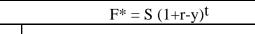
19

Figure 34.6: Stock Index Futures: Pricing and Arbitrage



If  $F > F^*$ 

If  $F < F^*$ 

Cashflows	Action	Cashflows
0	1. Buy futures contract	0
kfree r S	2. Sell short stocks in the index	S
-S	3. Lend money at riskfree rate	-S
$S((1+y)^{t}-1)$	1. Collect on loan	S(1+r) <sup>t</sup>
F	2. Take delivery of futures contract	-F
-S(1+r) <sup>t</sup>	3. Return borrowed stocks; Pay foregone dividends	$-S((1+y)^{t}-1)$
$-S(1+r-y)^{t} > 0$	S (1+r-	$\mathbf{y})^{\mathbf{t}} - \mathbf{F} > 0$
	0 kfree r S -S $S((1+y)^{t}-1)$ F -S(1+r) <sup>t</sup>	01. Buy futures contractkfree r S -S2. Sell short stocks in the index.S3. Lend money at riskfree rateS((1+y)t-1) F -S(1+r)t1. Collect on loan2. Take delivery of futures contract3. Return borrowed stocks; Pay foregone dividends

outs:

eoretical futures price al futures price level of index r= Riskless rate of interest (annualized)

t = Time to expiration on the futures contract

y = Dividend yield over lifetime of futures contract as % of current index level

## umptions

nvestor can lend and borrow at the riskless rate. are no transactions costs associated with buying or selling short stocks. ends are known with certainty.

## Figure 34.7: Stock Index Futures: Pricing and Arbitrage with modified assumptions

## ed Assumptions

tor can borrow at  $r_b$  ( $r_b > r$ ) and lend at  $r_a$  ( $r_a < r$ ).

ransactions cost associated with selling short is  $t_s$  (where  $t_s$  is the dollar transactions cost) and the transactions cost associated with buying the stocl  $t_c$ .

