What are Dividend Futures?

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Equity Derivatives

Dividend Futures

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Johannesburg
Stock Exchange

What are Dividend Futures (DIVF)?

DIVF contracts are derivative contracts used to hedge against dividend risk that accompany trade in Single Stock Futures (SSFs). These contracts are booked in conjunction with a relevant SSF (long SSF, long DIVF) and therefore offer a simple transaction to enable investors in the SSF market to protect themselves against any perceived dividend risk.

As will be shown, dividends predicted or declared are implemented into the fair value calculation of SSFs, for this reason there exists a strong need for the DIVF contracts, to prevent the very real dividend risk that exists. In order to understand this product, an understanding of the exchange's mark-to-model (fair value) calculations for SSF is necessary. Examples will also be provided to illustrate the use of the product and the benefit thereof.

Who uses DIVF contracts?

DIVF contracts are derivative contracts used to hedge against dividend risk that accompany trade in Single Stock Futures (SSFs). These contracts are booked in conjunction with a relevant SSF (long SSF, long DIVF) and therefore offer a simple transaction to enable investors in the SSF market to protect themselves against any perceived dividend risk.

As will be shown, dividends predicted or declared are implemented into the fair value calculation of SSFs, for this reason there exists a strong need for the DIVF contracts, to prevent the very real dividend risk that exists. In order to understand this product, an understanding of the exchange's mark-to-model (fair value) calculations for SSF is necessary. Examples will also be provided to illustrate the use of the product and the benefit thereof.

Anyone who trades in SSFs will, if they wish to avoid dividend risk, derive benefit from trading DIVF contracts.

The risk averse investor who would like exposure to the movement of the underlying stock and avoid exposure to differences that could exist between dividend predictions and actual dividend declarations should use dividend futures.

DIVF contracts can be used by everyone/anyone who would like to eliminate dividend risk.

A quick recap on SSF valuation and dividend mechanics

The only contract on Derivative Market that is marked-to-market (using quoted prices) each day is the near and next near ALSI contract. The rest of the contracts are actually marked-to-model using the following formula:

$F_t = [S_t - DDvD] \times (1 + i \times (t/365))$

Where:
- F_t = futures price at time t
- S_t = spot price of the underlying equity share at time t
- DDvD = discounted dividend (predicted/declared), discounted from payable date i = interest rate
- t = time to futures contract expiry

In words; the futures price is a function of the spot price of the underlying equity minus the discounted dividend (predicted or declared – this will be explained next) multiplied by one plus the interest rate for the relevant time period in question. The dividend is discounted by the interest rate corresponding to the payment date of the dividend in question, again for the relevant time period of the dividend in question. (The yield curve used can be found at www.yieldx.co.za)

The dividend used in the calculation is predicted until an actual dividend is declared. The dividend is predicted by looking at past declared dividends in the same period for which the contract is valid (for example December until March).

If the company historically paid dividends in the corresponding period, this value is multiplied by a historic growth rate to attain the predicted dividend today. The historic growth rate applied is dependent on the dividend history available, thus this rate could be a 1, 3 or 5 year rate.

What are the costs involved in trading Dividend Futures?

There is no trading fee for DIVF contracts.

The DIVF contract cover period equals the SSF contract cover period

An example will best illustrate this:

If you trade a SSF today that has a December expiry, and you want full dividend hedging until the contract expires, you need to trade the corresponding DIVF contract with a December expiry.

The value of the DIVF contract on a current day will reflect a combination of declared and predicted dividends, discounted from their payment dates back to the current day.

Once a declared dividend goes ex the corresponding dividend future contract will fall by an amount equal to the declared dividend, discounted from payable date until ex date. The long holder will receive this amount through a debit into his margin account; the short holder of the contract will pay this amount through a credit to his margin account.
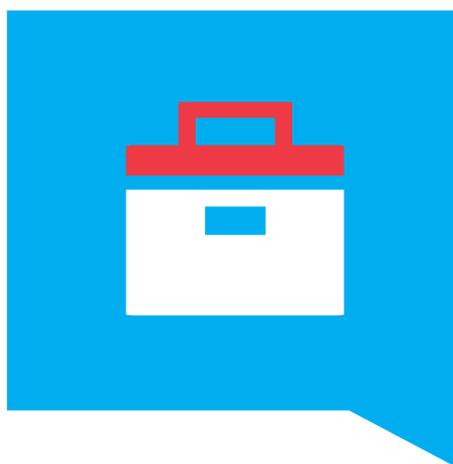
Physical dividend payout

On the day that the corresponding dividend goes ex, three actions will take effect:

1. The discounted dividend (discounted from payable date to ex-date) will be taken out of the SSF fair value calculation.
2. The corresponding dividend future fair value will drop by the same amount.
3. The short holder will pay the discounted dividend amount over to the long holder.

Salient mechanism of DIVF contract: All DIVF contracts eventually close out at a value of zero. The declared dividend value is paid out as a manufactured dividend from the short to the long holder on ex-date.

Examples

Assumptions

- Transaction is done with share ABC Ltd Share ABC trades at t_0 at R100
- Share ABC's only asset is a cash deposit of R100
- Share ABC has only one share in issue
- The spot value of ABC = R100 at t_0
- A future contract (FC) is written on ABC
- The futures contract (FC) expires in 1 year's time, t_1
- Interest rates are 10%
- No transaction costs are incurred in the hypothetical transactions

Scenario 1

No Dividend

At t_0

- Trader A purchases 1 Share of ABC at a price of R100
- Trader A sells FC at a fair value of R110
- No dividend is declared by ABC Ltd during the term of Futures Contract

At t_1

- The Future Contract expires on due date. Market to Model (MTM) = R100
- Trader A sells Share ABC at t_1 at a price of R100
- Trader A incurs interest charges of R10 (R100 x 10%) for funding Share ABC

Cashflows	Rand
Purchase Share ABC at t0	(100)
Sell Share ABC at t1	100
Profit from Futures Contract	10
Funding cost of Share ABC	(10)
Net profit/(loss)	0
Profit and loss	**Rand**
Profit/(loss) from transactions in Share ABC	(10)
Profit/(loss) from transactions in Futures Contract	10
Profit/(loss) from funding of Share ABC	(10)
Net profit/(loss)	0

Scenario 2

A Dividend of R10 is paid

At t_0

- Trader A purchases 1 Share of ABC at a price of R100
- Trader A sells 1 Futures Contract at a fair value price of R100
- FV = (spot – discounted dividend) x (1 + interest rate x (days to expiry/365))
- FV = (R100 – 9.09) x (1 + 0.10 x (365/365))
- FV = R100
  NB – The dividend is anticipated to be R10
- Trader A sells 1 Dividend Futures Contract @ R10
- (MTM the Dividend Future at the value equal to the Discounted Dividend value used in the FV calculation)
- Company ABC declares a R10 dividend between t_0 and t_1

At t_1

- Futures Contract expires on due date. MTM = R90 (At ex-date the Discounted Dividend value = R0)
- Trader A sells Share ABC at t1at price R90 (Assumed share price falls by value of declared dividend on ex-date)
- Trader A incurs funding costs of R10
- Trader A received a dividend of R10
- Dividend future expires on due date MTM =R 0

Cashflows	Rand
Purchase Share ABC at t0	(100)
Sell Share ABC at t1	90
Profit from Futures Contract transaction	10
Funding cost incurred	(10)
Dividend received	10
Profit/(loss) from dividend future	10
Manufactured Dividend paid from short to long holder	(10)
Net for profit/(loss)	0
Profitandloss	**Rand**
Profit/(loss) from transactions in Share ABC	(10)
Profit/(loss) from transactions in Futures Contract	10
Profit/(loss) from funding in Share ABC	(10)
Proft/(loss) from dividend received/paid	10
Profit/(loss) from dividend futures	10
Manufactured Dividend paid from short to long	(10)
Net for profit/(loss)	0

Scenario 3

A Dividend of R20 is paid

- Trader A purchases 1 Share of ABC at a price of R100
- Trader A sells 1 Futures Contract at a FV price of R100 (Trader A expects a dividend of R10 and therefore factors it into his forward calculation)
  NB – Anticipated value of dividend is R10
- Trader A sells 1 Dividend future at R10
- Company ABC declares a R20 dividend

At t_1

- Futures Contract expires on due date. MTM = R80
- Trader A sells Share ABC at t_1 at price R80
- Trader A incurs funding costs of Share SH of R10
- Trader A received a dividend of R20
- Dividend future expires on due date MTM = R0

Cashflows	Rand
Purchase Share ABC at t_0	(100)
Sell Share ABC at t_1	80
Profit from Futures Contract transaction	20
Funding cost incurred	(10)
Dividend received	20
Profit/(loss) from dividend future	10
Manufactured Dividend paid from short to long holder	(20)
Net for profit/(loss)	0
Profit and loss	**Rand**
Profit/(loss) from transactions in Share ABC	(20)
Profit/(loss) from transactions in Futures Contract	20
Profit/(loss) from funding in Share ABC	(10)
Proft/(loss) from dividend received/paid	20
Proft/(loss) from dividend futures	10
Manufactured Dividend paid to long holder	(20)
Net for profit/(loss)	0

Scenario 4

No Dividend is paid

At t_0

- Trader A purchases 1 Share of ABC at a price of R100
- Trader A sells 1 Futures Contract at a FV price of R100 (Trader A expects a dividend of R10 and therefore factors it into his forward calculation)
  NB – Anticipated value of dividend is R10
- Trader A sells 1 Dividend Future at R10
- Company ABC declares no dividend for this period

At t_1

- Future contract FC expires on due date. MTM = R100
- Trader A sells Share SH at t_1 at price R100
- Trader A incurs funding costs of Share SH of R10
- Trader A received no dividend from company ABC
- Dividend future expires on due date MTM = R0

Cashflows	Rand
Purchase Share ABC at t_0	(100)
Sell Share ABC at t_1	100
Profit from Futures Contract transaction	0
Funding cost incurred	(10)
Dividend received	0
Profit/(loss) from Dividend Future	10
Manufactured dividend paid to long holder	0
Net for profit/(loss)	0
Profit and loss	**Rand**
Profit/(loss) from transactions in Share ABC	0
Profit/(loss) from transactions in Futures Contract	0
Profit/(loss) from funding in Share ABC	(10)
Profit/(loss) from dividend received/paid	0
Profit/(loss) from dividend futures	10
Net for profit/(loss)	0

Scenario 5

Trader/Market maker does not make use of dividend assumptions, company pays R10 dividend

Att$_0$

- ▶ Trader A purchases 1 Share of ABC at a price of R100
- ▶ Trader A sells 1 Futures Contract at a fair value price of R110
- ▶ Trader FV = (spot – discounted dividend) x (1 + interest rate x (days to expiry/365))
- ▶ Trader FV = (R100 – 0) x (1 + 0.10 x (365/365))
- ▶ Trader FV = R110
  NB – Although the dividend is anticipated to be R10, the market maker/trader uses a value of R0 in his FV calculation. This is offset by trading the dividend future at zero.
- ▶ Trader A sells 1 Dividend future @ R0 (MTM the Dividend Future at the value equal to the Discounted Dividend value used in the FV calculation)
- ▶ Company ABC declares a R10 dividend between t_0 and t_1.

Att$_1$

- ▶ Future contract FC expires on due date. MTM = R100 (At ex-date the Discounted Dividend value = R0)
- ▶ Trader A sells Share ABC at t_1 at price R90
- ▶ Trader A incurs funding costs of R10
- ▶ Trader A received a dividend of R10
- ▶ Dividend future expires on due date MTM = R0

Cashflows	Rand
Purchase Share ABC at t_0	(100)
Sell Share ABC at t_1	90
Profit from Futures Contract transaction	20
Funding cost incurred	(10)
Dividend received	10
Profit/(loss) from dividend future	0
Manufactured Dividend paid to long holder	(10)
Net for profit/(loss)	0
Profit and loss	**Rand**
Profit/(loss) from transactions in Share ABC	(10)
Profit/(loss) from transactions in Futures Contract	20
Profit/(loss) from funding in Share ABC	(10)
Profit/(loss) from dividend received/paid	10
Profit/(loss) from dividend futures	0
Manufactured Dividend paid to long holder	(10)
Net for profit/(loss)	0

Contract Specifications – Future Specifications	
Code	ABCV
Underlying	ABC Declared dividend/s
Contract Size	100 x the dividend amount e.g. dividend amount R2 x 100 contracts equals R200)
Expiration Date and Time	17h00 on the 3rd Thursday of March, June, September and December (or the previous business day if a public holiday)
Quotations	Dividend amount quoted to the nearest cent
Minimum Price Movement	0.01 in the dividend equal to R1
Expiry Valuation Method	Discounted declared dividends transferred during the life of the contract Contract always expires a 0 value
Settlement Method	Cash Settled
Clearing House Fees	T.B.C

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