Financial
Immunities

Structured Products and Exotic Derivatives

March 2018

T 972-8-9369800 W www.immunities.co.il M info@immunities.co.il

Financial Immunities

Structured Products

- A Structured Product is a financial instrument that incorporates a number of financial products and is marketed by the Bank (or another financial intermediary) as a "package"
- Structures are known as investment alternatives, yet are far from being risk free. Over the last decade they have been intergraded into the risk management realm
- The constant conflict of the firm, which on one hand wishes to hedge its foreign currency exposure but on the other hand wants to participate in favorable currency movement, has laid the foundation for massive marketing of these products
- Obviously, use of structured products cannot be ruled out completely since they incorporate and infinite amount of variations. However, prior to taking on a position in a structured product, the firm must fully realize the financial implications that may occur

Evidently, firms realized the financial and accounting ramifications when it was too late…

Financial Immunities

Structured Products- Manual Guide

Before taking on a position in a structured product, the firm must be aware of a number of factors:

- The underlying derivative products, which comprise of the traded structure. For example, many structures include the term “Forward” but their resultant cash flow could be far from the cash flow arising from taking on a position in a standard FX Forward contract
- The firm’s policy in regards to the use of the derivatives which comprise of the structure
- The cash flow in every state of price
- Whether the structure does in fact provide an adequate hedge from unfavorable currency movement, against which the firm wishes to hedge and the hedging status of the firm after taking on the position
- The calculation of the fair value structure and the expected changes as a function of market movement
- The accounting implications. Standardly, hedge accounting cannot be implemented for the structure, therefore the fair value changes would be recognized immediately in profit or loss

Financial Immunities

The Cornerstones

To fully understand the nature of the product, there is a need to be familiarized with Vanilla derivatives which comprise of the structure.

- For convenience, the following explanation is presented with regards to USD\ILS currency pair. It can be applied to every other currency pair

FX Forward contract:

- An agreement to buy/sell a specified notional of USD against ILS at a predefined future point in time
- The deal is executed using the Forward rate. The price is a function of the spot rate, interest rate differential between the two economies and a risk premium
- The contract guarantees the firm a full certainty regarding the future cash flow and is executed at zero cost (if executed using the market's Forward rate), except for placing collateral

Financial Immunities

The Cornerstones

European Vanilla Put:

- A Put option gives the right, but not the obligation, to sell USD and buy ILS at a predefined rate (Strike) at maturity
- Buying a Put option allows the firm to hedge against a downward movement in USD, by setting a floor, while allowing it to enjoy a favorable upward movement

European Vanilla Call:

- A Call option gives the right, but not the obligation, to buy USD and sell ILS at a predefined rate (Strike) at maturity
- Buying a Call option allows the firm to hedge against a upward movement in USD, by setting a cap, while allowing it to enjoy a favorable downward movement

- For the right to buy/sell USD at a better rate than the prevailing market rate, the seller recives a premium, similar to an insurance contract

Financial Immunities

The Cornerstones

Options:

Position	Put	Call
Buyer	A right to sell USD against ILS	A right to buy USD against ILS
Seller	An obligation to buy USD against ILS	An obligation to sell USD against ILS

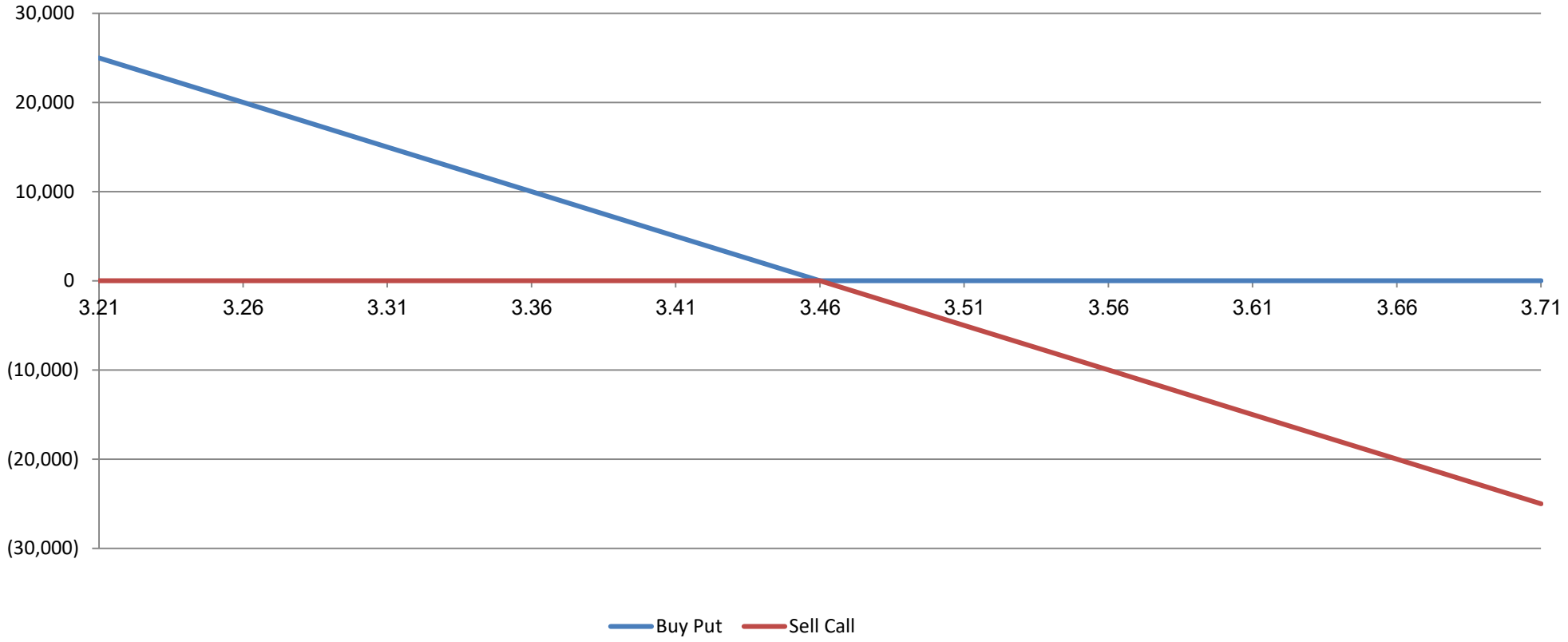
Buying a Put option and selling a Call option, with the same strike and maturity, creates a synthetic Forward contract to sell USD against ILS. Selling a Put option and buying a Call option, with the same strike and maturity, creates a synthetic Forward contract to buy USD against ILS

Barrier- An option " activation button". Generally, there are two distinct barriers:

- Knock In – The option is knocked in only if during the life span of the option, a specific barrier is reached
- Knock Out - The option is knocked out only if during the life span of the option, a specific barrier is reached

Financial Immunities

Synthetic Forward



Financial Immunities

DUCO

- The DUCO is not a hedging tool, since in an event of ILS appreciation there is no floor. The protection is limited to the size of the enhanced yield, relative to a standard deposit. This of course is negligible to the FX risk
- The DUCO structure includes selling a Call option not part of a strategy that aims to lower the hedging cost (such as buying a risk reversal). Selling a naked option, is generally forbidden according to firms' risk management/investment policies
- Since the DUCO incorporates a derivative product, it has to be marked to market and recognized in profit or loss, while acknowledged in relevant notes in the firm's financial statements
- Firms with a need to sell USD over the short term, beyond open hedging deals, can use DUCO as a replacement to a market order, though only in small amounts

Financial Immunities

Pricing DUCO

Before executing the DUCO, it's important to verify the bank's quote, so its "interesting" offer would be of interest to the firm as well

Bank's quote as of 08.02.2018:

DUCO with a three month maturity guarantees a USD yield of 3.5%. If the FX rate at maturity trades at above 3.57, the USD deposit will be converted to ILS at a FX rate of 3.57

Objective Pricing

FX USD\ILS	3.4920
Strike call option	3.57
Premium from selling the call option	0.53%
Premium from selling the call option (annualized)	2.14%
Standard USD deposit rate	1.685%
Objective pricing	3.83%

A difference of 0.33% between the pricing and the bank's offer

Financial Immunities

Forward Extra

Synthetic Forward includes:

- Buying a Vanilla Put option
- Selling an exotic Call option, with a Knock In barrier
- Two options with the same strike and maturity

Forward Rate in Market	3.4437

Market Data (19.03.2018)

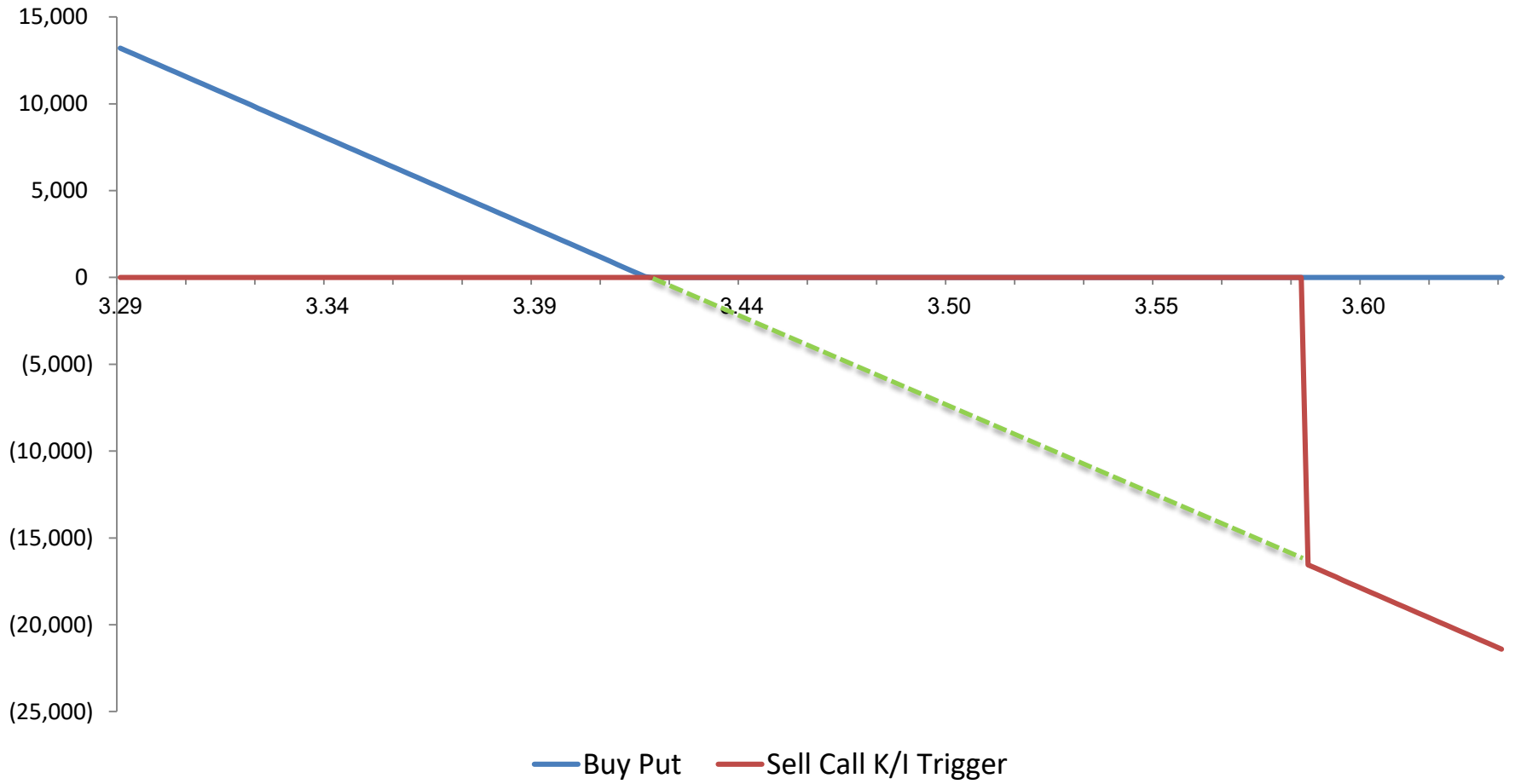
USDILS Spot Rate	3.4610
Strike (Buy Put & Sell Call)	3.42
Knock In Barrier	3.5852
Price	0%
Expiry	3 Months

- Possible Scenarios at Maturity:

Cash Flow	FX Rate during the option's life span
The call option will be exercised and the firm will be obliged to sell USD at a Forward rate of 3.42	Reached the 3.5852 barrier
The firm has the right to convert USD at a Forward rate of 3.42, which would be exercised if the spot rate at maturity trades below 3.42	Did not reach the 3.5852 barrier

Financial Immunities

Forward Extra



Financial Immunities

Forward Extra

Pros:

- The firm is guaranteed a minimal FX conversion rate, namely 3.42
- The firm retains the option to enjoy an ILS depreciation, up to 3.5852

Cons:

- In the event that the 3.5852 barrier is reached, the firm is obliged to sell the USD at a Forward rate of 3.42, which is lower than the market's forward price at inception (3.4437)
- There exists a complexity in fair value calculation
- Hedge accounting is inapplicable, due to the existence of the barrier

Suitability:

- The product is suitable for firms that do not apply hedge accounting as a substitute for a standard Forward contract
- The preferable means of use is for a short term exposure, as part of a number of hedging tools

Financial Immunities

BAFMAN

- The BAFMAN is comprised of:
  - Buying a series of exotic Put options with a Knock Out barrier for different maturities, but with the same strike and notional
  - Selling a series of exotic Call options with a Knock Out barrier with similar characteristics of the Put options but <u>two times</u> the notional

Example:

USDILS Spot Rate	3.46
Strike	3.50
Knock Out Trigger	3.20
Price	0%

Maturity	1 Year
Samples (end of month)	12
Amount (for each sample)	1-2M USD
Total Amount	24M USD

Average Forward Rate	3.42

BAFMAN

The outcome of the deal at each sample date:

- If the FX rate trades until the sample date at a rate above 3.20 (barrier wasn't reached)

Cash Flow	FX rate at sample date
The firm would sell 2 million USD against ILS at a rate of 3.5	Above 3.5
The firm would sell 1 million USD against ILS at a rate of 3.5	Below 3.5

- If the FX rate trades, during the life span of the deal, at a rate below or equal to 3.20 (barrier was reached), the deal is terminated. Consequently, the future sampling dates are terminated

Financial Immunities

BAFMAN

Pros:

- The advantage of the BAFMAN strategy is that it allows, supposedly, to create a series of synthetic forward transactions at a rate higher than the rate obtained in standard forward transactions in the same market conditions (3.5 as opposed to 3.42.

Cons:

- In the event of ILS appreciation (FX rate below 3.20), the firm is not hedged at all! In fact, the firm transgresses the hedging process
- The hedge is only on half of the deal due to gearing
- Executing one deal in a vast amount – the hedging process should be executed gradually while avoiding a hit or miss proposition
- Volatility in finance expenses - the long range scope of the deal and the sheer amount could increase volatility in profit or loss (hedge accounting is inapplicable)

Financial Immunities

BAFMAN

Suitability

- The fact that the deal is terminated just when it's needed the most (when ILS appreciates) excludes it from the definition of an appropriate hedging tool
- Use of the BAFMAN is not appropriate in hedging a firm's currency exposure and besides speculators, it is hard to see how it is appropriate for any other player

- In an academic article written by the International Monetary Fund (IMF), that included empirical research on the use of exotic tools for hedging purposes, it was mentioned that a group of hedging instruments with similar attributes to the BAFMAN should not be used in the hedging process:

"*Exotic Derivatives Losses in Emerging Markets: Questions of Suitability, Concerns for Stability*", IMF, July 2009