Case study 1 – Porsche exposed

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PORSCHE


Karol Miklas 2017

Company overview

Porsche's stakeholders and management style

Primary stakeholders

- **Porsche and Piéch families.** The two families hold all 8.75 million ordinary shares and hold all voting rights.
- **Employees.** They can be affected by Porsche's production decisions.
- **Customers.** Different products have different target customers.
- **Suppliers.** Porsche depends heavily on key suppliers such as Valmet (Boxster assembly) and Volkswagen (joint development of the Cayenne).

Secondary stakeholders

- **Preference shareholders.** Preference shareholders participated only in profits without voting rights.
- **Local communities.** Local communities are probably affected by Porsche in environmental and economic aspects.
- **Non-governmental institutions.** Porsche is regulated by non-governmental institutions in operating transparency, foreign exchange operations and legitimacy.
- **Financial analysts and investment institutions.** They influence Porsche indirectly through their reports and evaluations
- **Competitors.** Competitors such as BMW, Audi and Mercedes Benz can influence competitive markets and Porsche's strategies.
- **Media.** media comments on Porsche's currency hedging strategy.
- **General public.** General public can indirectly influence the company's reputation and legitimacy.

Porsche’s stakeholders and management style

Management

- Porsche uses a centralized management style that centralizes on the Porsche and Piéch families dominance, independence and the efficiency of the operation and manufacturing, with all voting rights held by the Porsche and Piéch families.
- For primary stakeholders, management maintains close alignment with customers by focusing on high quality, brand exclusivity and stable production line.
- For secondary stakeholders, management is more protective. Preference shareholders just receive dividends without voting rights.

Porsche vs Major European Rivals (BMW, Mercedes, VW)

Comparison Category	Feature	Porsche's Position	Major European Rivals
Operating Structure & Manufacture	*Cost Base & Natural Hedge*	Single-currency cost base, primarily in Euros. Has the lowest level of natural hedging in the sector.	Actively implement natural hedging by establishing production bases in the U.S. and U.K. to match currency flows.
	Production Location	Manufacturing confined to Germany and Finland, unwilling to move production outside Europe.	Increasingly expanding manufacturing capacity into non-Euro zones (e.g., BMW in South Carolina, Mercedes in Alabama).
	Market Exposure	Carries the heaviest U.S. market exposure. Over 50% of global sales are generated in countries with no production cost base.	Highly exposed to exchange rate changes but addressing exposure via operational adjustments.
	Product Portfolio Strategy	With only three platforms (911, Boxster, Cayenne), Porsche reduced dependence on the cyclical sports-car segment.	Larger scale and broader product ranges.
Financial Results & Performance (2002)	*Revenue per Vehicle*	Highest: €72,589	Lower (e.g., BMW at €32,221
	EBIT Margin	Highest: 16.4%	Lower (e.g., BMW at 8.0%)
	ROIC	Highest: 20.5%	Lower (e.g., BMW at 11.3%)
Corporate Governance & Reporting	*Accounting Standards*	Insists on using German accounting standards, criticized for lack of transparency.	Many rivals adopted IAS or U.S. GAAP.
	Reporting Frequency	Provides only semi-annual reporting, rejecting quarterly reports.	Typically provide quarterly reports.
	Management Incentives	Compensation based solely on current-year profitability, unrelated to share price.	Typically incorporate share-price incentives to build shareholder value.

Porsche's currency management strategy vs Competitors

Porsche has the **largest mismatch** between production costs (in euros, based solely in Europe for **quality** reasons) and revenue currencies, with **42% in dollars** and 11% in pounds

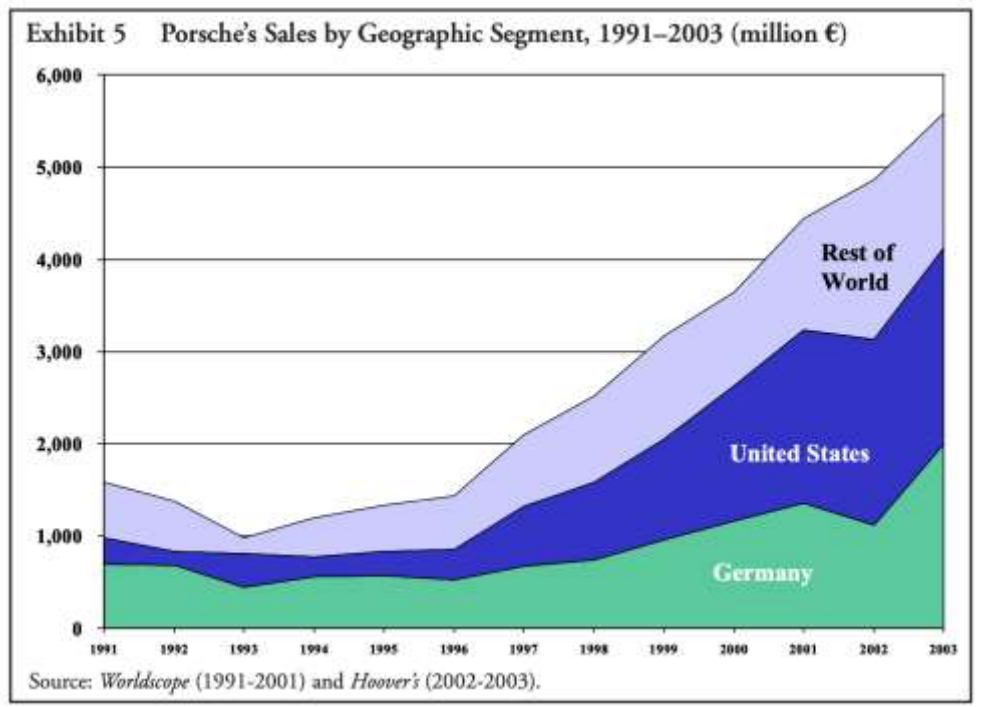
Competitors typically use **natural hedging** by aligning revenue currencies with production costs, often by locating production directly in the most relevant market

	North America	
Automaker	Sales	Production
BMW	26%	11%
Mercedes	19%	7%
Porsche	42%	0%
Volkswagen	13%	7%

''Porsche was a global brand with a single-currency cost base,,

All the companies were concerned about currency exposures and used different strategies to hedge them as illustrated in the **table**

Automaker	Implemented strategy
BMW	Doubling the capacity of its South Carolina manufaturing facility
Mercedes	Capacity expansion for its Alabama production site and condequently downsizing of its Germany operations
Porsche	Strong hedging strategy based on 3-years rolling put options
Volkswagen	Assembling all of its Bora and Fox line in Brazil or Mexico



Porsche forecasted increasing sales throughout its foreign markets, as depicted in **Exhibit 5**. Therefore, implanted an *aggressive* hedging strategy better explain afterwards

Hedging strategy

What is Currency Hedging?

Strategies used by businesses and investors to **protect earnings** from unfavorable exchange rate movements

Financial derivatives

Forward contract

Futures contract

Options

Swaps

Natural hedging

Diversification

Localizing

production

Financial derivatives

Forward contract

A forward contract is a **private agreement** between two parties to buy or sell an asset at a predetermined price on a specific future date

Future contract

Futures contracts are **standardized legal agreements** that mandate the purchase or sale of a specific commodity, asset, or security at a predetermined price on a specified future date.

Options

Contract that gives the buyer the right, but not the obligation, to buy or sell an asset at a specified price before or on a certain date (currency options can be traded both on exchange and OTC, **costly**, but **highly flexible**)

Swaps

A swap is a derivative contract where two parties exchange cash flows or liabilities of financial instruments, often over-the-counter (OTC) or on SEFs.

Natural hedging

Diversification: Spreading revenues across different markets (losses in one region are offset by gains in another)

Localizing production: Producing goods where they are sold (under the same currency)

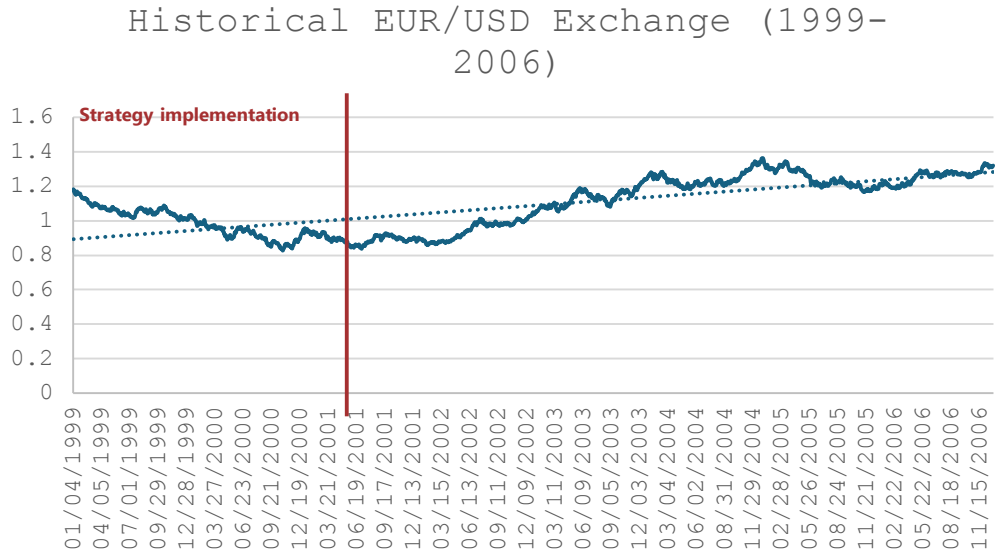
Porsche's Hedging strategy

Porsche is naturally **long USD** (large US sales, euros costs).

To protect euro revenues against a *weakening dollar / strengthening euro*, it **bought USD put options** with maturities extending 3 years forward.

Each year, a new *3-year tranche* is added while last year's option moves from 3 to 2 to 1 years to maturity.

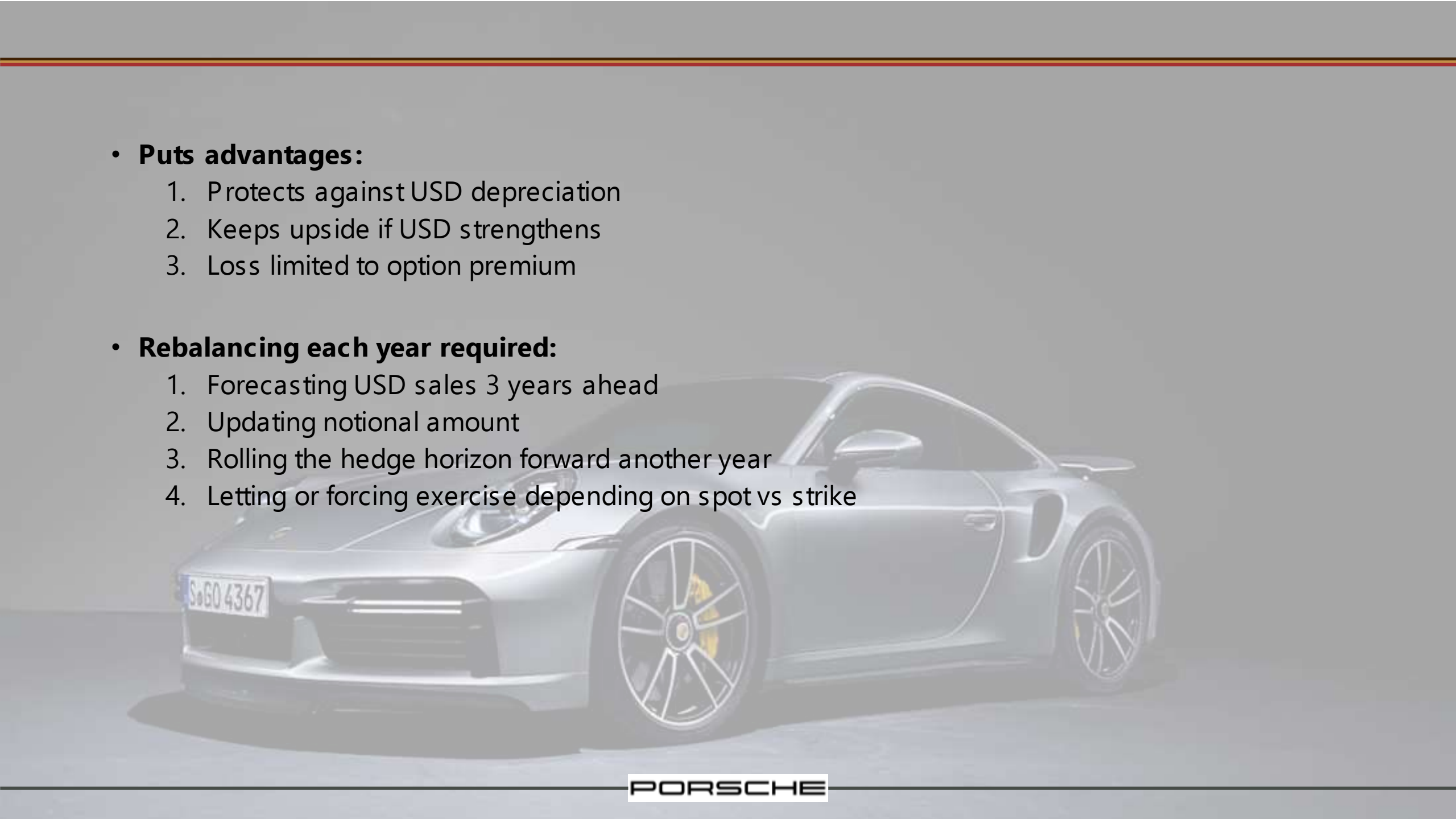
This creates a rolling hedge portfolio, always covering the next 3 full years of USD exposure. Exposure was about 70–72% of gross U.S. dollar revenues. And Porsche reached 100% coverage out to 2006



Benefited as USD weakened after strategy implementation

- **Puts advantages:**
  1. Protects against USD depreciation
  2. Keeps upside if USD strengthens
  3. Loss limited to option premium

- **Rebalancing each year required:**
  1. Forecasting USD sales 3 years ahead
  2. Updating notional amount
  3. Rolling the hedge horizon forward another year
  4. Letting or forcing exercise depending on spot vs strike



Strategy valuation

Garman Kohlhagen ~~Model~~

- Assumptions:

Year	Hedge initiated	Expiry of Hedge	Notes
2001	Buy 3-year put options for 2001-2003 exposures	2004	Cover sales in 2002-2004
2002	Buy 3-year put options for 2002-2005 exposures	2005	Cover sales in 2003-2005
2003	Buy 3-year put options for 2003-2006 exposures	2006	Cover sales in 2004-2006

To initiate strategy in 2001, Porsche buy three distinct "tranches" of options simultaneously:

- Tranche A (1-Year Option): Expires July 2002. Strike X=$0.90/€.
- Tranche B (2-Year Option): Expires July 2003. Strike X=$0.95/€.
- Tranche C (3-Year Option): Expires July 2004. Strike X=$1/€.

Garman Kohlhagen Model

- Porsche is concerned with the EUR value of future USD receipts, so it is convenient to treat the derivatives as **European put options on the foreign currency (USD), with the domestic currency being the euro.**
- The underlying asset is therefore the spot exchange rate quoted in EUR per USD.

Parameters	Notes	July 2001	July 2002	July 2003
Spot rate (S)	Appendix 8, Spot Rate of 0.86 US$/€ **converted to €/$**	1.1606	1.1606	1.1606
Strike rate (X, €/$)	Strike price is rising in subsequent years from 0.9 up to 1 $/€, **hence converting to €/$**	1.11	1.053	1
Domestic Rate (Rd)	12-month Euro – LIBOR Rate	4.31%	3.643%	2.077%
Foreign interest rate (Rf)	12 month Eurodollar – LIBOR Rate	4.00%	2.143%	1.201%
Volatility	Appendix 8	11.55%	15.68%	18.08%
Time to Maturity (T-t)		1	2	3

Garman Kohlhagen Model

- Applying Garman Kohlhagen Model using formulas:

$$P = Ke^{-r_d t}N(-d_2) - e^{-r_f t}S_0 N(-d_1)$$

$$d_1 = \frac{\ln\left[\frac{S_0}{K}\right] + \left(r_d - r_f + \frac{\sigma^2}{2}\right)t}{\sigma\sqrt{t}}$$

$$d_2 = d_1 - \sigma\sqrt{t}$$

We estimate following results

	year 1	year 2	year 3
d1	0.470	0.685	0.716
d2	0.355	0.463	0.403
N(-d1)	0.319	0.247	0.237
N(-d2)	0.361	0.322	0.343
Premium EUR per USD/ put option value	**0.028**	**0.041**	**0.057**

The cost of the hedge relative to the total value of USD exposure converted to EUR at current spot is therefore **2.41%, 3.53% and 4.91%** (calculated by dividing premium over spot rate 1.1606)

Profitability Assessment

- To **determine profitability** of the strategy, we compare the **put option payoffs** at maturity with the option premiums, where payoff of the put option is determined by the following formula:

$$P_T = max[0, X - S_T]$$

- For the first two years, we use spot rates $/€ available in **Appendix 8** and *convert them* to €/$ for correct comparison, since we treat Euro as domestic currency and USD as foreign.

Profitability Assessment

	Notes	Jul-02	Jul-03
Spot Rate (EUR per USD)	Converted Spot rate $/€ from Appendix 8	1.0069	0.8801
Strike price (EUR per USD)	Converted Strike price $/€	1.111	1.053
Payoff per USD, EUR		0.104	0.173
Premium	Calculated using Garman Kohlhagen Model	0.028	0.041
Payoff after premium, EUR		**0.076**	**0.132**

- We observe that first two years of three years rolling strategy were **extremely profitable**, even after taking premium into account. It is also said that a very large share of earnings is expected to come in 2003/4 from hedging contracts. Given the **continued weakening of the dollar** over this period, we assume that other options also ended in the money and delivered big profits.

Strategic evaluation and recommendations

Overall assessment of Porsche's hedging program and recommendations

Observations:

- Porshe's hedging program is **financially profitable and rational**, *but* very aggressive and somewhat **speculative**.
- Hedging 100% of net USD exposure out 3 years can lead to large gains from currency, sometimes contributing up to **50% of total profit**.

Recommendations:

- Keep using financial derivatives, but adjust currency exposure coverage by derivatives over the horizon to reduce the over-hedging risk for later maturities to avoid speculative profits, *for example:*

T=1	T=2	T=3
90%	70%	35%

- Use more **natural hedging**, like competitors. Over time it could shift part of its production outside the EURO nominated currencies zone towards the US or UK.
- Separate *operating results* from *treasury results* for better **transparency**; adopt international accounting standards (IFRS)