

# **Investing for the Long Term**

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# How long is long enough?

Managers worry about sustaining their investment strategy long enough to earn target premiums.

Long enough may be longer than most managers realize.

# The equity and value premiums

## Realized premiums for US stocks, 1927-2012

	$R_M - R_F$	$R_{V30} - R_M$	$R_{V10} - R_M$
<b>Average</b>	8.03	4.33	5.61
<b>Std dev</b>	20.69	12.73	19.98
<b>t-statistic</b>	3.60	3.15	2.60

$R_M - R_F$  is the equity risk premium (the market – Tbills).  
 $R_V - R_M$  is the VW return for the top 30% or 10% of firms sorted on B/M minus the market return.

# Realized returns may be misleading.

## Percent of periods with negative premiums

	5	10	15	20
$R_M - R_F$	17	8	0	0
$R_{V30} - R_M$	15	3	1	0
$R_{V10} - R_M$	18	1	1	0

The data are for US stocks, 1927-2012. The periods are overlapping.  $R_M - R_F$  is the equity risk premium.  $R_V - R_M$  is the VW return for the top 30% or top 10% of firms sorted on B/M minus the market return.

# Volatility is reduced by potentially spurious negative autocorrelations.

## Autocorrelations of annual premiums

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
$\mathbf{R_M - R_F}$	0.02	-0.17	-0.05	-0.11	-0.09
$\mathbf{R_{V30} - R_M}$	-0.05	-0.18	-0.01	-0.15	-0.07
$\mathbf{R_{V10} - R_M}$	-0.02	-0.16	-0.03	-0.25	-0.12

The standard errors of all estimates are 0.11.

The data are for US stocks, 1927-2012.

**The probability of a negative premium is higher if the autocorrelations are zero.**

**Probability of negative premium (in percent)**

	<b>5</b>	<b>10</b>	<b>15</b>	<b>25</b>	<b>40</b>
<b><math>R_M - R_F</math></b>	19	11	7	3	1
<b><math>R_{V30} - R_M</math></b>	22	14	10	5	2
<b><math>R_{V10} - R_M</math></b>	27	19	14	8	4

The estimates use the averages and standard deviations of the annual returns, and assume normality. The data are for US stocks, 1927-2012.

**The probability of negative realized alphas is probably even higher for active managers.**

Assume an active manager delivers expected CAPM alpha of 2% per year after fees.

Also assume (i) the volatility of the market is 20% per year, (ii) returns are normally distributed, and (iii) the true beta and correlation with the market are known.

**What is the probability that the manager's realized CAPM alpha is negative over an N-year period?**

# Probability realized CAPM alpha is negative (in percent)

		5-Year Horizon				
		Correlation with market				
		0.10	0.25	0.50	0.75	0.90
Beta	0.5	48	45	40	31	18
	1.0	49	48	45	40	32
	1.5	49	48	47	43	38

		10-Year Horizon				
		Correlation with market				
		0.10	0.25	0.50	0.75	0.90
Beta	0.5	47	44	36	24	10
	1.0	49	47	43	36	26
	1.5	49	48	45	41	33



# Probability realized CAPM alpha is negative (in percent)

		25-Year Horizon				
		Correlation with market				
Beta		0.10	0.25	0.50	0.75	0.90
		0.5	46	40	28	13
1.0	48	45	39	29	15	
1.5	49	47	42	35	25	

If (i) the market volatility is 20%, (ii) beta is 0.5, and (iii) the correlation with the market is 0.90, the volatility of the portfolio is an implausibly low 11.1%.