



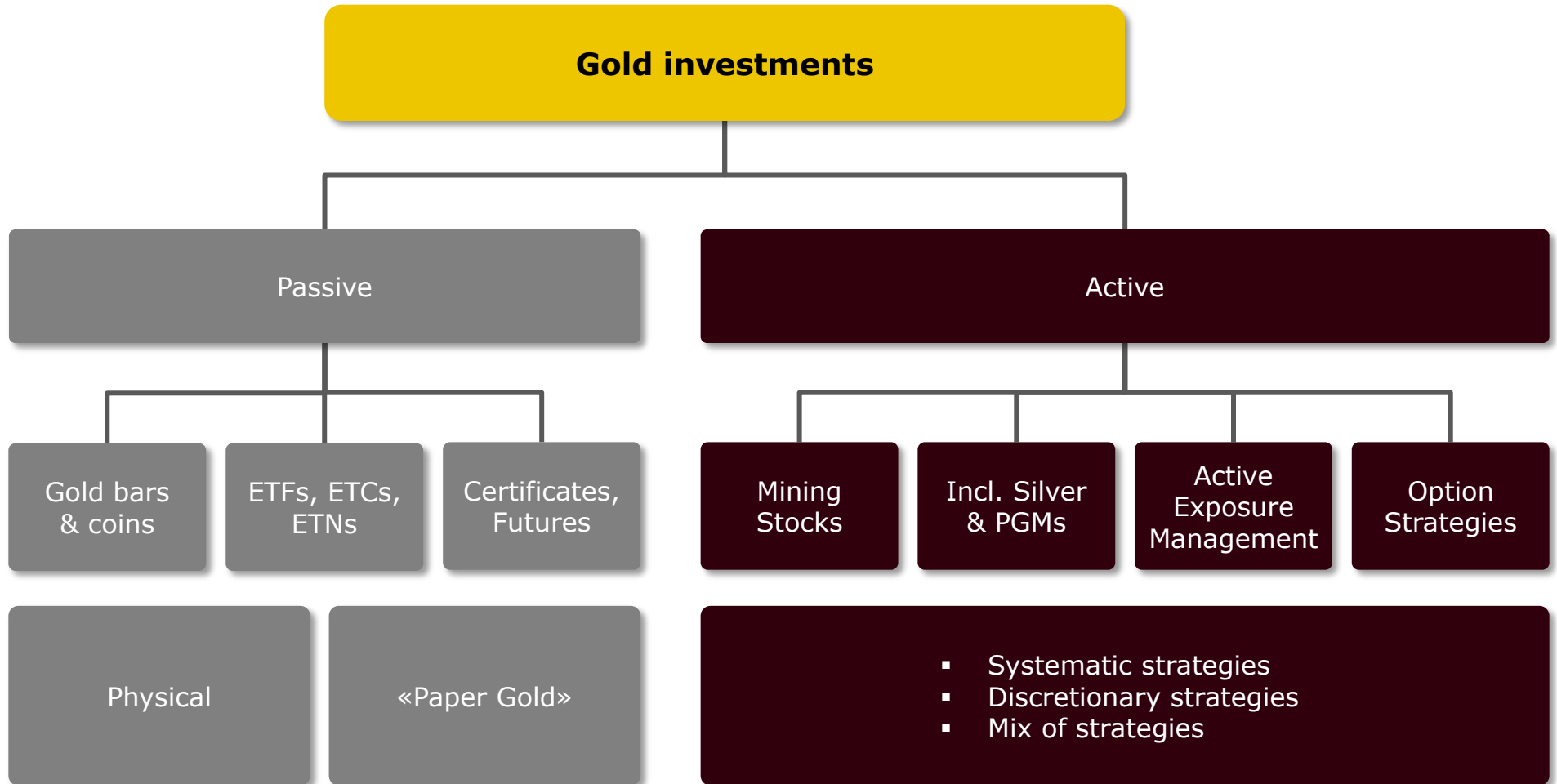
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Active Gold Strategies

Systematic call overwriting on Gold

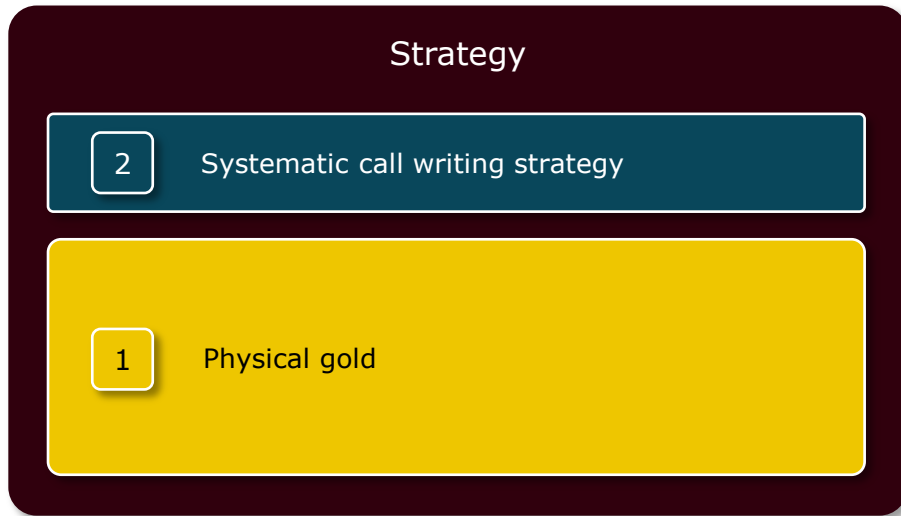
June 2013



Active strategies



Mining Stocks	<p>Aims at generating outperformance through:</p> <ul style="list-style-type: none">▪ Operational leverage of mining companies▪ Clever stock selection	<p>Risks:</p> <ul style="list-style-type: none">▪ Large mining cost increases▪ Company-specific risks▪ Political risk / country risk
Core Gold – satellite Silver and/or PGMs	<p>Aims at generating outperformance through investing in Silver and/or PGMs (next to Gold)</p>	<p>Risks:</p> <ul style="list-style-type: none">▪ Dilution of Gold performance▪ Higher volatility (Silver/Platinum/Palladium are typically more volatile than Gold)
Active Exposure Management	<p>Aims at generating outperformance through actively managing the Gold exposure (“market timing”)</p> <ul style="list-style-type: none">▪ Systematically: use of quantitative models, trading signals▪ Discretionary: use of trading experience, gut feeling	<p>Risks:</p> <ul style="list-style-type: none">▪ Bad timing▪ Overconfidence (both in quantitative models and discretionary decision taking) → future price behavior is not necessarily similar to past price behavior
Option Strategies	<p>Aims at generating outperformance through buying/selling options</p> <ul style="list-style-type: none">▪ Alpha generation through volatility premium, time decay and possibly leverage	<p>Risks:</p> <ul style="list-style-type: none">▪ Leverage, volatility, vol of vol, time decay,... (risks embedded in the greeks)



Yield generating overlay

Base portfolio: Gold

- 1 At all times, the base portfolio **is fully invested in Gold**
- 2 In addition, the strategy **systematically manages** the Gold positions by writing call options:
 - Writing short-term call options continuously generates income and prevents / reduces losses in a sideways or downward trending market.
 - The choice of the strike price of the written call options is dynamically managed by reliable trend filters.

1 Base portfolio: Physical Gold



Overview

- The base portfolio exclusively exists of Swiss, physically backed Gold ETFs or direct investments in Gold:

Physically backed Gold ETF

Physical Gold

- ETFs are 100% backed by physical Gold, stored exclusively in Switzerland
- Hence ETFs are a safe and efficient way of direct investment in physical gold

Advantages of physically backed ETFs

Physical delivery

Delivery of physical Gold if desired (Gold bars)

Liquidity

The ETFs are traded daily on the Swiss Exchange

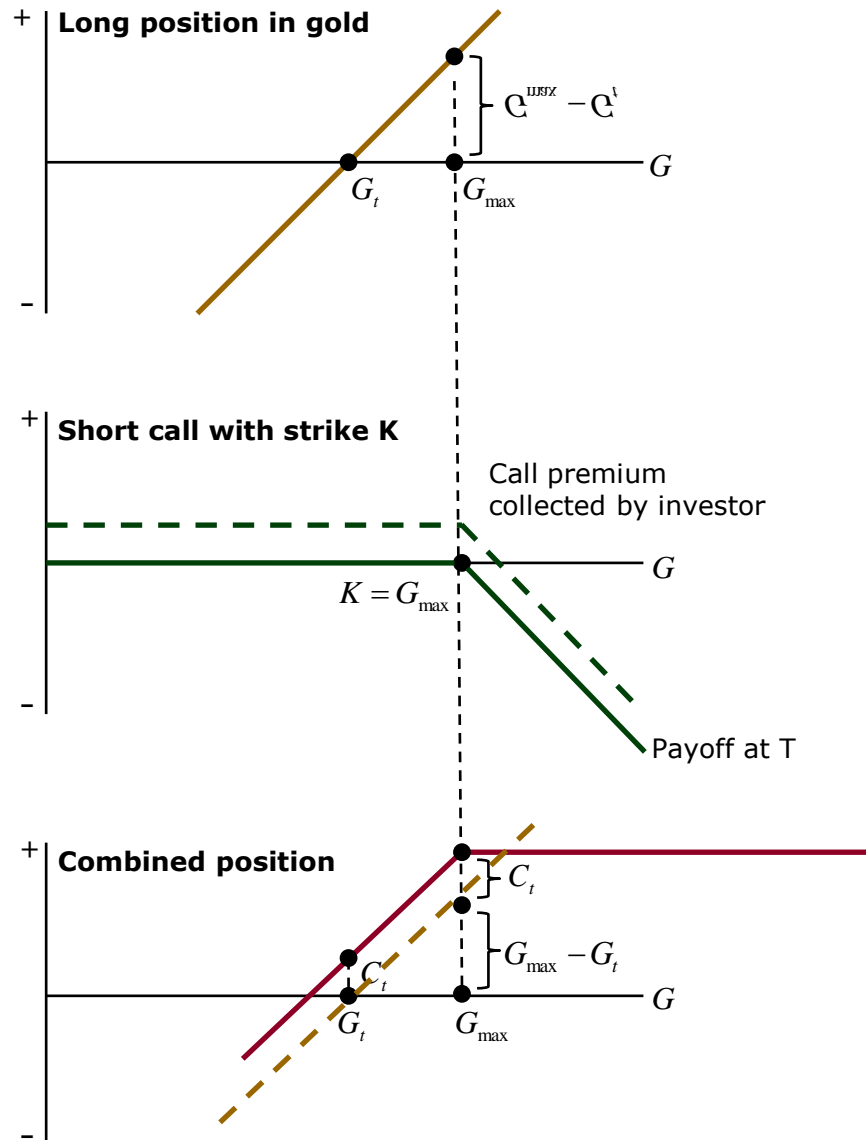
Cost efficiency

Low fees for the safe storage of gold and the management of the ETFs (approx. 0.40% p.a.)

Popularity

Estimated assets under management in Swiss, physically backed Gold ETFs are above CHF 20 billion

2 Systematic call writing strategy



- Passive long position in Gold
- Delta varies between 99% and 101%
- Return driver: Gold price

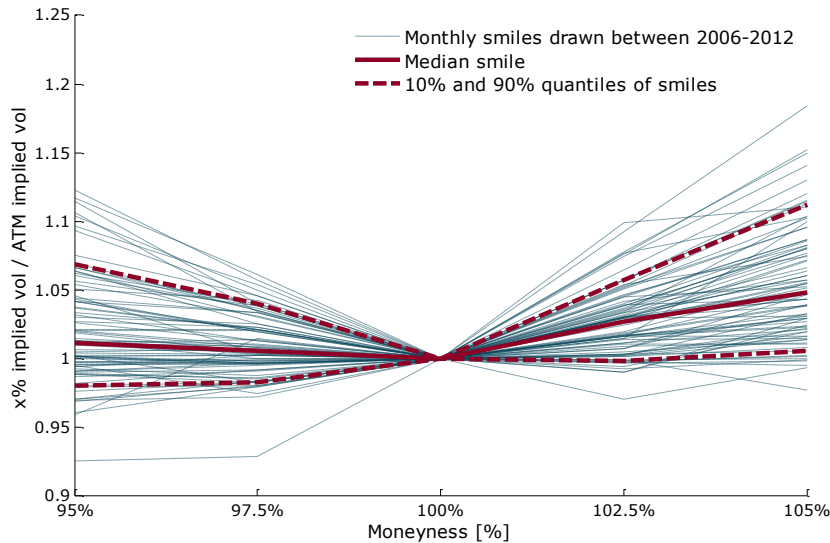
- Systematic writing of Comex Gold options
- Delta varies between -100% and 0%
- Return driver: Fair call value, vol premium, theta decay

- Combined position is a covered call in Gold
- Delta varies between 0% and 100%
- Empirically: enhanced return with lower risk

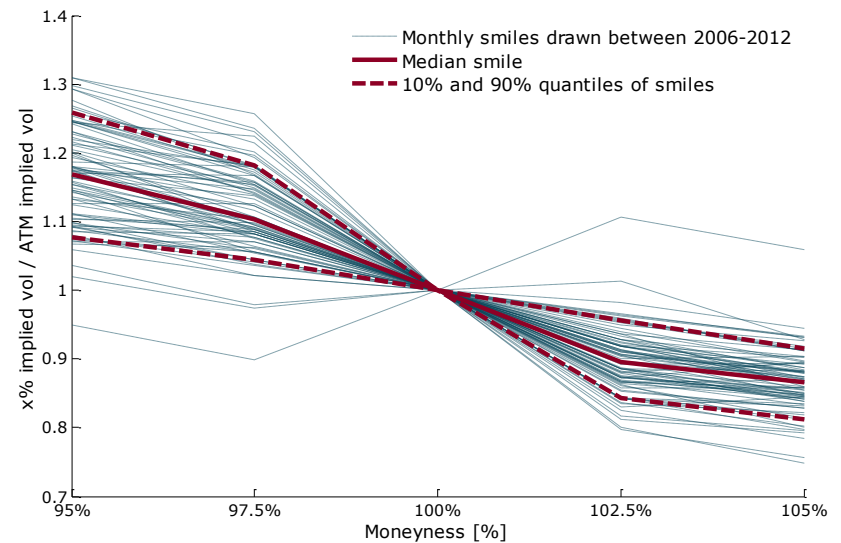
Smile effects: Gold options vs. equity index options



Volatility smile of **Gold** futures options



Volatility smile of **S&P 500** futures options



- We observe a **positive skew** (or weak smile) for Gold options
- Higher strikes trade at higher prices than lower strikes as investors pay more for out-of-the-money (OTM) calls and in-the-money (ITM) puts
- Higher demand for higher strikes comes from the tendency of Gold to be a haven asset

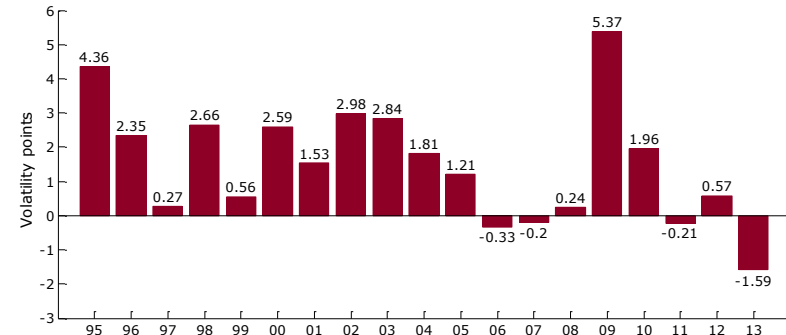
- We observe a **negative skew** for equity index options
- Lower strikes trade at higher prices than higher strikes as investors pay more for OTM puts and ITM calls
- Higher demand for lower strikes comes from crash protection with OTM puts and leveraged bets with ITM calls

Gold volatility risk premium

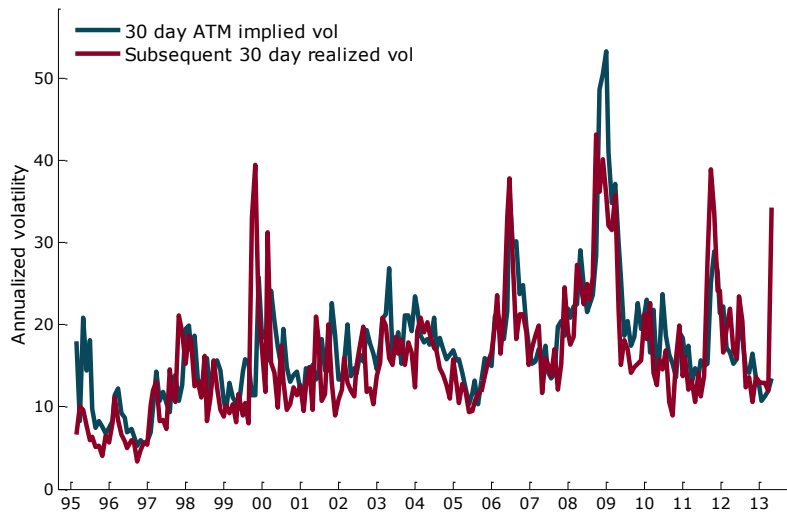


- An important return source of overwriting strategies is the tendency for option implied volatility to trade in excess of subsequent realized volatility
- From 1995 through May 2013 the **average spread** between one-month Gold ATM implied volatility and trailing one-month realized market volatility was **1.62 volatility points**

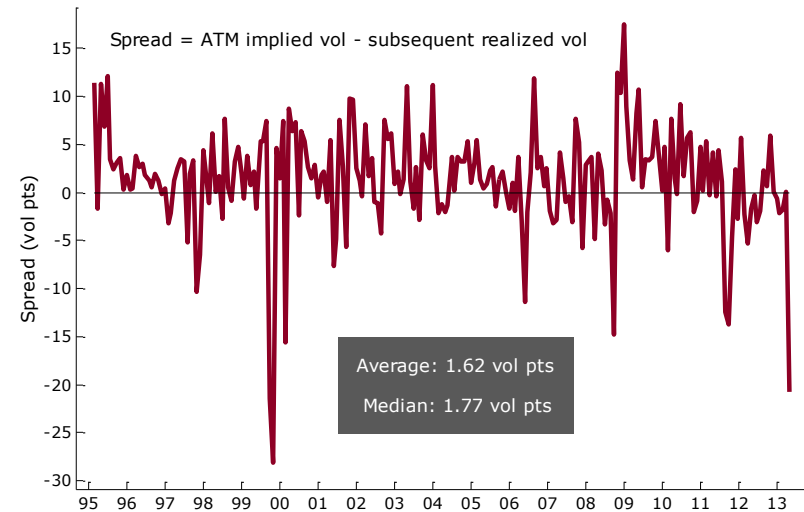
Average volatility premium per year



Implied volatility vs. realized volatility



Time-varying volatility premium

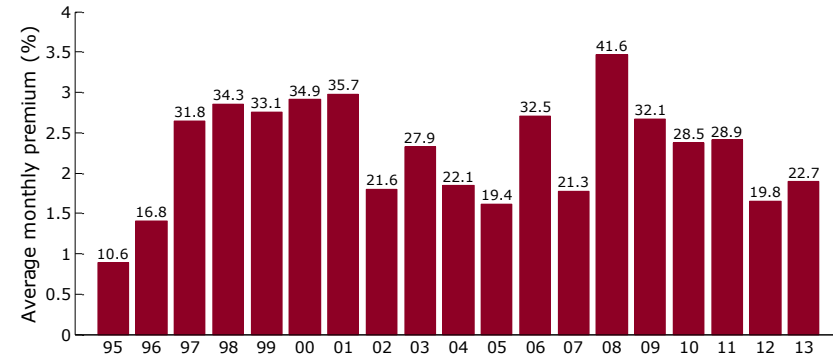


Collected option premiums

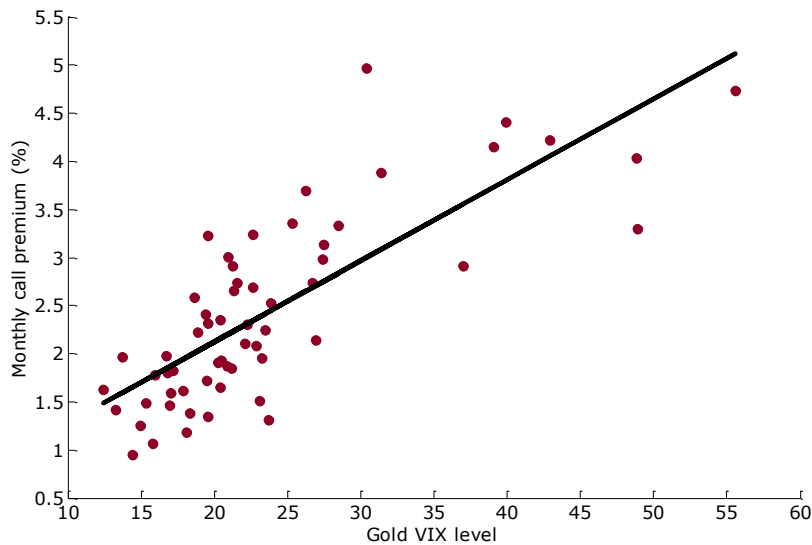


- Selling call options generates monthly cash flows much like interest or dividends
- The premium collected reflects the probability that the seller will incur a loss through exercise of the option
- The call premium is mainly driven by implied volatility reflected in option prices

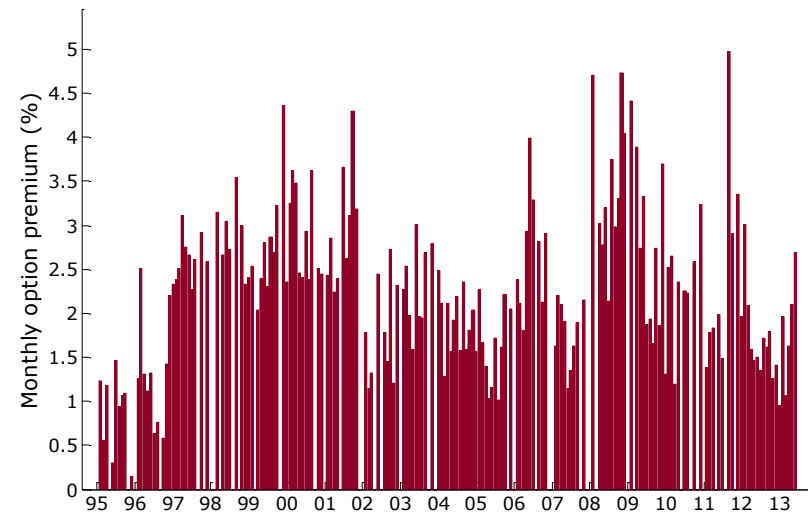
Average monthly option premium (% of NAV)



Monthly call premium vs. Gold VIX



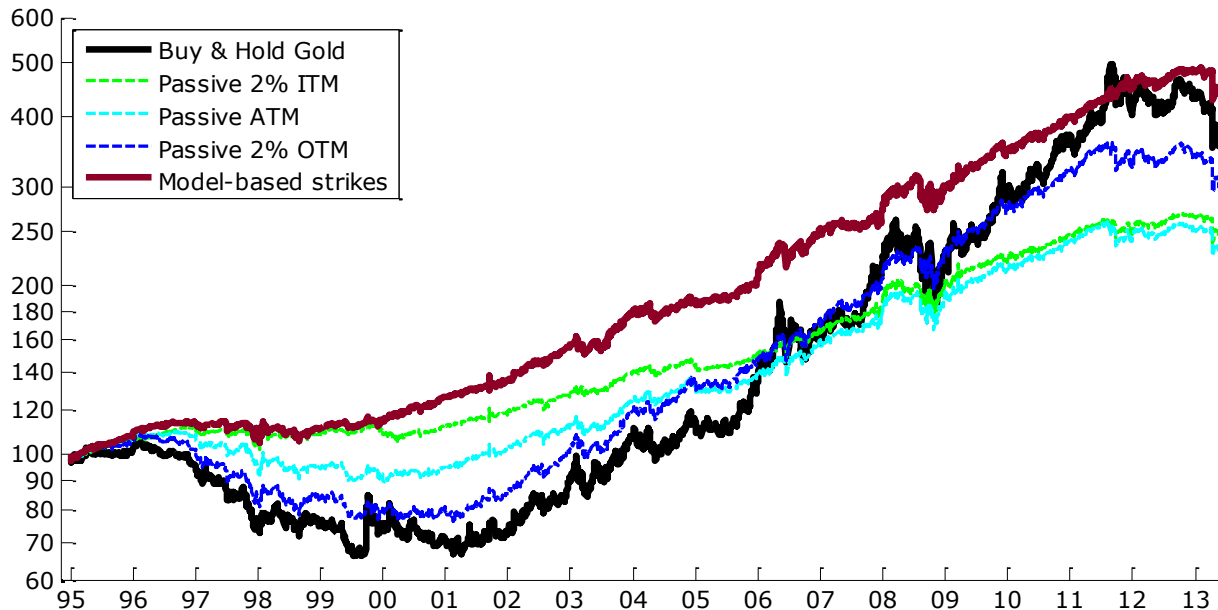
Monthly option premiums (% of NAV)



2 Systematic call writing strategy



- A reasonable amount of premium can be collected by overwriting Gold
 - In the search of yield overwriting is therefore an approach to generate cash flows
- Should we use a passive or an active overwriting strategy?
- What maturities work best? What strikes should we choose?
- Should we use leverage?



InCube overwriting strategy

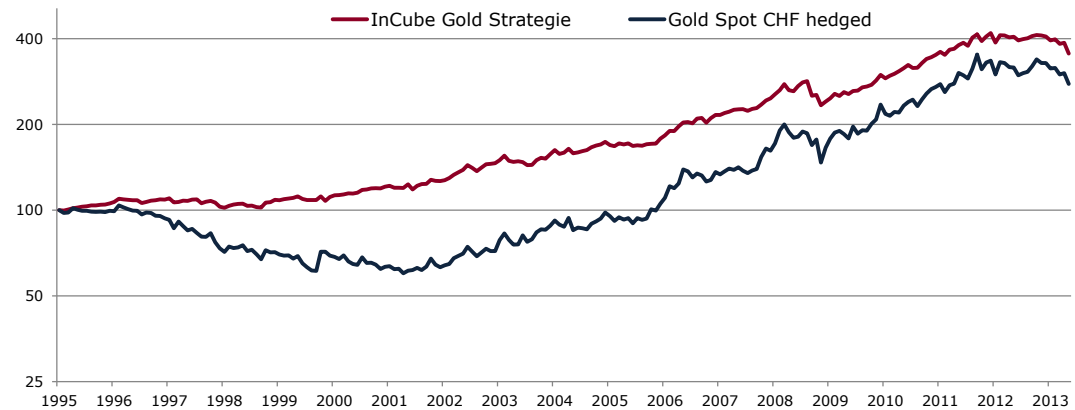
- Monthly maturities
- Active with respect to strikes
- Dynamic strike between 98% (ITM) and 102% (OTM) in 1% steps
- Short-term, mid-term and long-term trend filters determine the strike
- Gold uptrend: strike between 100% and 102% (OTM)
- Gold downtrend: strike between 98% and 100% (ITM)
- Trend-filters are based on DFA filtering, an approach developed at KOF ETH for prediction of business cycles
- Call exposure = 100% Gold exposure (no leverage)

Performance (Simulation + Live)

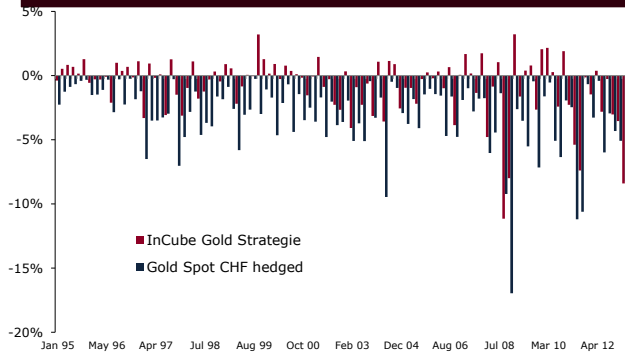


Statistics		
Period: Jan 1995-Apr 2013	InCube Gold Fund	Gold
Total return	254.67%	177.81%
Annualized return	7.15%	5.73%
Annualized volatility	8.41%	16.21%
Sharpe ratio ¹	0.85	0.35
Maximum drawdown	17.74%	42.27%

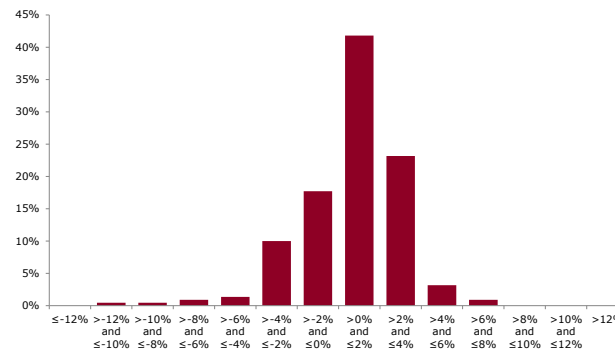
Cumulative performance (normalized, logarithmic scale)



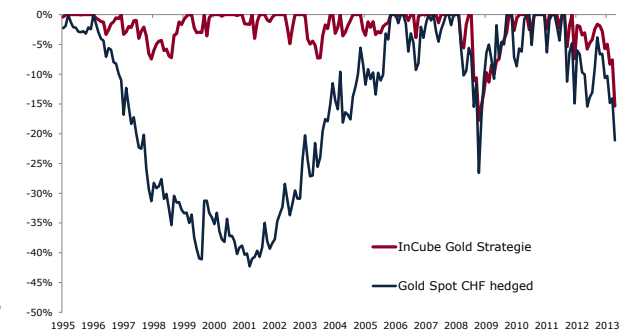
Return when Gold price down



Return distribution



Drawdown analysis



Results until 29 Nov 2012 are based on backtesting. Since 30 Nov 2012 results are based on live trading. All returns are net of fees and costs of currency hedging.

Past performance is no indication or guarantee of future performance.

¹ Risk-free rate: 0.00%

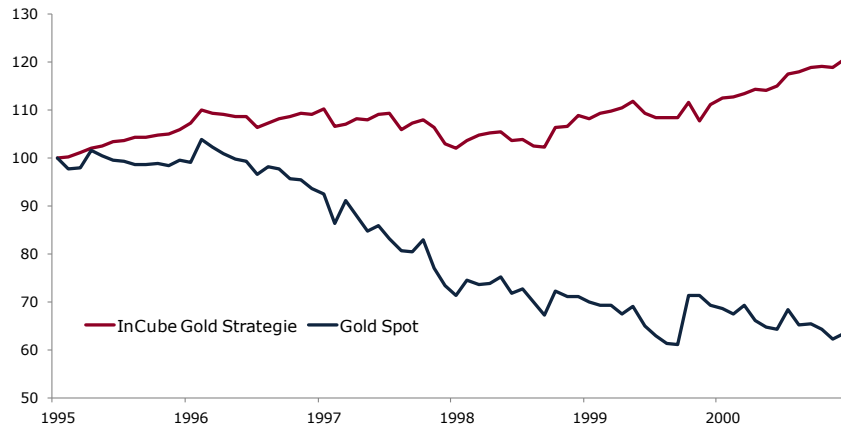
Comparison: 1995 - 2000 (bear market)



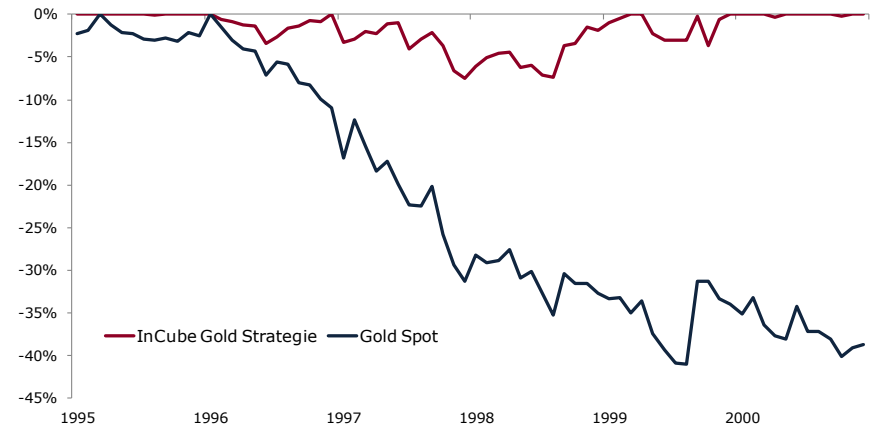
Monthly / annual returns

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual return	Gold Spot	Outperformance
2000	0.16%	0.57%	0.91%	-0.26%	0.78%	2.31%	0.36%	0.84%	0.10%	-0.16%	1.45%	0.71%	8.01%	-7.19%	15.20%
1999	0.90%	0.56%	0.56%	1.23%	-2.19%	-0.84%	0.06%	-0.04%	3.00%	-3.49%	3.20%	1.28%	4.10%	-1.90%	6.00%
1998	1.56%	1.10%	0.54%	0.15%	-1.80%	0.28%	-1.25%	-0.31%	4.04%	0.32%	2.04%	-0.46%	6.25%	-2.08%	8.33%
1997	-3.31%	0.42%	0.94%	-0.17%	1.15%	0.09%	-3.07%	1.27%	0.71%	-1.49%	-3.12%	-0.96%	-7.45%	-22.84%	15.40%
1996	2.55%	-0.56%	-0.29%	-0.30%	-0.10%	-2.12%	0.83%	1.00%	0.36%	0.68%	-0.14%	1.11%	3.00%	-6.74%	9.73%
1995	-0.39%	0.97%	0.97%	0.53%	0.83%	0.31%	0.68%	-0.03%	0.52%	0.15%	0.94%	1.28%	6.95%	-0.81%	7.76%

Cumulative performance (normalized, logarithmic scale)



Drawdown analysis



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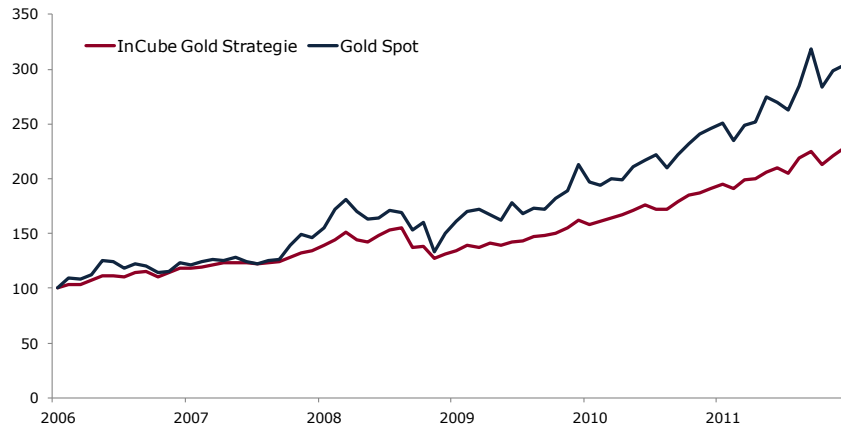
Comparison: 2006 - 2011 (bull market)



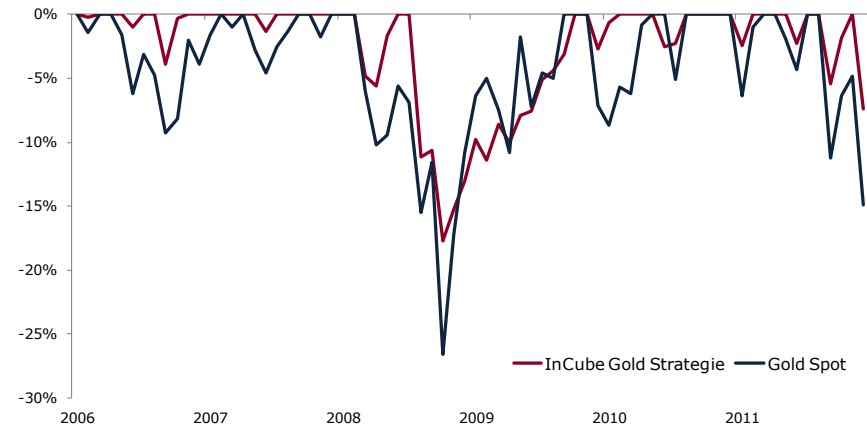
Monthly / annual returns

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual return	Gold Spot	Outperformance
2011	-2.42%	4.32%	0.70%	2.96%	1.90%	-2.28%	6.84%	2.66%	-5.38%	3.72%	2.96%	-7.39%	7.86%	8.08%	-0.22%
2010	2.06%	1.56%	2.16%	2.41%	2.73%	-2.52%	0.27%	3.82%	3.47%	1.30%	1.98%	2.42%	23.75%	27.23%	-3.48%
2009	3.78%	-1.78%	3.22%	-1.63%	2.41%	0.39%	2.67%	0.79%	1.29%	3.68%	4.53%	-2.66%	17.66%	22.15%	-4.49%
2008	3.53%	4.98%	-4.78%	-0.86%	4.21%	3.07%	1.05%	-11.15%	0.63%	-7.99%	3.02%	2.63%	-3.15%	3.86%	-7.01%
2007	1.45%	1.04%	1.68%	0.36%	0.17%	-1.35%	1.48%	0.69%	2.88%	3.40%	1.74%	3.24%	18.01%	28.66%	-10.65%
2006	3.73%	-0.21%	3.98%	3.20%	0.32%	-0.99%	3.80%	0.66%	-3.87%	3.72%	2.73%	0.06%	18.15%	20.96%	-2.81%

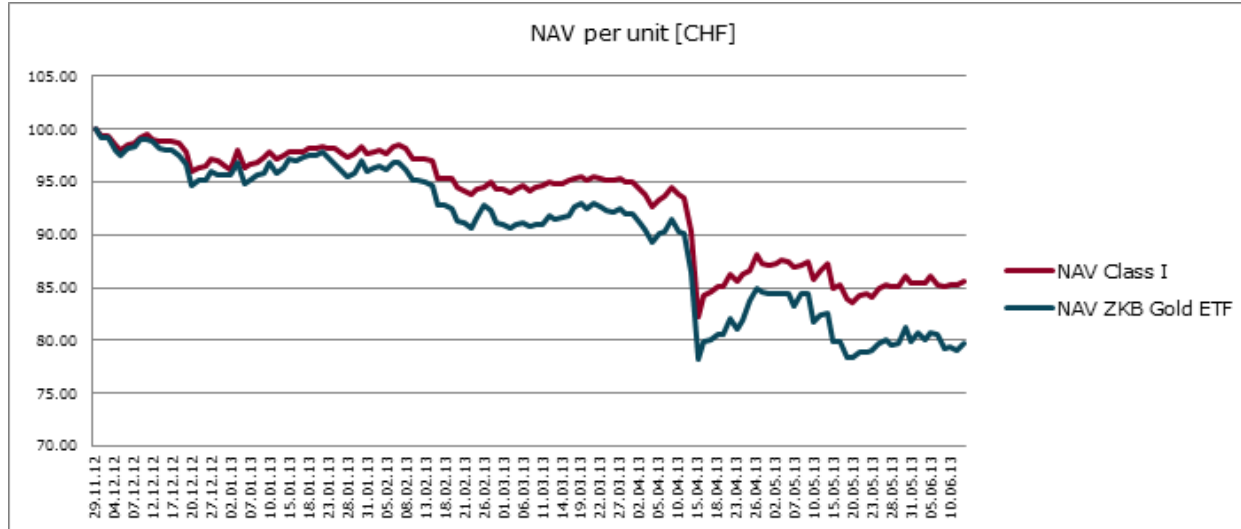
Cumulative performance (normalized, logarithmic scale)



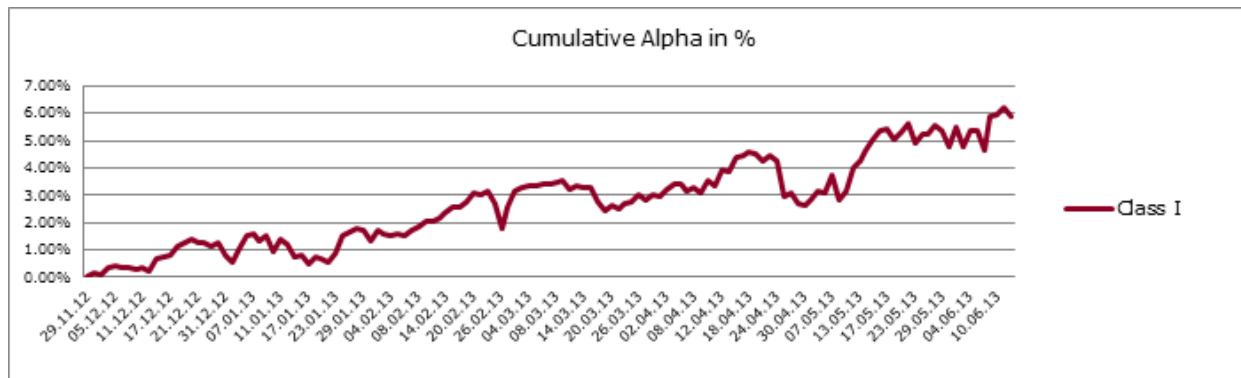
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- Strategy is live since 30 Nov 2012
- **Return enhancement and risk reduction have been achieved so far**
- Despite very low implied volatilities enough premiums could be collected to outperform Gold
- Current strike is at 100% (ATM)



12.06.2013	Gold Strategy	ZKB Gold ETF
NAV	85.68	79.80
MTD	0.27%	-0.23%
YTD	-11.65%	-16.61%
ITD	-14.32%	-20.20%



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