

RETURN AND RISK

GOVERNMENT PENSION FUND GLOBAL

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Extended information in three publications



RETURN AND RISK

GOVERNMENT
PENSION FUND
GLOBAL

/2016

No. 02

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RETURN

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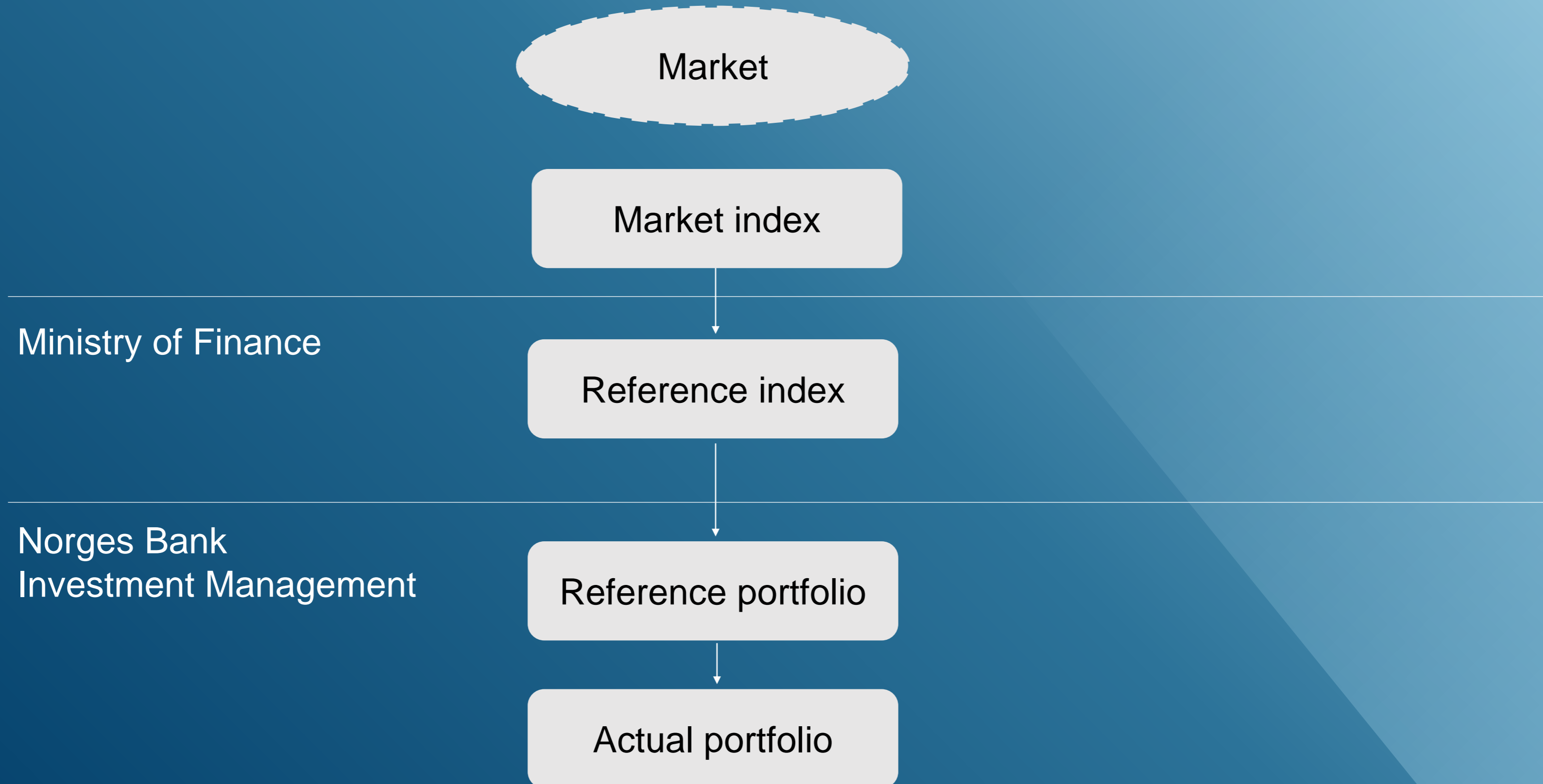
RISK

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Management of the fund



INVESTMENTS

The fund's equity benchmark

By country as at close of 31 December 2016 (table 1)

Country	Deviation from FTSE	
	Percentage points	Millions of kroner
UK	4.2	198,280
Germany	2.4	113,118
Switzerland	2.3	106,262
France	2.2	102,434
Netherlands	0.8	39,224
US	-16.0	-754,584

Source: Norges Bank Investment Management



The fund's equity benchmark

By sector as at close of 31 December 2016 (table 2)

Sector	Deviation from FTSE	
	Percentage points	Millions of kroner
Financials	1.0	48,214
Technology	-1.6	-76,872

The fund's fixed-income benchmark

By sector as at close of 31 December 2016 (table 3)

Sector	Deviation from Barclays	
	Percentage points	Millions of kroner
Inflation-linked bonds	6.7	175,761
Treasuries	6.4	167,776
Industrial	4.1	107,635
Financial institutions	3.0	78,625
Covered	1.2	30,838
MBS Passthrough	-11.9	-311,837

Source: Norges Bank Investment Management



The fund's fixed-income benchmark

By currency as at close of 31 December 2016 (table 4)

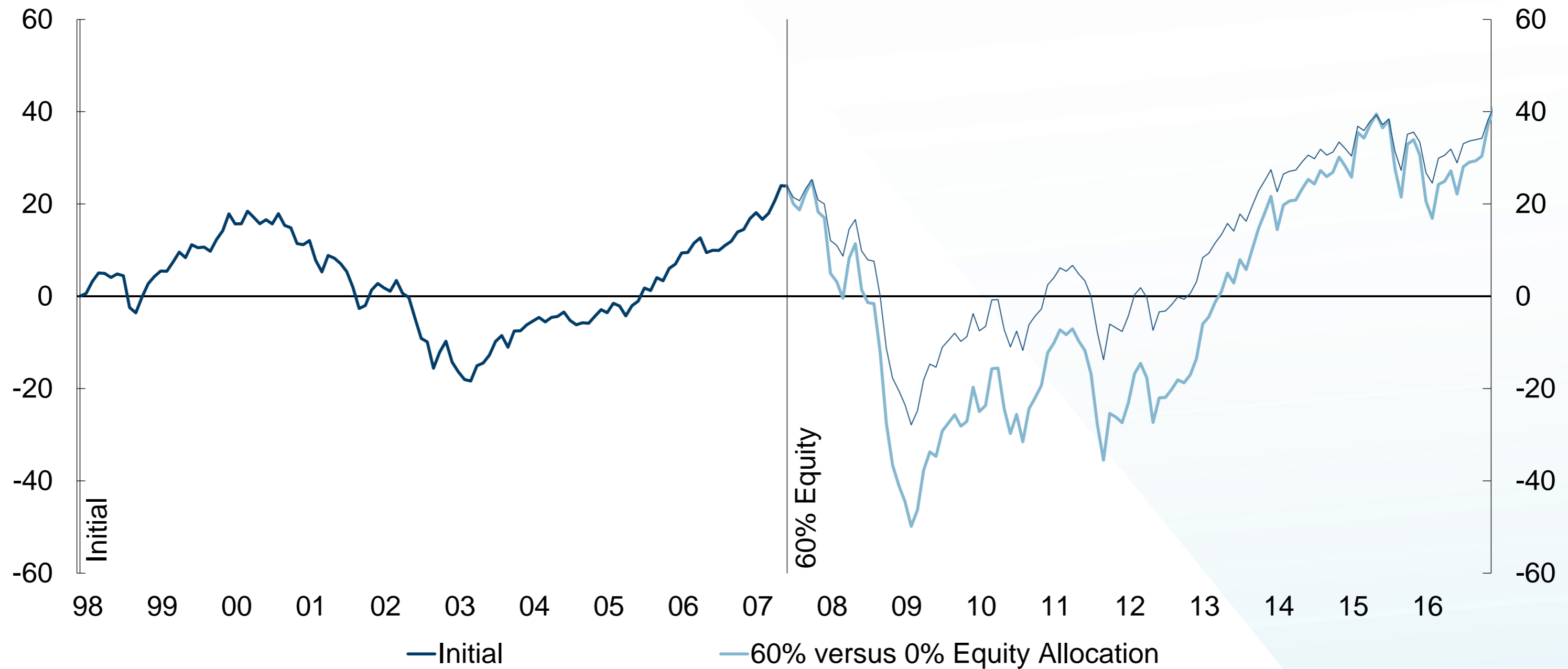
Currency	Deviation from Barclays	
	Percentage points	Millions of kroner
Euro	2.6	67,466
Mexican Peso	1.5	40,003
South Korean Won	0.9	22,976
Swiss Franc	0.8	21,776
Swedish Krona	0.7	18,356
Japanese Yen	-10.5	-275,781

Source: Norges Bank Investment Management



Impact of asset allocation

Return of equity share allocation. Percentage points (chart 1)

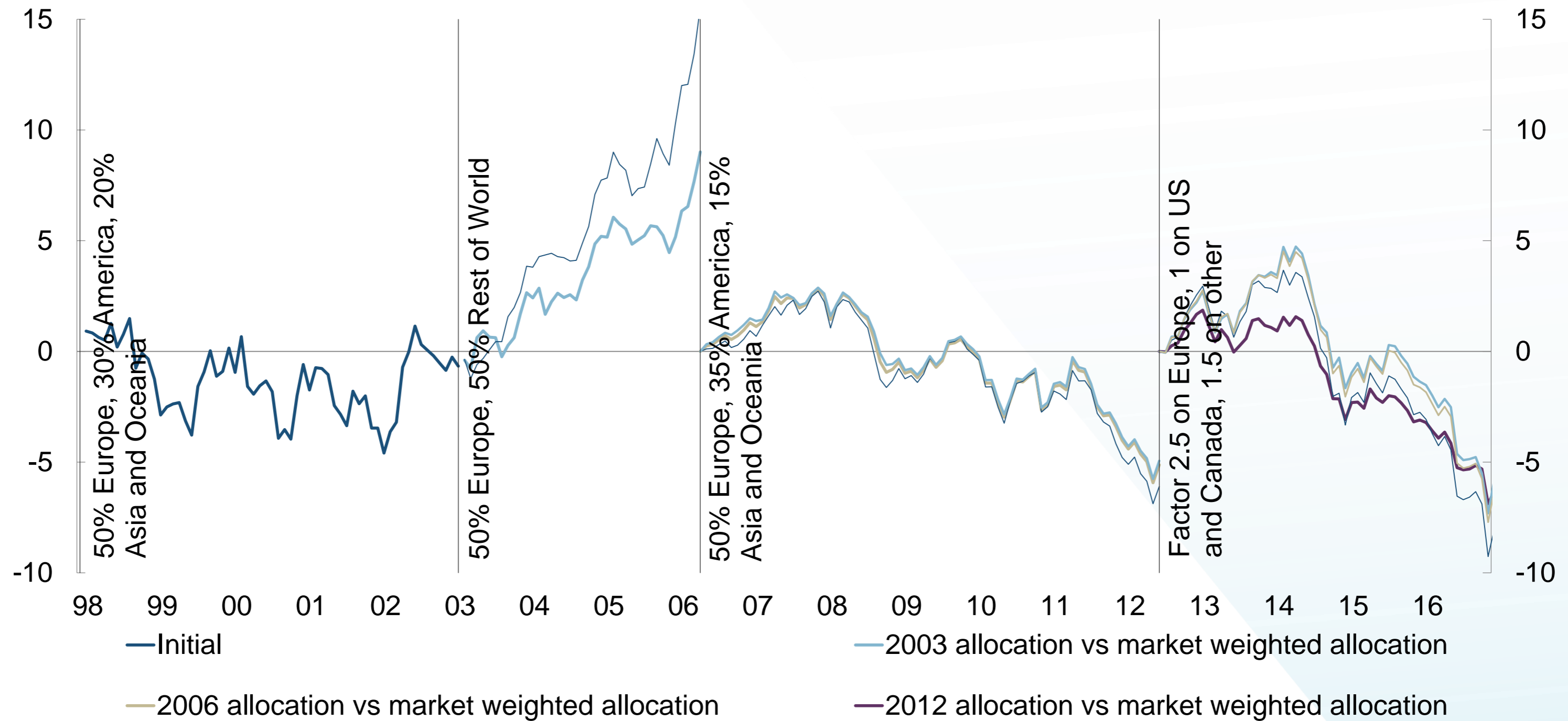


Source: FTSE, Bloomberg Barclays Indices



Impact of regional allocation

Regional allocations vs. market weights per region. Percentage points (chart 4)

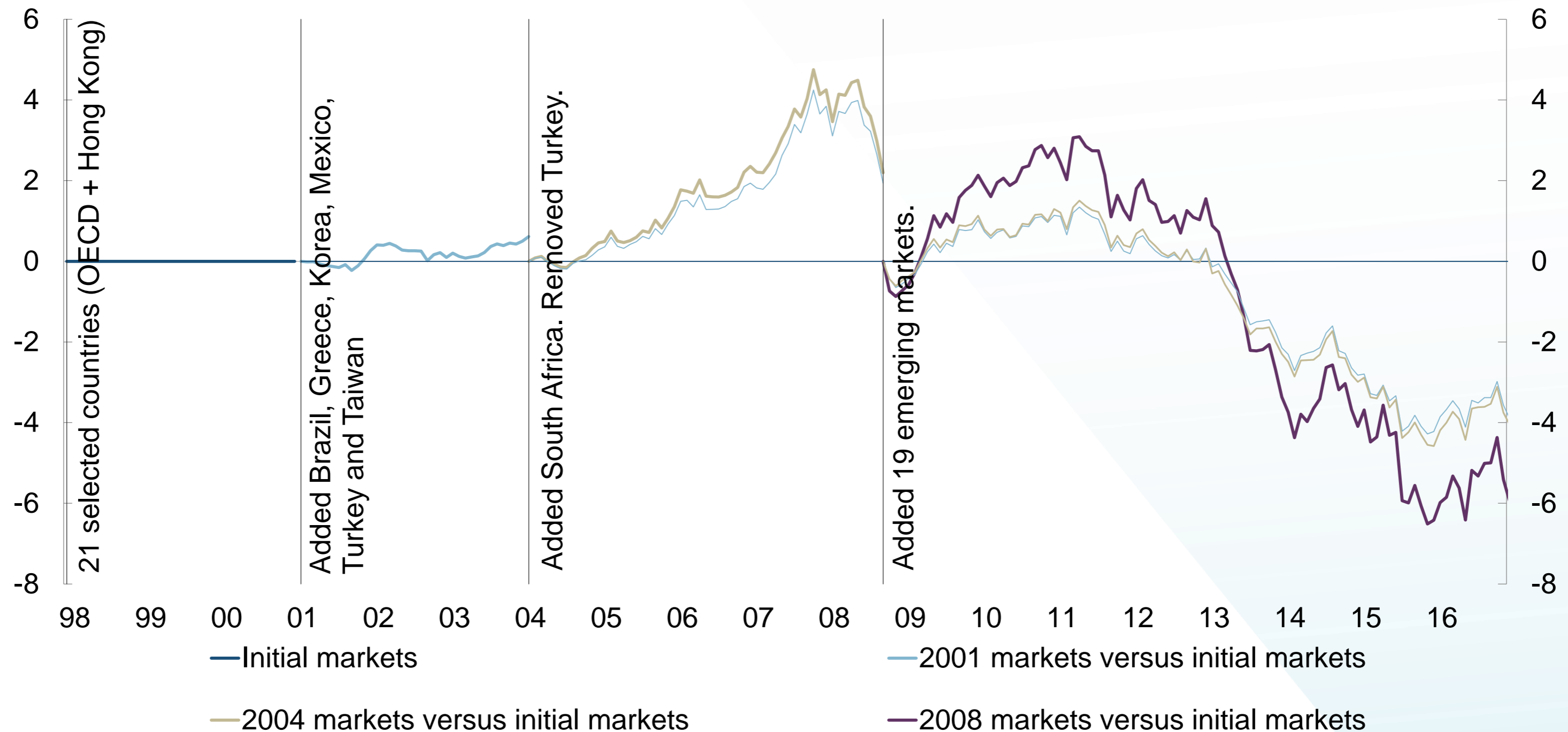


Source: FTSE, FactSet



Impact of emerging market equity

Equity benchmark with chosen vs. initial markets. Percentage points (chart 7)

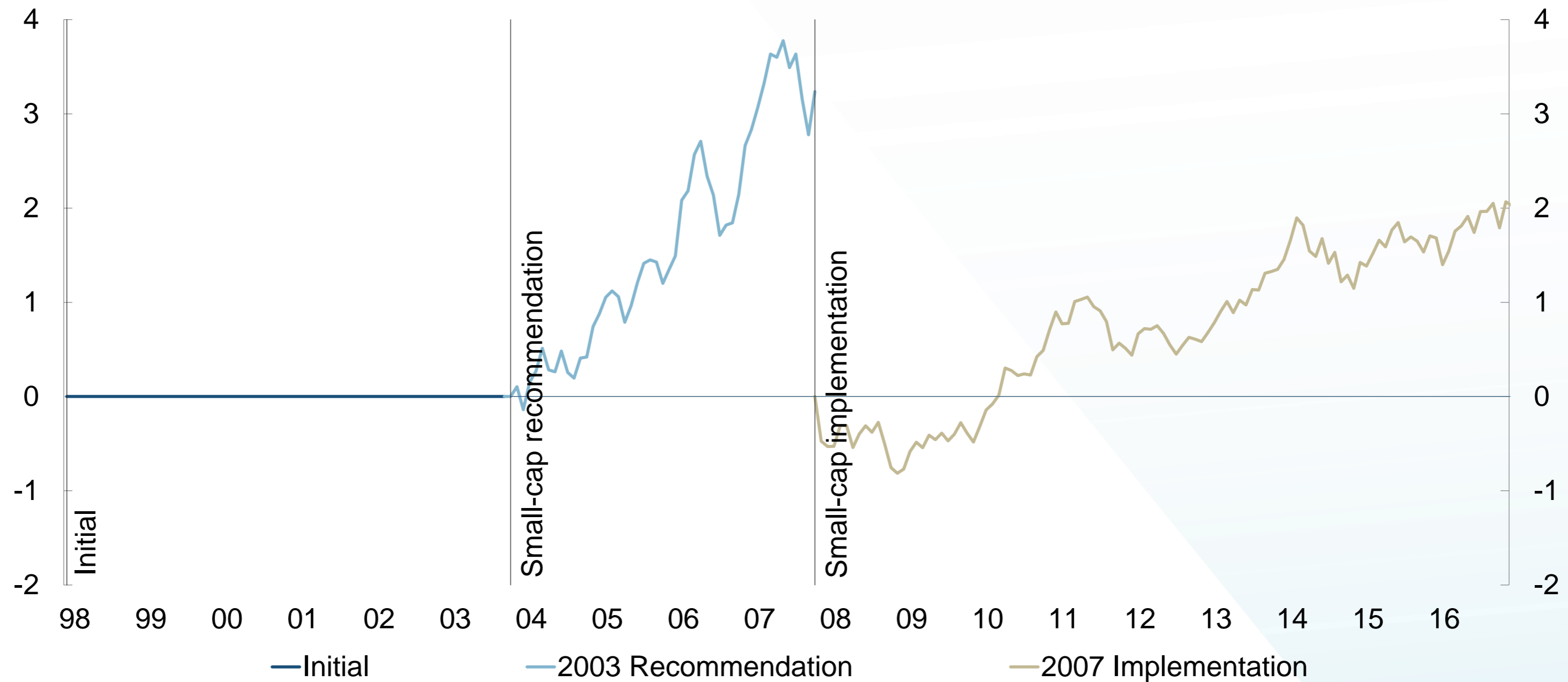


Source: FTSE, FactSet



Impact of small cap inclusion

Small cap inclusion vs. large and mid cap only. Percentage points (chart 10)

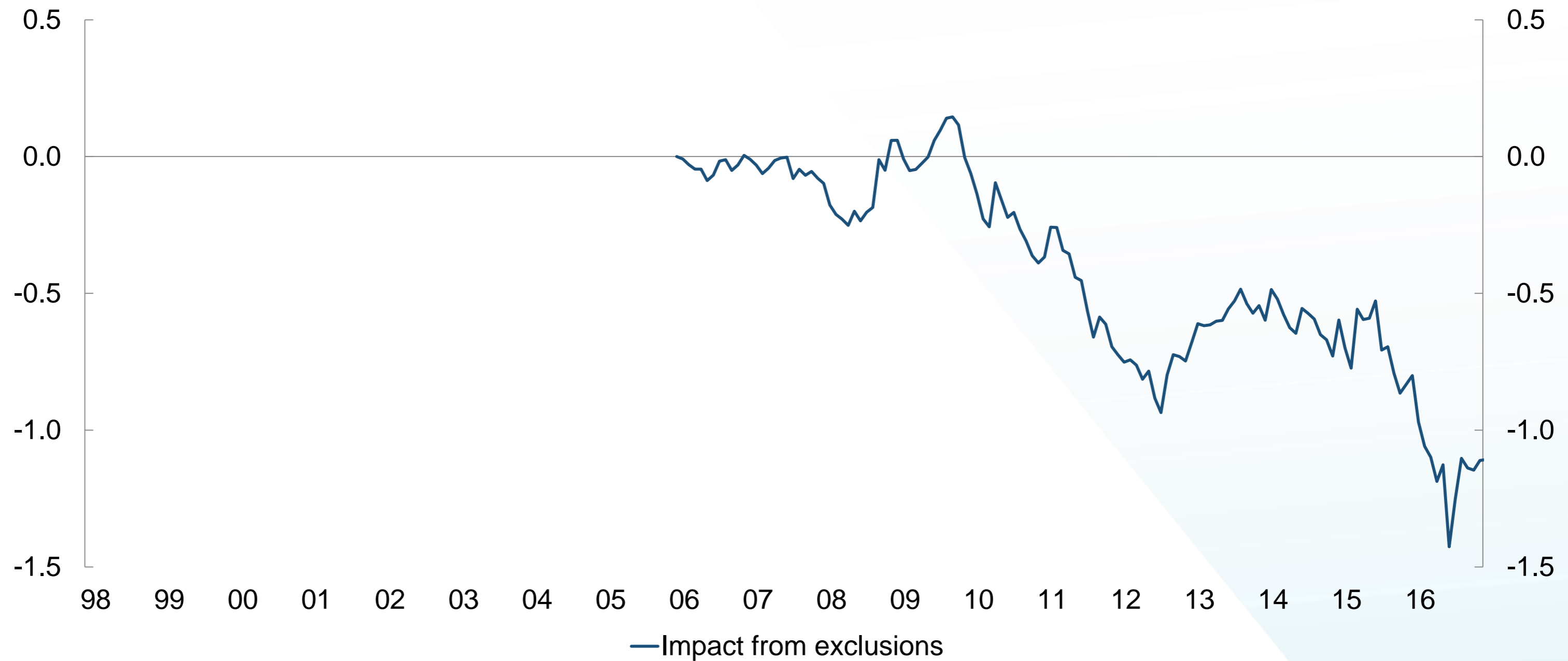


Source: FTSE, FactSet



Impact of ethical exclusions

Return of ethical exclusions vs. unadjusted index. Percentage points (chart 11)



Source: Norges Bank Investment Management



Impact of ethical exclusions

Return of ethical exclusions vs. unadjusted index. Percentage points (table 5)

Criterion	2006-2016
Product-based exclusions	-1.90
Production of specific weapon types	-0.75
Production of tobacco	-1.16
Thermal coal mining or coal based power production	0.01
Conduct-based exclusions	0.80
Serious or systematic human rights violations	-0.05
Serious violations of the rights of individuals in situations of war or conflict	0.00
Severe environmental damage	0.78
Gross corruption	0.00
Other particularly serious violations of fundamental ethical norms	0.07
Total	-1.11

Source: Norges Bank Investment Management

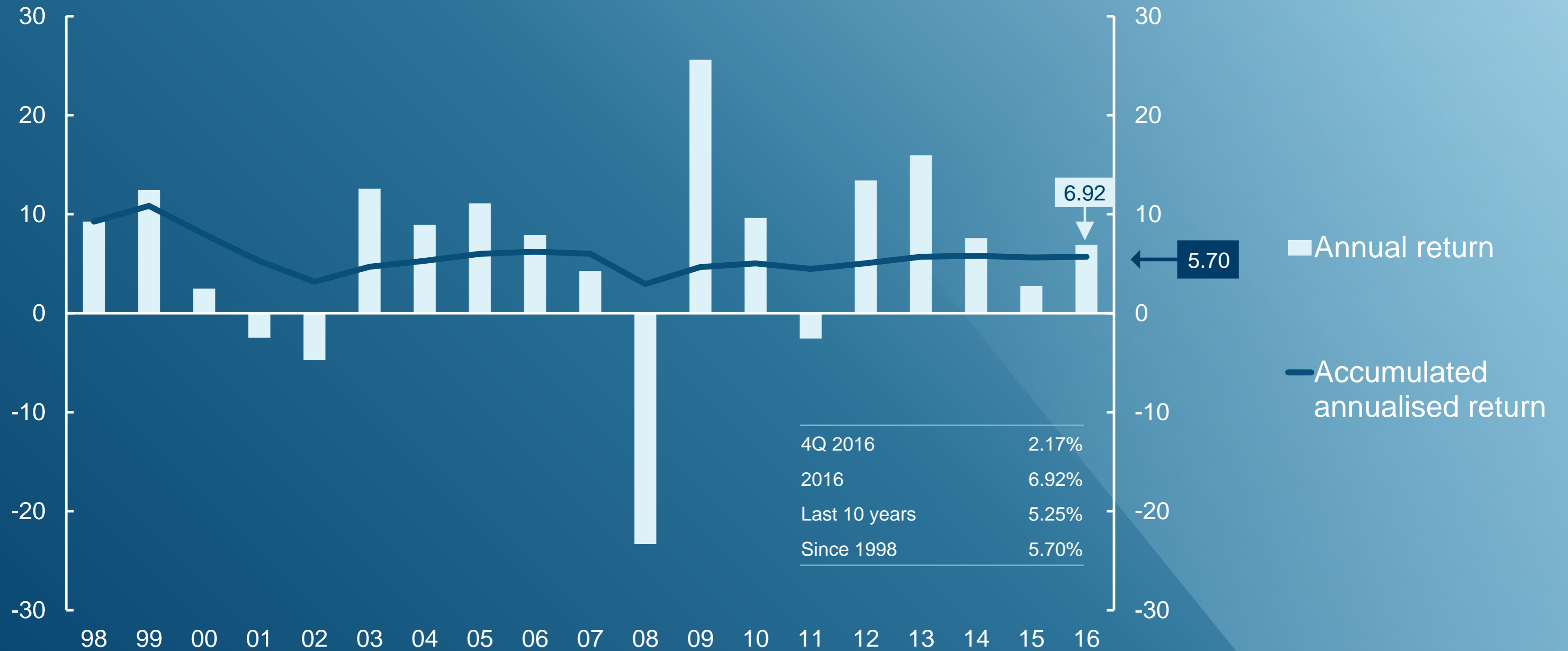


RETURN



Absolute return

Annual absolute return of the fund. Percent



Source: Norges Bank Investment Management



Absolute return key figures

Annualised. Percent (table 12)

	Since 01.01.1998	Last 10 years	Last 5 years	2016
Return on equity investments ¹	5.46	4.78	12.67	8.72
Return on fixed-income investments	4.84	4.37	3.62	4.32
Return on real estate investments	-	-	7.67	0.78
Return on fund	5.70	5.25	9.22	6.92

¹ Since 01.01.1999.

Source: Norges Bank Investment Management



Absolute return, 5-year buckets

Annualised. Percent (table 13)

	1998-2002	2003-2007	2008-2012	2013-2016	2016
Return on equity investments ¹	-4.85	16.28	-0.59	11.37	8.72
Return on fixed-income investments	6.26	4.00	5.87	2.87	4.32
Return on real estate investments	-	-	-	8.15	0.78
Return on fund	3.19	8.92	3.14	8.19	6.92

¹ Since 01.01.1999.

Source: Norges Bank Investment Management



Real return key figures

Annualised. Percent (table 14)

	Since 01.01.1998	Last 10 years	Last 5 years	2016
Fund return (nominal)	5.70	5.25	9.22	6.92
Annual inflation	1.76	1.77	1.31	1.52
Annual management fees	0.09	0.08	0.06	0.05
Real return	3.79	3.33	7.74	5.27

Relative return

Annual relative return of the fund. Percentage points



Source: Norges Bank Investment Management



Relative return key figures

Annualised. Percentage points (table 20)

	Since 01.01.1998	Last 10 years	Last 5 years	2016
Relative return on equity and fixed-income investments ¹	0.26	0.06	0.20	0.15
Relative return on equity investments ¹	0.49	0.24	0.37	0.15
Relative return on fixed-income investments	0.14	0.03	-0.16	0.16

¹ Equity investments since 01.01.1999.

Relative return, 5-year buckets

Annualised. Percentage points (table 21)

	1998-2002	2003-2007	2008-2012	2013-2016
Relative return on equity and fixed-income investments ¹	0.41	0.40	0.01	0.20
Relative return on equity investments ¹	0.78	0.90	0.01	0.33
Relative return on fixed-income investments	0.17	0.03	0.43	-0.13

¹ Equity investments since 01.01.1999.

Contributions to relative return

2016. Percentage points (table 22)

	Equity	Fixed income	Cross-asset allocation	Total
Fund allocation	-0.04	-0.04	-0.02	-0.10
Security selection	-0.02	-0.03		-0.06
Asset management	0.16	0.13	0.02	0.31
Total	0.10	0.05	0.00	0.15

Source: Norges Bank Investment Management



Contributions to relative return

2016. Percentage points (table 22)

	Equity	Fixed income	Cross-asset allocation	Total
Fund allocation	-0.04	-0.04	-0.02	-0.10
Internal reference portfolio	0.01	-0.05	0.00	-0.04
of which systematic factors	0.19			0.19
of which universe expansion	-0.10	0.17		0.06
Allocation decisions	-0.05	0.01	-0.02	-0.07
Security selection	-0.02	-0.03		-0.06
Internal security selection	-0.04	-0.03		-0.07
External security selection	0.01			0.01
Asset management	0.16	0.13	0.02	0.31
Asset positioning	0.11	0.12	0.02	0.25
Securities lending	0.05	0.01		0.06
Total	0.10	0.05	0.00	0.15

Source: Norges Bank Investment Management



Contributions to relative return

2013-2016. Annualised. Percentage points (table 23)

	Equity	Fixed income	Cross-asset allocation	Total
Fund allocation	-0.03	-0.14	0.04	-0.13
Internal reference portfolio	-0.01	-0.14	0.00	-0.15
of which systematic factors	0.02			0.02
of which universe expansion	0.00	-0.09		-0.09
Allocation decisions	-0.02	0.00	0.04	0.02
Security selection	0.07	0.00		0.07
Internal security selection	-0.02	0.00		-0.02
External security selection	0.09			0.09
Asset management	0.17	0.08	0.00	0.25
Asset positioning	0.12	0.08	0.00	0.20
Securities lending	0.05	0.00		0.06
Total	0.21	-0.06	0.04	0.20

Source: Norges Bank Investment Management



The fund's relative return

Annualised. Basis points (table 28)

	5 years	Since inception
The fund's relative return before management costs	20	26
The fund's management costs	-6	-8
The fund's relative return after management costs	14	17

Estimated relative return of passive strategy

Annualised. Basis points (table 29)

	5 years	Since inception
Management costs of a passive strategy	-3	-5
Revenues from securities lending	6	6
Transaction costs related to replication of the benchmark index	-3	-4
Transaction costs related to inflows and extraordinary benchmark changes	-3	-5
Estimated relative return of a passive strategy	-4	-8

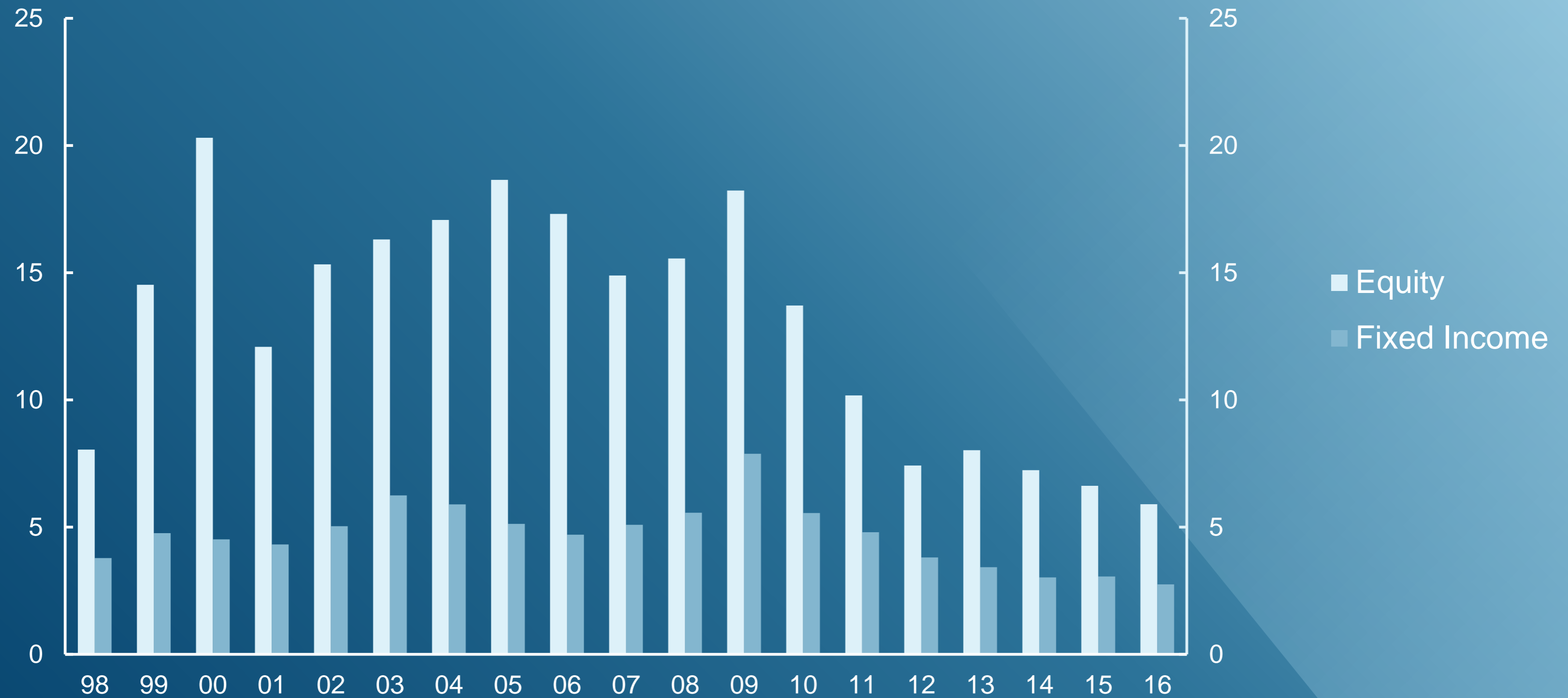
Cost-adjusted relative return comparison

Annualised. Basis points (table 30)

	5 years	Since inception
The fund's relative return after management costs	14	17
Estimated relative return of a passive strategy	-4	-8
Estimated relative return difference	18	25

Management cost per asset class

Basis points (chart 25)



Source: Norges Bank Investment Management



Management cost per investment strategy

2016. Basis points (table 26)

	Contribution to the fund's management cost	Management cost based on assets under management
Fund allocation	0.3	
Security selection	2.1	9.8
Internal	0.8	4.7
External ¹	1.3	30.2
Asset management	2.2	2.9
Real estate	0.6	19.6
Total	5.2	

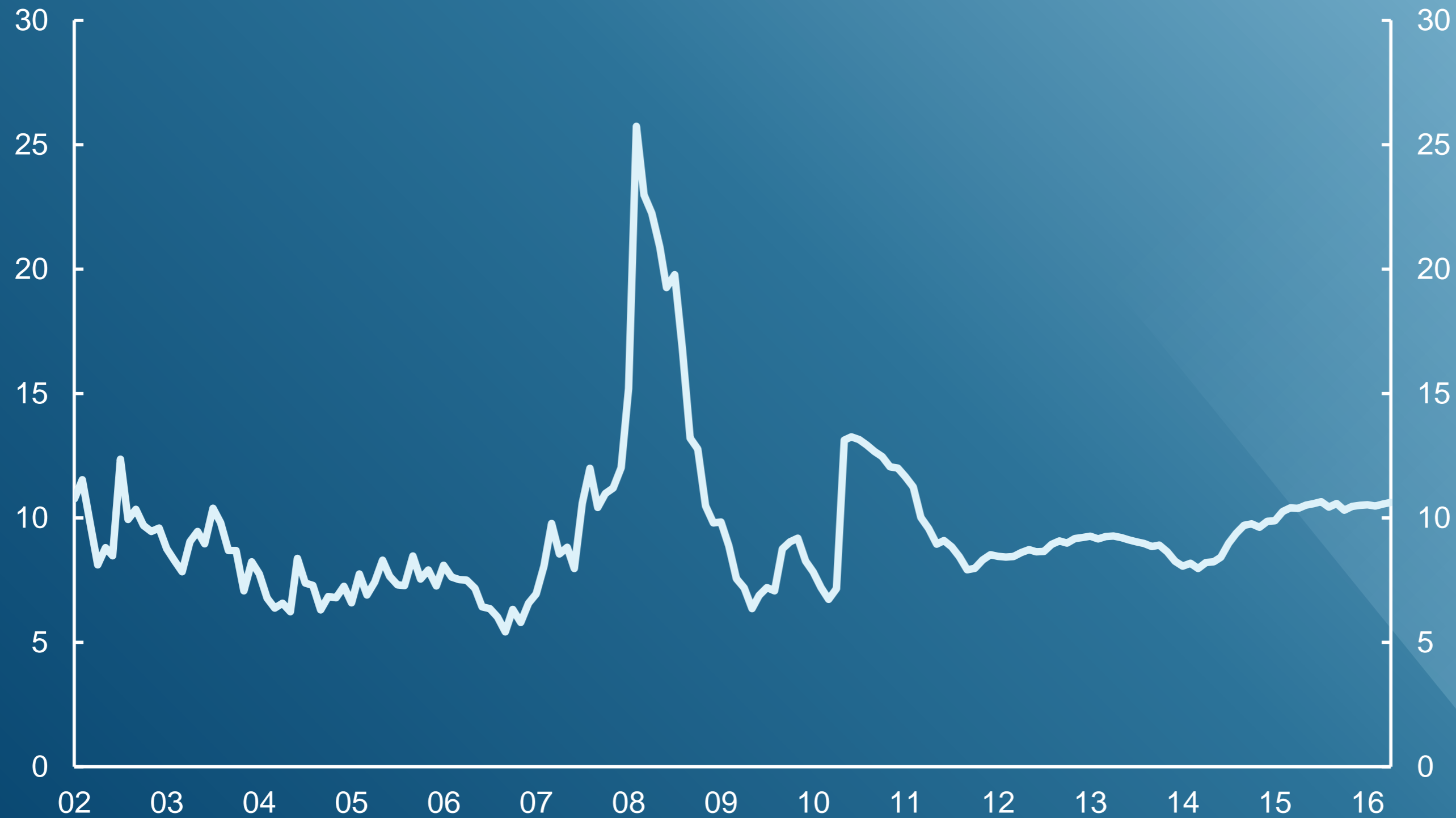
¹ Includes all externally managed capital.

RISK



Expected absolute volatility

Percent (chart 31)

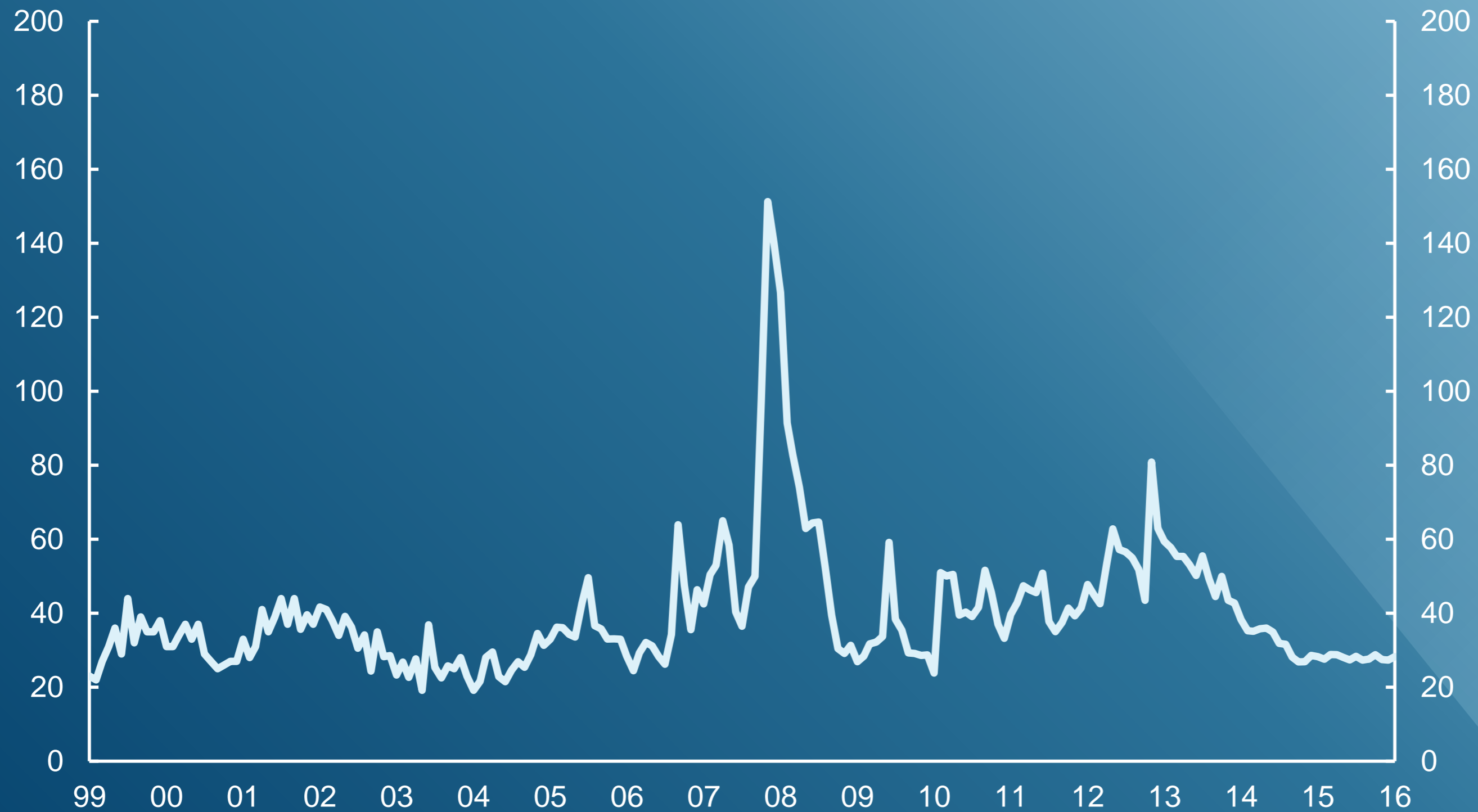


Source: Norges Bank Investment Management



Expected relative volatility

Basis points (chart 33)



Source: Norges Bank Investment Management



Expected relative volatility by strategy

31 December 2016. Basis points (table 35)

	Equity	Fixed income	Cross-asset allocation	Total
Fund allocation	16	13	1	18
Internal reference portfolio	14	8	1	15
of which systematic factors	7			7
of which universe expansion	10	11		12
Allocation decisions	6	8	1	10
Security selection	17	3		17
Internal security selection	16	3		15
External security selection	5			5
Asset management	6	5	3	7
Asset positioning	6	5	3	7
Total	24	16	4	28

Source: Norges Bank Investment Management



Risk-adjusted measures for equity investments

Before management costs. Annualised (table 42)

	Since 01.01.1999	Last 10 years	Last 5 years
Sharpe ratio equity investments	0.32	0.34	1.20
Sharpe ratio equity benchmark index	0.29	0.33	1.19
Sharpe ratio difference equity investments versus benchmark index	0.03	0.01	0.01
Information ratio equity investments	0.66	0.41	0.78
Jensen's alpha equity investments (percent)	0.43	0.17	0.12
Appraisal ratio equity investments	0.59	0.28	0.29

Source: Norges Bank Investment Management



Risk-adjusted measures for equity investments

Before management costs. Annualised (table 43)

	1999-2002	2003-2007	2008-2012	2013-2016
Sharpe ratio equity investments	-0.44	1.38	0.05	1.10
Sharpe ratio equity benchmark index	-0.50	1.32	0.04	1.09
Sharpe ratio difference equity investments versus benchmark index	0.06	0.05	0.00	0.01
Information ratio equity investments	0.87	1.07	0.13	0.67
Jensen's alpha equity investments (percent)	1.03	0.53	0.09	0.08
Appraisal ratio equity investments	1.06	0.72	0.13	0.19

Source: Norges Bank Investment Management



Regression analysis of relative return

Equity investments. Measured in dollars before management costs (table 46)

Sample period	Regression coefficients							Variance explained in percent (R squared)
	Intercept, bps annualised	Market (MKT)	Small vs large (SMB)	Cheap vs expensive (HML)	Profitable vs unprofitable (RMW)	Conservative vs aggressive investment (CMA)		
Since 01.01.1999	38	0.02	0.05	-0.01	0.01	-0.02	45	
Last 10 years	32	0.02	0.03	0.00	-0.01	-0.04	45	
Last 5 years	27	0.01	0.02	0.01	-0.02	-0.02	33	

Source: Norges Bank Investment Management, Kenneth French. Bold indicates significant at 5 percent confidence level





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