

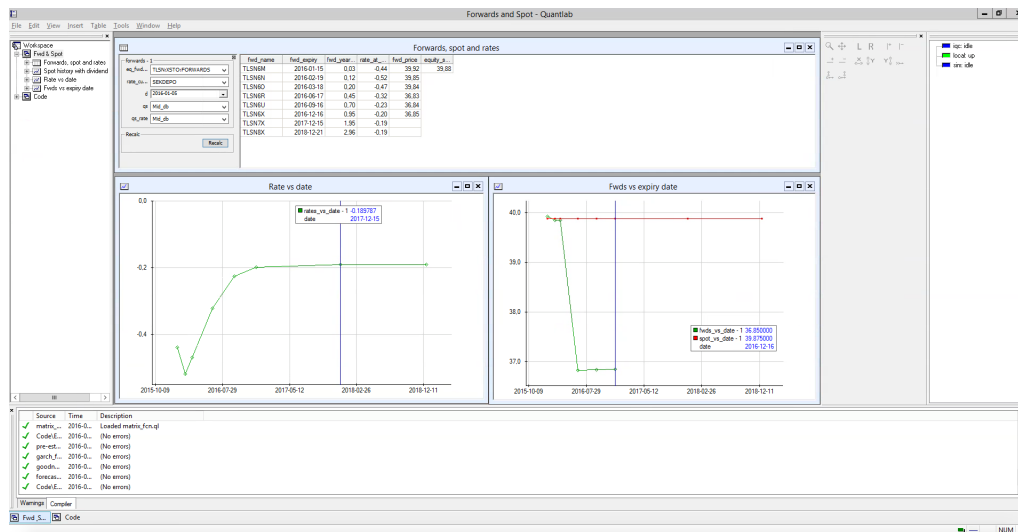
FinanceLab project - SF2701 Financial Mathematics, Basic course

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1 Description of FinanceLab workspace

Start FinanceLab and open the workspace `Forwards and Spot.qlw`. Open the `Fwd&Spot` window in the left panel (unless it loads automatically). You should see the following display on your screen.



In the top window labelled **Forwards, Spots and Rates** you can see the forward prices on 2016-01-05 of forward constructs with different maturities, written on the TeliaSonera stock. In the table you can see the names of the forward contracts, their maturities, the continuously compounded yearly interest rate to maturity, the forward price and the current spot price (on 2016-01-05).

The lower left graph shows the interest rates for different maturities as of 2016-01-05 whereas the lower right graph shows the forward price for different maturities (green) and the current spot price (red).

You may notice a large downward jump of the forward price between the maturities 2016-03-18 and 2016-06-17. This jump is due to a dividend to be paid in mid april (2016-04-15).

2 Exercise 1 - Dividends on Telia Sonera

Suppose that today is 2016-01-05 and consider the market prices of the forward contracts on TeliaSonera.

- (a) Suppose that a dividend of d SEK is to be paid at 2016-04-15. Determine d using the available market data (spot, interest rates, forward prices).
- (b) Suppose that the dividend to be paid at time t , corresponding to 2016-04-15, is αS_t , where $\alpha > 0$ and S_t is the spot price of the TeliaSonera share on 2016-04-15. Determine α using the available market data.

3 Exercise 2 - Dividends on other stocks

In the left panel in the top window labelled **Forwards, Spots and Rates** you can select other stocks (`eq_fwd`) other interest rates (`rate_cu`) for extracting the yield curve (SEKDEPO is default), other dates (`date`) for extracting market prices. (You should not play with the selectors `qs`, `qs_rate`).

Find out the market's expected dividends for two stocks other than TeliaSonera. Use both methods in (a) and (b) above.

You can do this by selecting other stocks in the `eq_fwd` selector. As market data for forward contracts is not very liquid you may have to change the date to obtain market prices. Some stocks do not have market prices at all. Stocks that often have market prices on forwards are Assa B, Boliden, Ericsson B, Getinge, SEB, SSAB, Telia Sonera, Trelleborg, and Volvo.

4 Exercise 3 - Dividends over time

Consider a stock that pays a dividend in the near future, for instance, Telia Sonera which pays a dividend on 2016-04-15. Using the method (a) for determining the dividend, determine the market's expectation of the dividend over a longer time period (a few months). That is, if you consider the TeliaSonera dividend, determine the dividend amount on, say 2015-11-04, 2015-12-04, 2016-01-04, 2016-02-04, 2016-03-04, to investigate how the expected dividend has changed over time. Interpret the result.

If you investigate further the market's expected dividend around the date 2016-01-29 you will see something interesting. What?