

## Analysis of Asset Class Purchasing Power After Higher Interest Rates

We examine the market value, cash flow, and purchasing power of a typical asset in each of three asset classes. We consider these measurers in six scenarios of three rates: debt-instrument interest rate, the risk-premium rate of equity over debt, and inflation. This is done under the simplifying assumption that these types of rates immediately change to the scenario values and are static thereafter.

### **ASSET CLASS: Equity share of stock or triple-net lease.**

Example: Share of stock or lease that pays \$10.00 /year in dividend or net lease payment

Scenario Name:	Current Rates						
	0	1	2	3	4	5	6
	%	%	%	%	%	%	%
Equity-over-debt risk premium rate	4	4	3	0	-3	-5	-5
Interest rate	5	8	10	12	15	18	21
Inflation	0	4	10	11	12	13	15

year	cash flow	CONTEMPORANEOUS PURCHASING POWER						
	\$	\$	\$	\$	\$	\$	\$	\$
1	10.00	10.00	9.62	9.09	9.01	8.93	8.85	8.70
2	10.00	10.00	9.25	8.26	8.12	7.97	7.83	7.56
3	10.00	10.00	8.89	7.51	7.31	7.12	6.93	6.58
4	10.00	10.00	8.55	6.83	6.59	6.36	6.13	5.72
5	10.00	10.00	8.22	6.21	5.93	5.67	5.43	4.97
6	10.00	10.00	7.90	5.64	5.35	5.07	4.80	4.32
7	10.00	10.00	7.60	5.13	4.82	4.52	4.25	3.76
8	10.00	10.00	7.31	4.67	4.34	4.04	3.76	3.27
9	10.00	10.00	7.03	4.24	3.91	3.61	3.33	2.84
10	10.00	10.00	6.76	3.86	3.52	3.22	2.95	2.47

### At year 0 (now)

Market value = \$	106.38	83.33	76.92	83.33	83.33	76.92	62.50
Present value of purchase power = \$	185.19	83.33	50.00	43.48	37.04	32.26	27.78

**ASSET CLASS: Bonds**

Example: Annual-coupon bond with face value of  $F =$  \$100 , coupon rate  
 $Cr =$  5.4% , and maturity of  $M =$  10 years.

Scenario Name:	Current Rates						
	0	1	2	3	4	5	6
	%	%	%	%	%	%	%
Equity-over-debt risk premium rate	4	4	3	0	-3	-5	-5
Interest rate	5	8	10	12	15	18	21
Inflation	0	4	10	11	12	13	15

year	cash flow	CONTEMPORANEOUS PURCHASING POWER						
	\$	\$	\$	\$	\$	\$	\$	\$
1	5.40	5.40	5.19	4.91	4.86	4.82	4.78	4.70
2	5.40	5.40	4.99	4.46	4.38	4.30	4.23	4.08
3	5.40	5.40	4.80	4.06	3.95	3.84	3.74	3.55
4	5.40	5.40	4.62	3.69	3.56	3.43	3.31	3.09
5	5.40	5.40	4.44	3.35	3.20	3.06	2.93	2.68
6	5.40	5.40	4.27	3.05	2.89	2.74	2.59	2.33
7	5.40	5.40	4.10	2.77	2.60	2.44	2.30	2.03
8	5.40	5.40	3.95	2.52	2.34	2.18	2.03	1.77
9	5.40	5.40	3.79	2.29	2.11	1.95	1.80	1.54
10	105.40	105.40	71.20	40.64	37.12	33.94	31.05	26.05

At year 0 (now)

Market value = \$	100.00	82.55	71.73	62.71	51.82	43.37	36.76
Present value of purchase power = \$	100.00	62.71	38.79	33.13	27.33	22.97	18.93

## INTEREST RATE HEDGE

Example: An annual-pay interest-rate cap on 3-Month Libor, struck at Protected Rate

PR = 6% with a Notional Amount of NA = \$ 200, that matures in Mcap = 10 years.

Observed rates at every annual observation OR.k =	OR.0	OR.1	OR.2	OR.3	OR.4	OR.5	OR.6
	%	%	%	%	%	%	%
	5.4	8	10	12	15	18	21

year	CASH FLOW						
	\$	\$	\$	\$	\$	\$	\$
1	10.68	15.88	19.88	23.88	29.88	35.88	41.88
2	10.68	15.88	19.88	23.88	29.88	35.88	41.88
3	10.68	15.88	19.88	23.88	29.88	35.88	41.88
4	10.68	15.88	19.88	23.88	29.88	35.88	41.88
5	10.68	15.88	19.88	23.88	29.88	35.88	41.88
6	10.68	15.88	19.88	23.88	29.88	35.88	41.88
7	10.68	15.88	19.88	23.88	29.88	35.88	41.88
8	10.68	15.88	19.88	23.88	29.88	35.88	41.88
9	10.68	15.88	19.88	23.88	29.88	35.88	41.88
10	10.68	15.88	19.88	23.88	29.88	35.88	41.88

year	CONTEMPOREAOUS PURCHASE POWER						
	\$	\$	\$	\$	\$	\$	\$
1	10.13	14.70	18.07	21.32	25.98	30.41	34.61
2	9.61	13.61	16.43	19.04	22.59	25.77	28.60
3	9.12	12.61	14.94	17.00	19.65	21.84	23.64
4	8.65	11.67	13.58	15.18	17.08	18.51	19.54
5	8.21	10.81	12.34	13.55	14.86	15.68	16.15
6	7.79	10.01	11.22	12.10	12.92	13.29	13.34
7	7.39	9.27	10.20	10.80	11.23	11.26	11.03
8	7.01	8.58	9.27	9.64	9.77	9.55	9.11
9	6.65	7.94	8.43	8.61	8.49	8.09	7.53
10	6.31	7.36	7.66	7.69	7.39	6.86	6.23

year	PRESENT VALUE OF CONTEMPOREAOUS PURCHASE POWER						
	\$	\$	\$	\$	\$	\$	\$
1	9.61	13.61	16.43	19.04	22.59	25.77	28.60
2	8.65	11.67	13.58	15.18	17.08	18.51	19.54
3	7.79	10.01	11.22	12.10	12.92	13.29	13.34
4	7.01	8.58	9.27	9.64	9.77	9.55	9.11
5	6.31	7.36	7.66	7.69	7.39	6.86	6.23
6	5.68	6.31	6.33	6.13	5.58	4.92	4.25
7	5.11	5.41	5.24	4.89	4.22	3.54	2.90
8	4.60	4.64	4.33	3.90	3.19	2.54	1.98
9	4.14	3.97	3.58	3.11	2.41	1.82	1.35
10	3.73	3.41	2.96	2.48	1.83	1.31	0.93

Current PV of Hedge cash flows = \$ 62.66 74.96 80.60 84.14 86.99 88.10 88.25