

Case 1

- 1) For finding the arbitrage opportunities, let us find 2 treasury coupon bonds expiring at same day.
- 2) Then we find a treasury strip expiring on the same day
- 3) Create a synthetic bond of the smaller coupon bond, using the treasury strip and the higher coupon bond
- 4) Compare the prices of the synthetic and actual bond. Long the cheaper one and short the expensive one

Current Date 1/9/2015

Combination 1

Maturity Date 11/15/2024

Last Payment Date 11/15/2014

Coupon	Clean Price	Accrued Coupon				Dirty Price
		days	days between	Coupon	Accrued	
0	81.230	55	182	0.000	0.000	81.230
2.25	102.531	55	182	1.125	0.340	102.871
7.5	150.063	55	182	3.750	1.133	151.196

Assume weight of **a** invested in 0 coupon bond and weight of **(1-a)** invested in high coupon bond, to synthetically generate low coupon bond

Coupon Matching $0a + (1-a)7.5 = 2.25$

a	0.7
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Principal Matching $100a + (1-a)100 = 100$ Matched

Price

Synthetic Price **102.220**

As Synthetic price < dirty 2.25 coupon bond

Long synthetic bond using 0 coupon bond and 7.5 coupon bond, and short actual 2.25 coupon bond.

All are of maturity 11/15/2024

Profit 0.652

Current Date 1/9/2015

Combination 2

Maturity Date 11/15/2022

Last Payment Date 11/15/2014

Coupon	Clean Price	Accrued Coupon				Dirty Price
		Number of days	days between	Coupon	Accrued Coupon	
0	86.150	55	182	0.000	0.000	86.150
1.625	98.563	55	182	0.813	0.246	98.808
7.625	143.063	55	182	3.813	1.152	144.215

Assume weight of **a** invested in 0 coupon bond and weight of **(1-a)** invested in high coupon bond, to synthetically generate low coupon bond

Coupon Matching $0a + (1-a)7.625 = 1.625$

a	0.787
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Principal Matching $100a + (1-a)100 = 100$ Matched

PriceSynthetic Price **98.524**

As Synthetic price < dirty 1.625 coupon bond

Long synthetic bond using 0 coupon bond and 7.625 coupon bond, and short actual 1.625 coupon bond.**All are of maturity 11/15/2022****Profit 0.284**

Current Date 1/9/2015

Combination 3

Maturity Date 2/15/2023

Last Payment Date 8/15/2014

Coupon	Clean Price	Accrued Coupon				Dirty Price
		Number of days between	Coupon	Accrued Coupon		
0	85.430	147	182	0.000	0.000	85.430
2	101.219	147	182	1.000	0.808	102.026
7.125	140.063	147	182	3.563	2.877	142.940

Assume weight of **a** invested in 0 coupon bond and weight of **(1-a)** invested in high coupon bond,
to synthetically generate low coupon bond

Coupon Matching $0a + (1-a)7.125 = 2$ **a 0.719**Principal Matching $100a + (1-a)100 = 100$ Matched**Price**Synthetic Price **101.573**

As Synthetic price < dirty 2 coupon bond

Long synthetic bond using 0 coupon bond and 7.125 coupon bond, and short actual 2 coupon bond.**All are of maturity 2/15/2023****Profit 0.453**

Current Date 1/9/2015

Combination 4

Maturity Date 8/15/2023

Last Payment Date 8/15/2014

Coupon	Clean Price	Accrued Coupon				Dirty Price
		Number of days between	Coupon	Accrued Coupon		
0	84.290	147	182	0.000	0.000	84.290
2.5	104.844	147	182	1.250	1.010	105.853
6.25	135.063	147	182	3.125	2.524	137.587

Assume weight of **a** invested in 0 coupon bond and weight of **(1-a)** invested in high coupon bond,
to synthetically generate low coupon bond

Coupon Matching $0a + (1-a)6.25 = 2.5$ **a 0.600**

Principal Matching $100a + (1-a)100 = 100$ Matched

Price

Synthetic Price

105.609

As Synthetic price < dirty 2.5 coupon bond

Long synthetic bond using 0 coupon bond and 6.25 coupon bond, and short actual 2.5 coupon bond.

All are of maturity 8/15/2023

Profit

0.245
