Share price = £34.78

$$\begin{aligned}\text{Total Cash Return} &= (\text{£1.85} \\ &+ \text{£34.78} - \text{£37}) \times 100 \\ &= -\text{£37}\end{aligned}$$

Dividend
Yield



Capital
Gains
Yield

Percentage
Return

Dividend Yield

- Div_{t-1}/P_t

Capital Gains Yield

- $(P_t - P_{t-1})/P_{t-1}$

Percentage Return

- Dividend Yield + Capital Gains Yield

$$P_0 = \text{£}37 \quad \text{Div}_1 = \text{£}1.85 \quad P_1 = \text{£}40.33$$

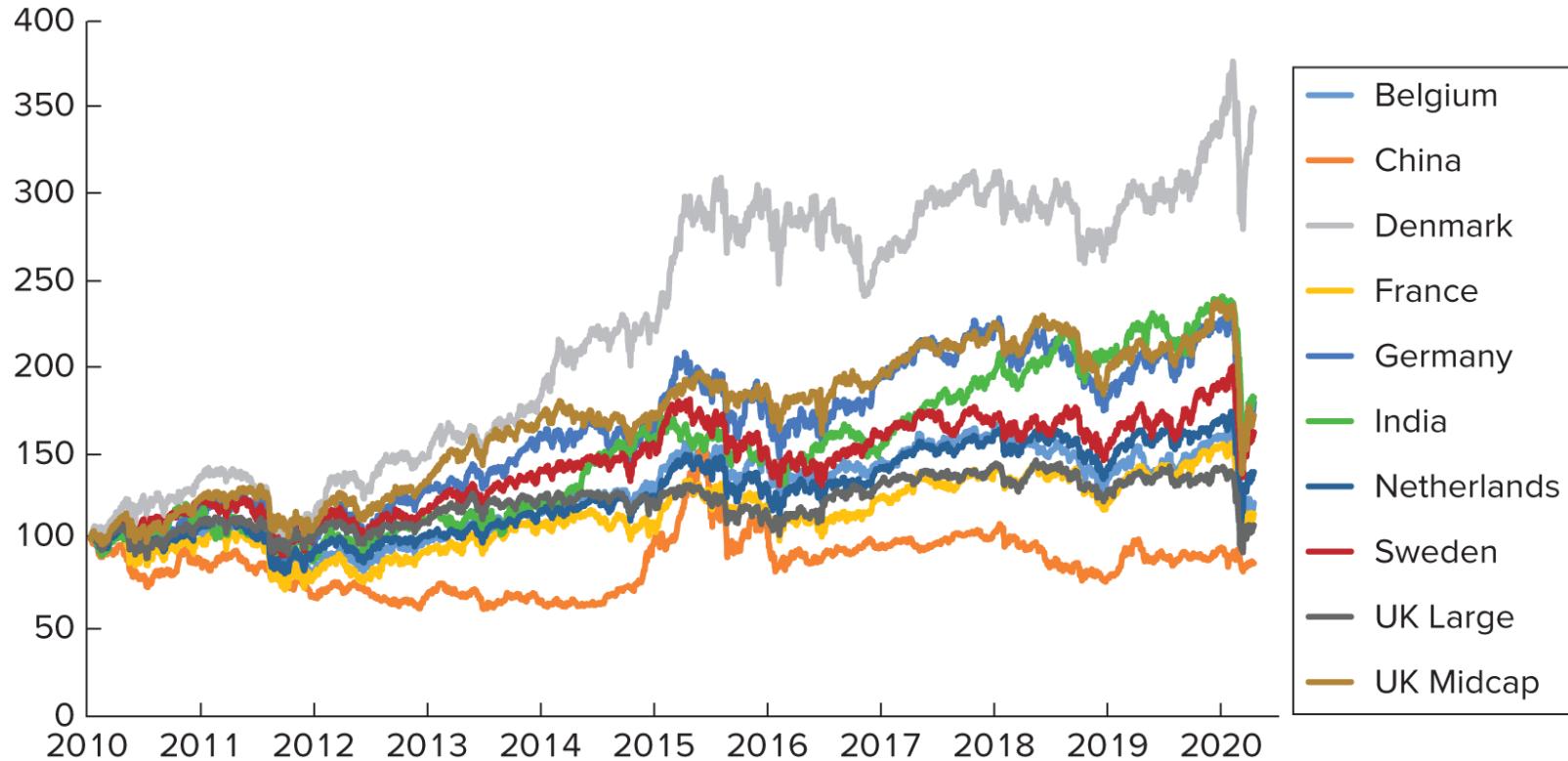
$$\begin{aligned}\text{Dividend yield} &= \text{Div}_{t+1} / P_t \\ &= \text{£}1.85 / \text{£}37 \\ &= 0.05 \\ &= 5\%\end{aligned}$$

$$\begin{aligned}\text{Capital gain} &= (P_{t+1} - P_t) / P_t \\ &= \text{£}40.33 - \text{£}37 / \text{£}37 \\ &= \text{£}3.33 / \text{£}37 \\ &= 0.09 \\ &= 9\%\end{aligned}$$

$$\begin{aligned}R_{t+1} &= [\text{Div}_{t+1} / P_t] + [(P_{t+1} - P_t) / P_t] \\ &= 5\% + 9\% \\ &= 14\%\end{aligned}$$

The Historical Record

Stock Market Performance of Selected Countries



Year-by-year stock market index levels for different countries, 2010–2020											
Date	Belgium	China	Denmark	France	Germany	India	Netherlands	Sweden	UK Large	UK Midcap	
01/01/2010	100	100	100	100	100	100	100	100	100	100	100
03/01/2011	104.7866	85.68684	137.1855	99.09891	117.3281	117.7284	108.7594	123.6551	108.9982	124.1962	
02/01/2012	84.18152	67.11394	118.2393	81.86051	101.9822	88.8525	95.12705	105.013	102.9448	108.5529	
01/01/2013	98.57423	69.24113	147.364	92.4991	127.7798	112.1158	101.5277	116.0772	108.9588	132.9657	
01/01/2014	116.4117	64.56784	182.8091	109.1359	160.3403	121.0461	116.6859	140.0569	124.6857	171.221	
01/01/2015	130.8024	98.7043	221.1055	108.5465	164.5936	157.5027	124.3858	153.8845	121.3049	172.8337	
01/01/2016	147.3272	107.9961	301.2177	117.8016	180.3296	149.7921	130.5811	152.0216	115.3235	187.2787	
02/01/2017	144.537	94.70578	267.2963	124.0338	194.6868	152.2802	140.9585	160.4285	131.9599	194.2353	
01/01/2018	158.3791	100.9164	304.2027	134.9623	216.8324	193.605	156.4486	165.6937	142.0273	222.698	
01/01/2019	129.1449	76.09992	264.8014	120.1802	177.2402	207.5864	138.2351	148.0204	124.2985	188.0548	
01/01/2020	157.5011	93.07265	337.34	151.8689	222.3947	236.51	166.3538	186.1735	139.3425	235.1314	
27/04/2020	120.8957	85.91305	347.2096	114.4533	178.9361	181.7545	138.7302	161.7608	108.0163	171.4076	

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Table 11.2
Annual returns for different countries, 2010–2020

Date	Belgium	China	Denmark	France	Germany	India	Netherlands	Sweden	UK Large	UK Midcap
2010	4.79%	-4.31%	37.19%	-0.90%	17.33%	17.73%	8.76%	23.66%	9.00%	24.20%
2011	-19.66%	-21.68%	-13.81%	-17.40%	-13.08%	-24.53%	-12.53%	-15.08%	-5.55%	-12.60%
2012	17.10%	3.17%	24.63%	13.00%	25.30%	26.18%	6.73%	10.54%	5.84%	22.49%
2013	18.10%	-6.75%	24.05%	17.99%	25.48%	7.97%	14.93%	20.66%	14.43%	28.77%
2014	12.36%	52.87%	20.95%	-0.54%	2.65%	30.12%	6.60%	9.87%	-2.71%	0.94%
2015	12.63%	9.41%	36.23%	8.53%	9.56%	-4.90%	4.98%	-1.21%	-4.93%	8.36%
2016	-1.89%	-12.31%	-11.26%	5.29%	7.96%	1.66%	7.95%	5.53%	14.43%	3.71%
2017	9.58%	6.56%	13.81%	8.81%	11.37%	27.14%	10.99%	3.28%	7.63%	14.65%
2018	-8.46%	-24.59%	-12.95%	-10.95%	-18.26%	7.22%	-11.64%	-10.67%	-12.48%	-15.56%
2019	21.96%	22.30%	27.39%	26.37%	25.48%	13.93%	20.34%	25.78%	12.10%	25.03%
Jan–Apr 2020	-23.24%	-7.69%	2.93%	-24.64%	-19.54%	-23.15%	-16.61%	-13.11%	-22.48%	-27.10%

Source: Yahoo! Finance. © 2013 Yahoo! All rights reserved. Note: returns are for period January–

Average Returns: The First Lesson

$$\text{Mean} = \bar{R} = \frac{(R_1 + \dots + R_T)}{T}$$

TABLE 11.3 Average annual returns, 2011–2020

Investment	Average return (%)
UK large companies	3.78
UK small companies	10.00
Belgian companies	5.65
Chinese companies	1.47
Danish companies	14.62
French companies	5.02
German companies	9.38
Indian companies	10.25
Dutch companies	5.71
Swedish companies	7.24

Source: Yahoo! Finance. © 2020 Yahoo! All rights reserved.

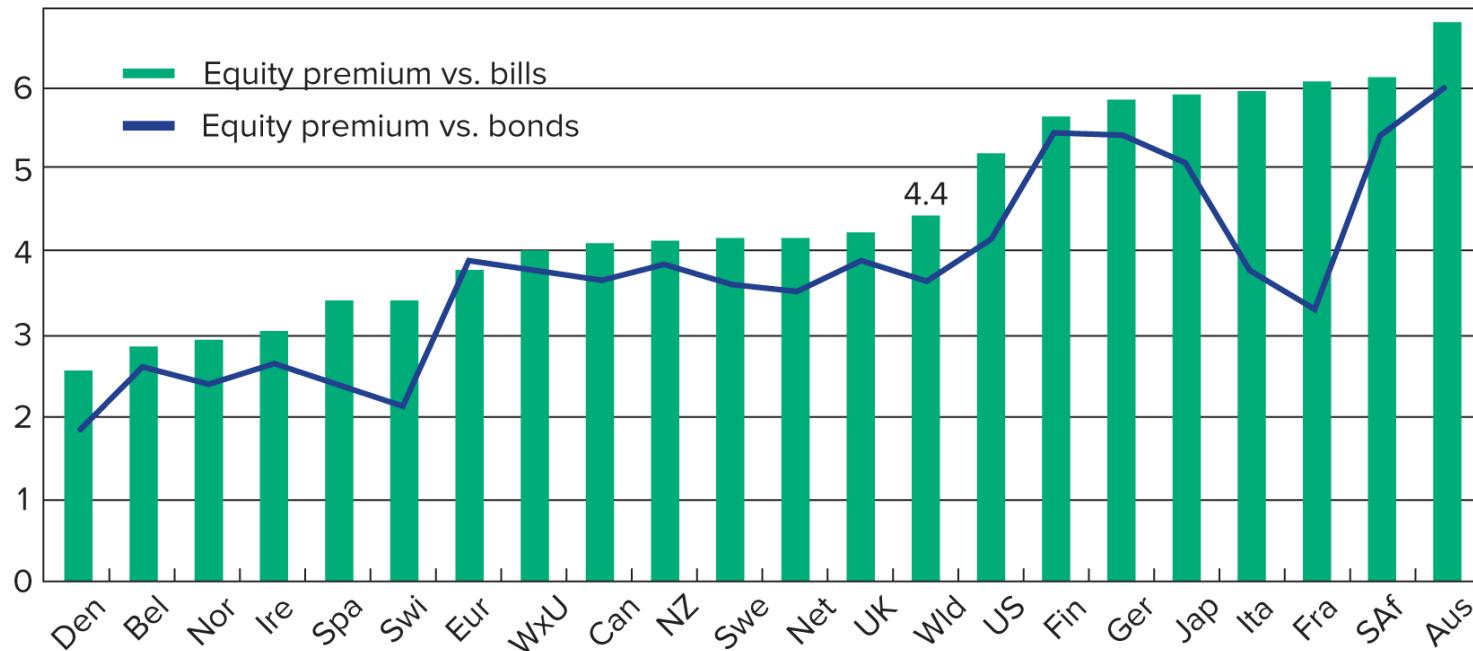
TABLE 11.4

Equity and Country Risk Premiums, April 2020

Country	Equity Risk Premium	Country Risk Premium	Country	Equity Risk Premium	Country Risk Premium
Abu Dhabi	6.29%	0.91%	Norway	5.96%	0.00%
Austria	6.74%	0.73%	Oman	9.02%	3.06%
Bahrain	16.8%	7.64%	Poland	7.14%	1.18%
Belgium	6.80%	0.84%	Portugal	9.02%	3.06%
China	6.94%	0.98%	Russia	9.43%	3.47%
Denmark	5.96%	0.00%	Saudi Arabia	6.94%	0.98%
Finland	6.51%	0.55%	Singapore	5.96%	0.00%
France	6.65%	0.69%	South Africa	9.02%	3.06%
Germany	5.96%	0.00%	Spain	8.18%	2.22%
Greece	14.99%	9.03%	Sweden	5.96%	0.00%
India	8.60%	2.64%	Switzerland	5.96%	0.00%
Ireland	7.14%	1.18%	Turkey	10.96%	5.00%
Italy	9.02%	3.06%	United Arab Emirates	6.65%	0.69%
Malaysia	7.63%	1.67%	United Kingdom	6.65%	0.69%
Netherlands	5.96%	0.00%	United States	5.96%	0.00%

Source: Aswath Damodaran website, http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html.

Equity Risk Premiums, 1900 - 2010



Risk Premium is the return on a risky asset less the return on the risk-free security

The higher the risk premium, the more risky the investment

Government Treasury bills are used as the risk-free asset

The Variability of Returns: The Second Lesson

Variance and Standard Deviation

Variance

The average squared difference between the actual return and the average return.

Standard Deviation

The positive square root of the variance.

Suppose a particular investment had returns of 10 per cent, 12 per cent, 3 per cent and -9 per cent over the last 4 years.

The average return =

$$(0.10 + 0.12 + 0.03 - 0.09)/4 = 4\%$$

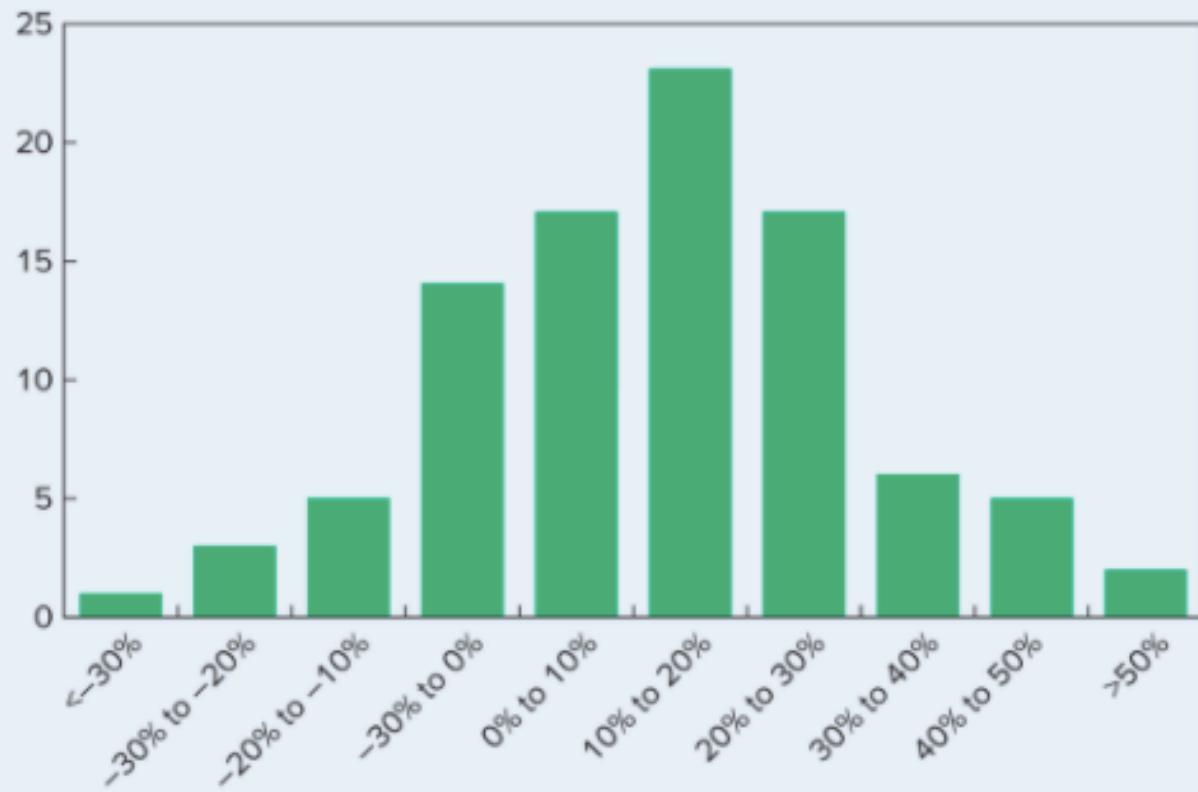
What is the Standard Deviation of Returns?

The Variability of Returns: The Second Lessons

	(1) Actual return	(2) Average return	(3) Deviation (1)–(2)	(4) Squared deviation
	0.10	0.04	0.06	0.0036
	0.12	0.04	0.08	0.0064
	0.03	0.04	-0.01	0.0001
	<u>-0.09</u>	0.04	<u>-0.13</u>	<u>0.0169</u>
Totals	<u>0.16</u>		<u>0.00</u>	<u>0.0270</u>

$$\text{Var}(R) = \sigma^2 = 0.027/(4 - 1) = 0.009$$

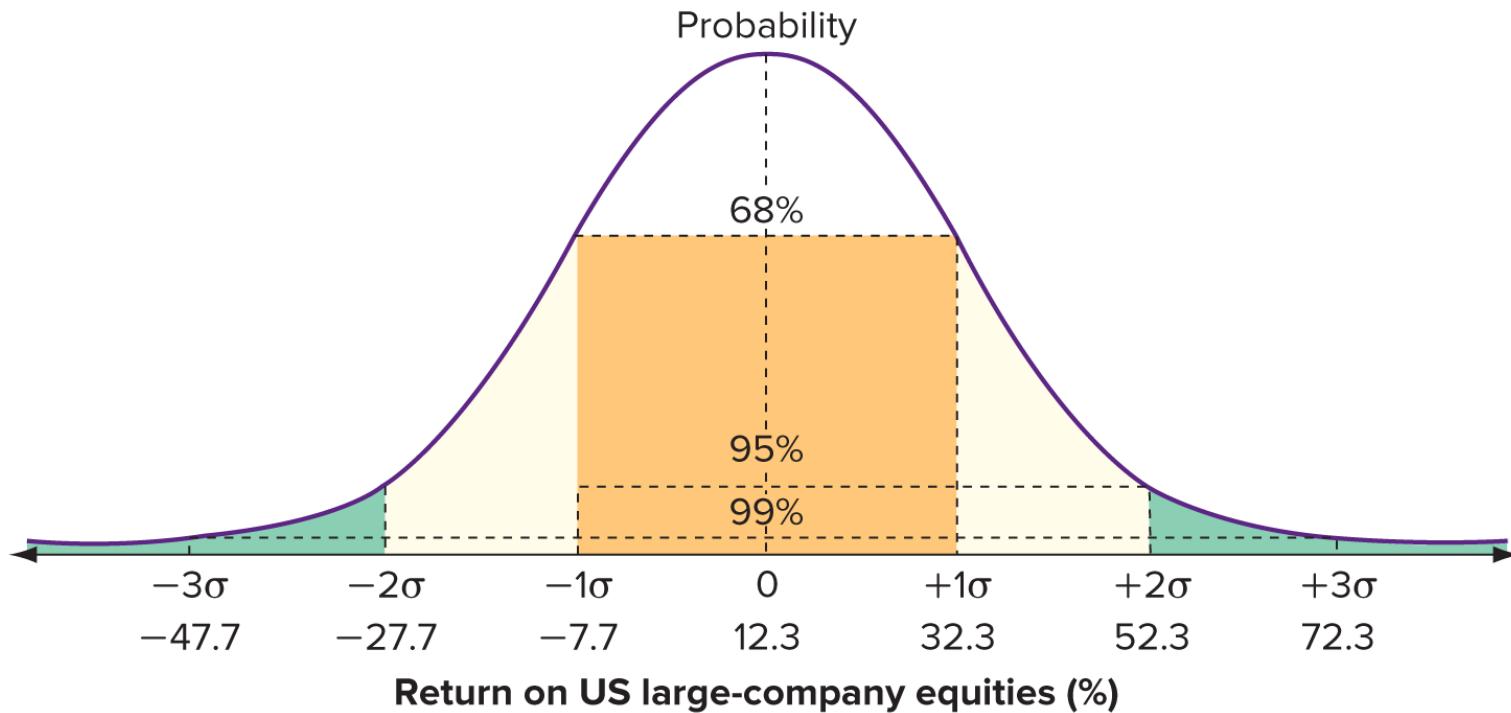
$$\text{SD}(R) = \sigma = \sqrt{0.009} = 0.09487$$



Source: www.finfacts.com

Figure 11.6 Histogram of returns on UK equities, 1926–2019

Stock Return Distributions: The Normal Distribution



More about Average Returns

Arithmetic Average Return

- The return earned in an average year over a multi-year period.
- Tells you what you earn in a typical year.

Geometric Average Return

- The average compound return earned per year over a multi-year period.
- Tells you what you actually earned per year on average, compounded annually.

More about Average Returns

If we have T years of returns, the geometric average return over these T years is calculated using:

Geometric average return

$$= [(1 + R_1) \times (1 + R_2) \times \dots \times (1 + R_T)]^{1/T} - 1$$

TABLE 11.5

Worldwide risk premiums relative to bonds, 1900-2010

Country	Geometric Mean (%)	Arithmetic Mean (%)	Standard Dev. (%)	Min. Return (%)	Year	Max. Return (%)	Year
Australia	5.9	7.8	19.8	-52.9	2008	66.3	1980
Belgium	2.6	4.9	21.4	-60.3	2008	84.4	1940
Canada	3.7	5.3	18.2	-40.7	2008	48.6	1950
Denmark	2.0	3.4	17.2	-54.3	2008	74.9	1972
Finland	5.6	9.2	30.3	-56.3	2008	173.1	1999
France	3.2	5.6	22.9	-50.3	2008	84.3	1946
Germany	5.4	8.8	28.4	-50.8	2008	116.6	1949
Ireland	2.9	4.9	19.8	-66.6	2008	83.2	1972
Italy	3.7	7.2	29.6	-49.4	2008	152.2	1946
Japan	5.0	9.1	32.8	-45.2	2008	193.0	1948
The Netherlands	3.5	2.1	22.2	-55.6	2008	107.6	1940
New Zealand	3.8	1.7	18.1	-59.7	1987	72.7	1983
Norway	2.5	5.5	28.0	-57.8	2008	192.1	1979
South Africa	5.5	1.9	19.6	-34.3	2008	70.9	1979
Spain	2.3	4.3	20.8	-42.7	2008	69.1	1986
Sweden	3.8	6.1	22.3	-48.1	2008	87.5	1905
Switzerland	2.1	3.6	17.6	-40.6	2008	52.2	1985
UK	3.9	1.6	17.0	-38.4	2008	80.8	1975
US	4.4	1.9	20.5	-50.1	2008	57.2	1933
Europe	3.9	5.2	16.6	-47.6	2008	67.9	1923
World ex-US	3.8	1.5	15.5	-47.1	2008	51.7	1923
World	3.8	5.0	15.5	-47.9	2008	38.3	1954

Note: Premiums for Germany are based on 109 years, excluding hyperinflationary 1922-23.

Source: E. Dimson, P. Marsh and M. Staunton (2002) *Triumph of the Optimists* (Princeton, NJ: Princeton University Press) and subsequent research. E. Dimson, P. Marsh and M. Staunton (2011) 'Equity Premia around the World', in *Rethinking the Equity Risk Premium (December)*, CFA Institute. Copyright 2011, CFA Institute Research Foundation. Reproduced and republished from *Rethinking the Equity Risk Premium* with permission from the CFA Institute Research Foundation. All rights reserved.

Capital Market Efficiency

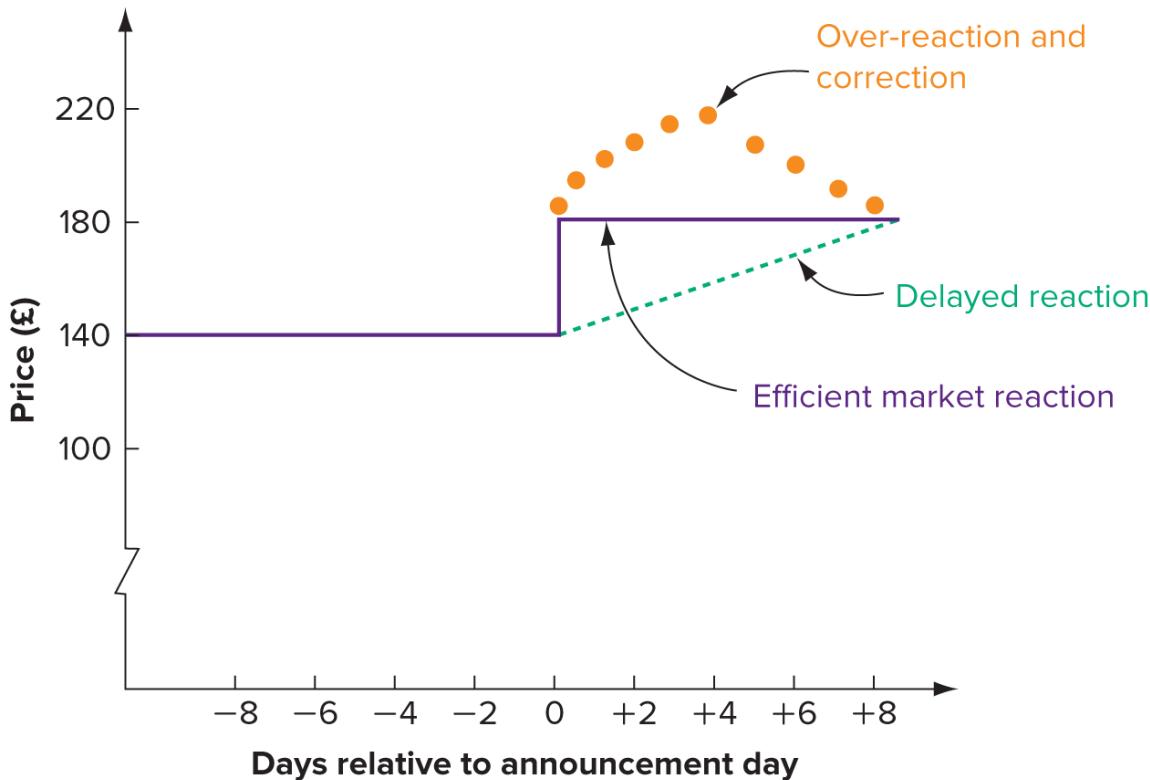
Efficient Capital Market

- A market in which security prices reflect available information

Efficient Markets Hypothesis

- The hypothesis that actual capital markets are efficient

Price Behaviour in an Efficient Market



Efficient market reaction: The price instantaneously adjusts to and fully reflects new information; there is no tendency for subsequent increases and decreases to occur.

Delayed reaction: The price partially adjusts to the new information; 8 days elapse before the price completely reflects the new information.

Over-reaction: The price over-adjusts to the new information; it overshoots the new price and subsequently corrects.

Different Forms of Market Efficiency

How much do you understand?

Quiz

What are the two parts of total return?
What is the difference between a cash return and a percentage return? Which type is more convenient and why?

What is meant by excess return and risk premium?

What were the first and second lessons from capital market history?

Concept Quiz

What are the two parts of total return? What is the difference between a cash return and a percentage return? Which type is more convenient and why?

What is meant by excess return and risk premium?

What are the first and second lessons from capital market history?