



ACEPI - RESEARCH

Part 3: Certificates with Protection

Milano, 2016

Agenda

- Research objectives
- Database description
 - Year of issue and maturities
 - Underlying and issuers
- Calculation of the historical performance
- Scatter-plot and Volatility
- Results and methodology
 - Return and risk
 - Return and protection
 - Return and participation
 - Dividend yield

Database description

The original database consists of **616** certificates divided into 23 sub-types. These are certificates issued since 2004 and matured by 2015

TIPOLOGIA	NUMERO	FREQUENZA
EQUITY PROTECTION	254	41,5%
EQUITY PROTECTION CAP	105	16,9%
BORSA PROTETTA	88	14,4%
BORSA PROTETTA CON CAP	52	8,4%
PROTECTION CERTIFICATES	31	5,0%
BUTTERFLY CERTIFICATE	21	3,4%
EQUITY PROTECTION PLAIN VANILLA	19	3,1%
BORSA PROTETTA QUANTO	8	1,3%
PROTECTION CAP CERTIFICATES	6	1,0%

TIPOLOGIA	NUMERO	FREQUENZA
EQUITY PROTECTION CAP QUANTO	6	1,0%
EQUITY PROTECTION QUANTO	5	0,8%
CAPITAL PROTECT QUANTO	3	0,5%
EQUITY PROTECTION QUANTO EURO	3	0,5%
EXPRESS PROTECTION	2	0,3%
CAPITAL PROTECTED	2	0,3%
PROTECTION CON BONUS	2	0,3%
BORSA PROTETTA ALPHA	2	0,3%
EQUITY PROTECTION SWICTHABLE	2	0,3%

Certificate selection and methodology

- The analysis will focus primarily on the entire database, then the focus will move to the three most important certificates: Equity protection, Equity protection cap, Butterfly
- The analysis will estimate the historical performance of the certificates in comparison with the underlying's one in the same reference period. This allows the comparison of the performance of investment certificates with the hypothetical direct investment in the underlying
- The analysis will be carried out by dividing the sample into three sub-periods corresponding to different market phases: certificates issued from 2004 to 2007, those from 2008 to 2009 and then from 2010 to 2015
- The calculation of the performance will be made firstly without considering the effect of dividends and then considering their impact

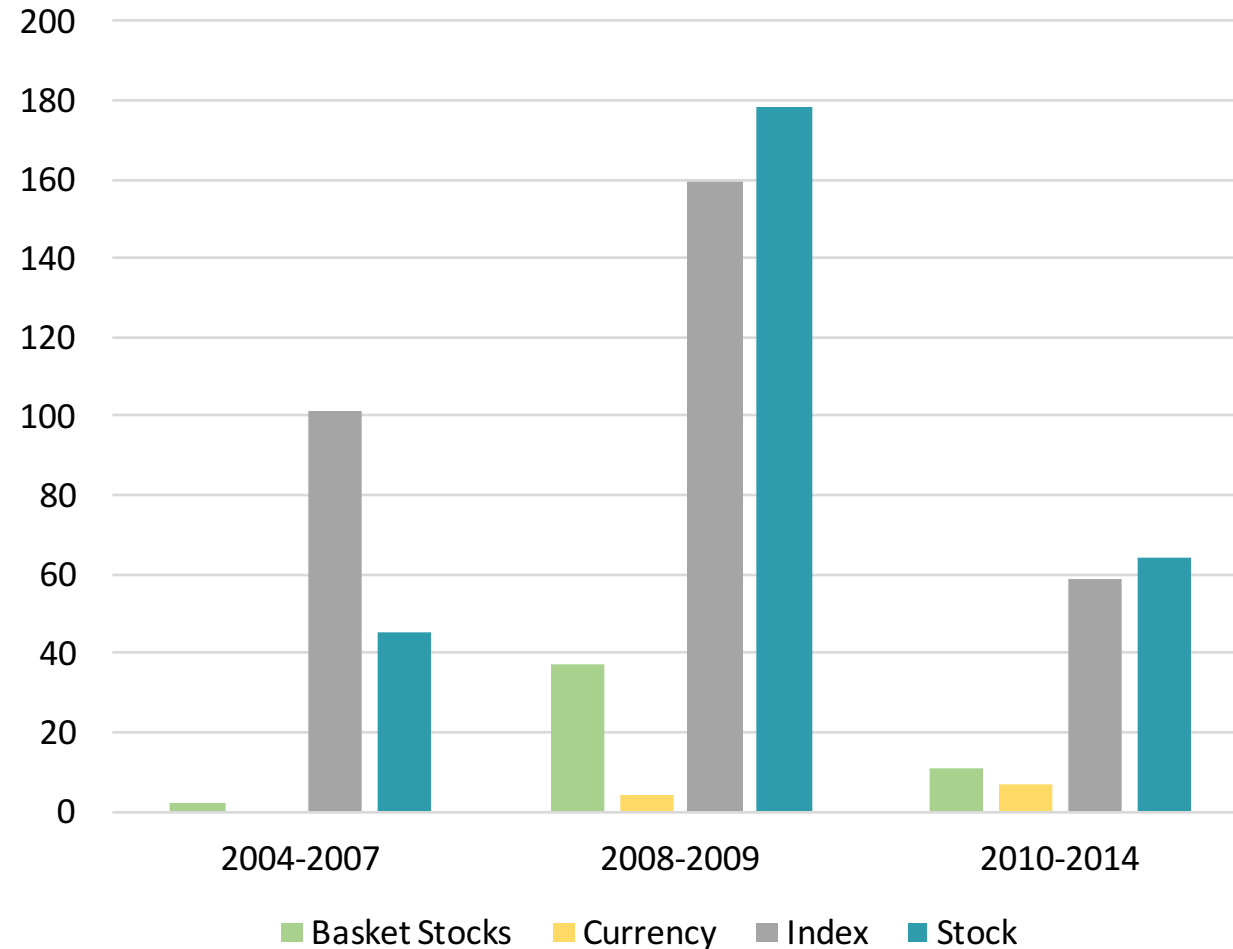
Features of the certificates: year of issue and life-cycle

The largest number of certificates (221 or 36%) of the database have been issued in 2007. The certificates issued in the early years had usually maturities shorter than three years

YEAR OF ISSUE	LIFECYCLE					TOTAL	PERCENTAGE
	1 -2	2-3	3-4	4-5	5-6		
2005				3	7	10	1,6%
2006	44	43	14	17	14	132	21,6%
2007	80	54	30	27	30	221	35,6%
2008	27	59	28	16		130	21,1%
2009	22	7	3	14	5	51	8,2%
2010	6		4	13		23	3,7%
2011	21	14	6	1		42	6,9%
2012		6				6	1,0%
2014	1					1	0,2%
TOTAL	201	183	85	91	56	616	
PERCENTAGE	32,7%	29,7%	13,9%	14,7%	9,0%		

Features of the certificates: underlying

The certificates have 95 different underlyings (16 baskets, 3 FX, 58 indices 18 stocks)



Stocks and indices increased from 2004 to 2009 and decreased in the last period

The most traded underlyings have been:

- FTSE MIB
- S&P 500
- Eni
- Enel
- Telecom Italia

Calculation of historical performances

- For each certificate, the performance has been calculated by comparing the performance of the redemption price with the issue price
- It has been then calculated the average yield of certificates belonging to the three categories: Equity protection, Equity protection cap, Butterfly
- Alpha is the variable that expresses the difference between the average yield of certificates and the average yield of the underlying

Final database

The period was divided into three sections:

- 2004-2007: bull market, 363 certificates have been considered
- 2008-2009: bear market, 181 certificates have been considered
- 2010-2015: bullish US market and lateral EU market, 616 certificates have been considered

It has not been taken into consideration the maturity date but only the issue date

PERIOD	EQUITY PROTECTION	EQUITY PROTECTION CAP	BUTTERFLY	TOTAL
2004-2007	315	43	5	363
2008-2009	72	94	16	181
2010-2014	40	32		72
TOTAL	426	169	21	616

Features of the certificates: capital protection

**2004
2007**

PROTECTION LEVEL	NUMBER	PERCENTAGE
0,7 – 0,8	21	5,8%
0,8 – 0,9	69	19,0%
0,9 – 1,0	273	75,2%

**2008
2009**

PROTECTION LEVEL	NUMBER	PERCENTAGE
0,7 – 0,8	14	7,7%
0,8 – 0,9	21	11,6%
0,9 – 1,0	146	80,7%

**2010
2014**

PROTECTION LEVEL	NUMBER	PERCENTAGE
0,7 – 0,8	9	12,5%
0,8 – 0,9	8	11,1%
0,9 – 1,0	55	76,4%

Features of the certificates: participation

**2004
2007**

TPOLOGY	< 0,6	0,6 – 0,8	0,8 – 1,0	> 1
EQUITY PROTECTION	43	21	241	10
EQUITY PROTECTION CAP	1	1	39	2
BUTTERFLY			3	2
TOTAL	44	22	283	14

**2008
2009**

TPOLOGY	< 0,6	0,6 – 0,8	0,8 – 1,0	> 1
EQUITY PROTECTION	6	5	53	7
EQUITY PROTECTION CAP			93	1
BUTTERFLY	3		13	
TOTALE	9	5	159	8

**2010
2014**

TPOLOGY	< 0,6	0,6 – 0,8	0,8 – 1,0	> 1
EQUITY PROTECTION	11	2	19	8
EQUITY PROTECTION CAP	1	2	29	
TOTALE	12	4	48	8

Participation vs. Protection vs. Cap

< 0,6	TYPOLGY	NUMBER	AVERAGE CAP	AVERAGE PROTECTION
	EQUITY PROTECTION	60	NO CAP	99%
	EQUITY PROTECTION CAP	2	129%	98%
	BUTTERFLY	3	NO CAP	100%
0,6 – 0,8	TYPOLGY	NUMBER	AVERAGE CAP	AVERAGE PROTECTION
	EQUITY PROTECTION	28	NO CAP	97%
	EQUITY PROTECTION CAP	3	164%	97%
0,8 – 1,0	TYPOLGY	NUMBER	AVERAGE CAP	AVERAGE PROTECTION
	EQUITY PROTECTION	313	NO CAP	95%
	EQUITY PROTECTION CAP	161	134%	94%
	BUTTERFLY	16	NO CAP	100%
> 1,0	TYPOLGY	NUMBER	AVERAGE CAP	AVERAGE PROTECTION
	EQUITY PROTECTION	25	NO CAP	94%
	EQUITY PROTECTION CAP	3	128%	100%
	BUTTERFLY	2	NO CAP	100%

Yields and risk

2004-2007

It has been compared the average performance of the underlying and certificates in the period 2004-2007 for a total of 363 observations

The average yield of certificates is higher than the average yield of the underlying for all the three categories

TYPOLGY	PERCENTAGE	MIN/MAX CAP	UNDERLYING AVERAGE YIELD	CERTIFICATES AVERAGE YIELD	AVERAGE ALPHA
EQUITY PROTECTION	87%	NO CAP	-34,34%	-1,08%	33,26%
EQUITY PROTECTION CAP	12%	137%	-35,39%	0,98%	36,36%
BUTTERFLY	1%	NO CAP	-44,61%	0,80%	45,41%

TYPOLGY	MIN/MAX PROTECTION	MAX UNDERLYING YIELD	MAX CERTIFICATES YIELD	MIN UNDERLYING YIELD	MIN CERTIFICATES YIELD
EQUITY PROTECTION	70% / 100%	54,36%	54,36%	-98,93%	-27,73%
EQUITY PROTECTION CAP	80% / 100%	30,94%	30,94%	-83,96%	-15,00%
BUTTERFLY	100% / 100%	-34,60%	2,00%	-56,37%	0,00%

Yields and risk

2008-2009

In the second period, 181 observations have been considered. The Alpha of certificates is always greater than the yield of the underlying

During these years the market has been basically bearish and protection helped to preserve, in most cases, the capital invested

TYPOLGY	PERCENTAGE	MIN/MAX CAP	UNDERLYING AVERAGE YIELD	CERTIFICATES AVERAGE YIELD	AVERAGE ALPHA
EQUITY PROTECTION	39%	NO CAP	-18,88%	0,24%	19,13%
EQUITY PROTECTION CAP	52%	132%	-21,58%	2,17%	23,75%
BUTTERFLY	9%	NO CAP	-24,32%	0,74%	25,06%

TYPOLGY	MIN/MAX PROTECTION	MAX UNDERLYING YIELD	MAX CERTIFICATES YIELD	MIN UNDERLYING YIELD	MIN CERTIFICATES YIELD
EQUITY PROTECTION	65% / 100%	52,40%	39,20%	-94,50%	-29,08%
EQUITY PROTECTION CAP	80% / 100%	61,31%	37,50%	-90,69%	-10,00%
BUTTERFLY	100% / 100%	6,07%	6,07%	-50,61%	-0,99%

Yields and risk 2010-2014

In the third period, 72 observations have been considered in a bullish market condition
Due to the presence of the cap, the certificates' return is lower than the underlying's one,
however the performance of the instrument is anyway positive

TYPOLGY	PERCENTAGE	MIN/MAX CAP	UNDERLYING AVERAGE YIELD	CERTIFICATES AVERAGE YIELD	AVERAGE ALPHA
EQUITY PROTECTION	56%	NO CAP	-9,60%	-1,57%	8,04%
EQUITY PROTECTION CAP	44%	135%	14,28%	13,53%	-0,75%

TYPOLGY	MIN/MAX PROTECTION	MAX UNDERLYING YIELD	MAX CERTIFICATES YIELD	MIN UNDERLYING YIELD	MIN CERTIFICATES YIELD
EQUITY PROTECTION	70% / 100%	63,74%	63,74%	-99,80%	-35,50%
EQUITY PROTECTION CAP	70% / 100%	69,97%	42,00%	-42,32%	-23,13%

Underlying performance

The average performance of the underlying has been compared to the average yield of certificates in 4 different performance scenarios of the underlying (X). The value in the brackets represents the percentage of the total certificates which had an underlying's performance in that range

X < -20% (66%)	UNDERLYING PER.	CERTIFICATES PER.	ALPHA
EQUITY PROTECTION (72%)	-46,35%	-4,34%	42,01%
EQUITY PROTECTION CAP (24%)	-41,54%	-1,79%	39,75%
BUTTERFLY (4%)	-37,11%	0,20%	37,31%

-20% < X < 0% (18%)	UNDERLYING PER.	CERTIFICATES PER.	ALPHA
EQUITY PROTECTION (71%)	-9,31%	-5,06%	4,26%
EQUITY PROTECTION CAP (23%)	-10,69%	-1,90%	8,79%
BUTTERFLY (5%)	-12,33%	1,35%	13,69%

0% < X < 10% (8%)	UNDERLYING PER.	CERTIFICATES PER.	ALPHA
EQUITY PROTECTION (54%)	5,11%	3,11%	-2,00%
EQUITY PROTECTION CAP (43%)	4,58%	4,62%	0,04%
BUTTERFLY (3%)	6,07%	6,06%	-0,01%

10% < X < 20% (8%)	UNDERLYING PER.	CERTIFICATES PER.	ALPHA
EQUITY PROTECTION (60%)	14,33%	11,82%	-2,52%
EQUITY PROTECTION CAP (40%)	15,23%	14,86%	-0,37%

- Certificates' yield is similar to the underlyngs' one
- The protection preserved the capital invested
- (Alpha > 0)

- Positive/mixed Alpha in lateral market conditions

- Lower return in case of bull market

Yields and maturities

1 – 2 YEARS

TYPOLGY	NUMBER	UNDERLYING AVERAGE YIELD	CERTIFICATES AVERAGE YIELD	ALPHA
EQUITY PROTECTION	191	-25,85%	-1,53%	24,32%
EQUITY PROTECTION CAP	9	-28,01%	-2,29%	25,72%
BUTTERFLY	1	-56,37%	0,00%	56,37%

2 - 3 YEARS

TYPOLGY	NUMBER	UNDERLYING AVERAGE YIELD	CERTIFICATES AVERAGE YIELD	ALPHA
EQUITY PROTECTION	201	-26,10%	-1,56%	24,54%
EQUITY PROTECTION CAP	107	-29,25%	-0,41%	28,83%
BUTTERFLY	63	-20,01%	1,92%	21,93%

3 – 4 YEARS

TYPOLGY	NUMBER	UNDERLYING AVERAGE YIELD	CERTIFICATES AVERAGE YIELD	ALPHA
EQUITY PROTECTION	40	-45,39%	-4,92%	40,47%
EQUITY PROTECTION CAP	39	-19,48%	3,29%	22,78%
BUTTERFLY	6	-35,57%	0,00%	35,57%

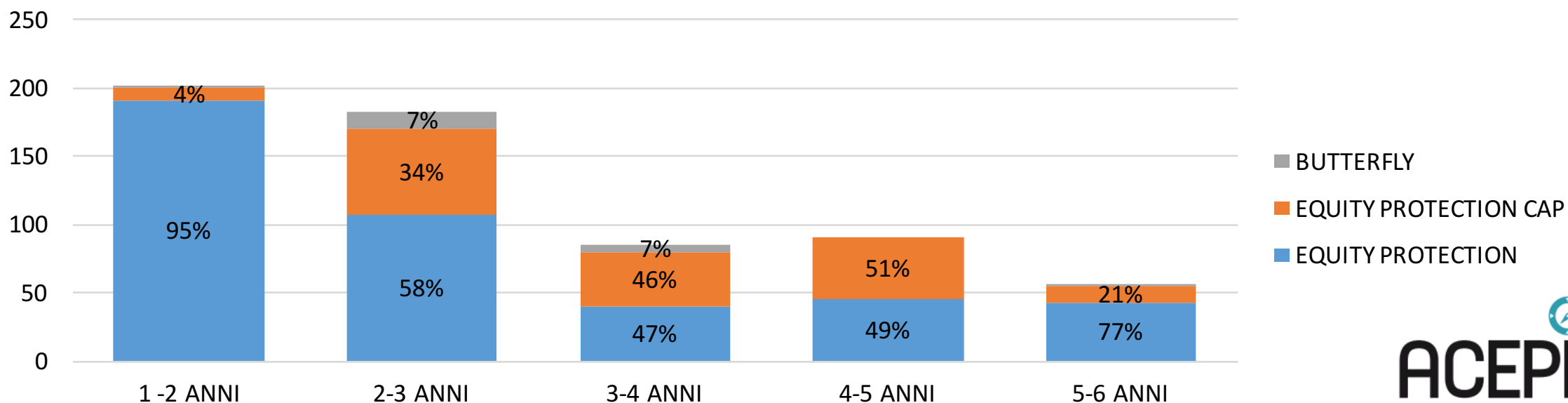
Yields and maturities

**4 - 5
YEARS**

TPOLOGY	NUMBER	UNDERLYING AVERAGE YIELD	CERTIFICATES AVERAGE YIELD	ALPHA
EQUITY PROTECTION	45	-23,05%	4,50%	27,55%
EQUITY PROTECTION CAP	46	-15,60%	7,19%	22,79%

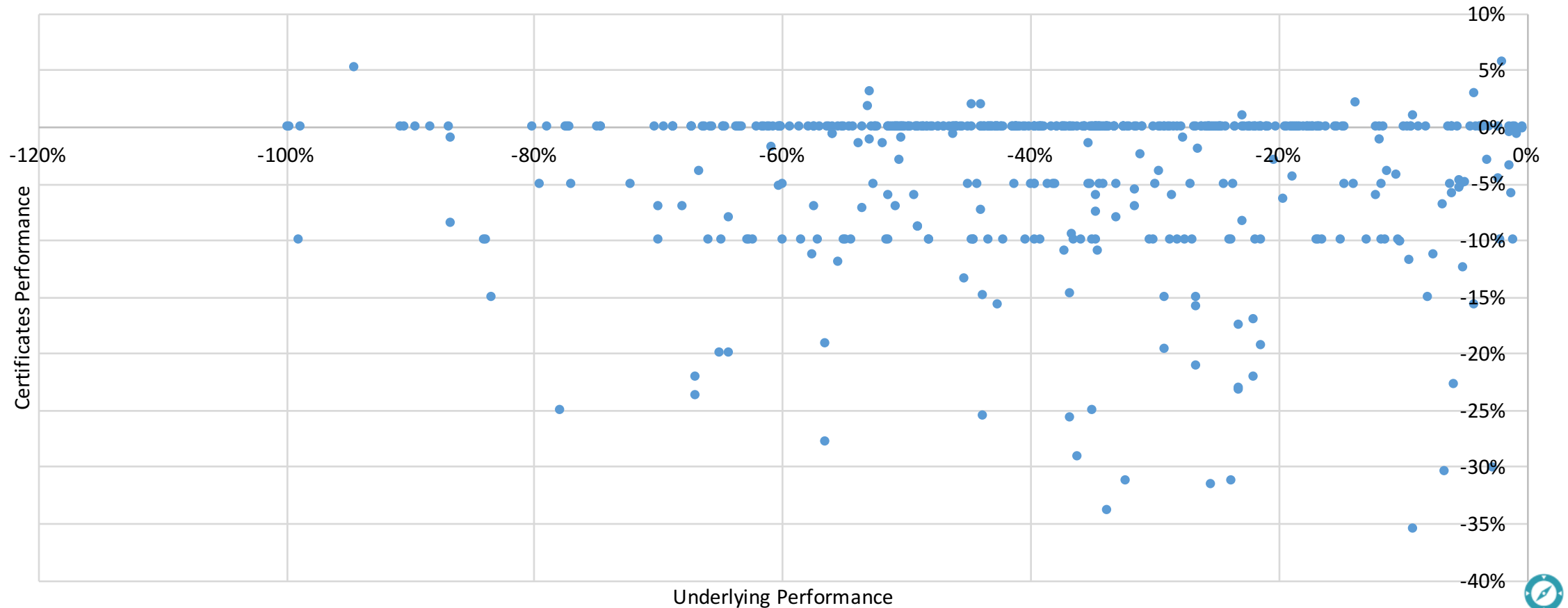
**5 – 6
YEARS**

TPOLOGY	NUMBER	UNDERLYING AVERAGE YIELD	CERTIFICATES AVERAGE YIELD	ALPHA
EQUITY PROTECTION	43	-37,71%	-1,27%	36,44%
EQUITY PROTECTION CAP	12	-8,56%	9,96%	18,51%
BUTTERFLY	1	-43,55%	0,00%	43,55%



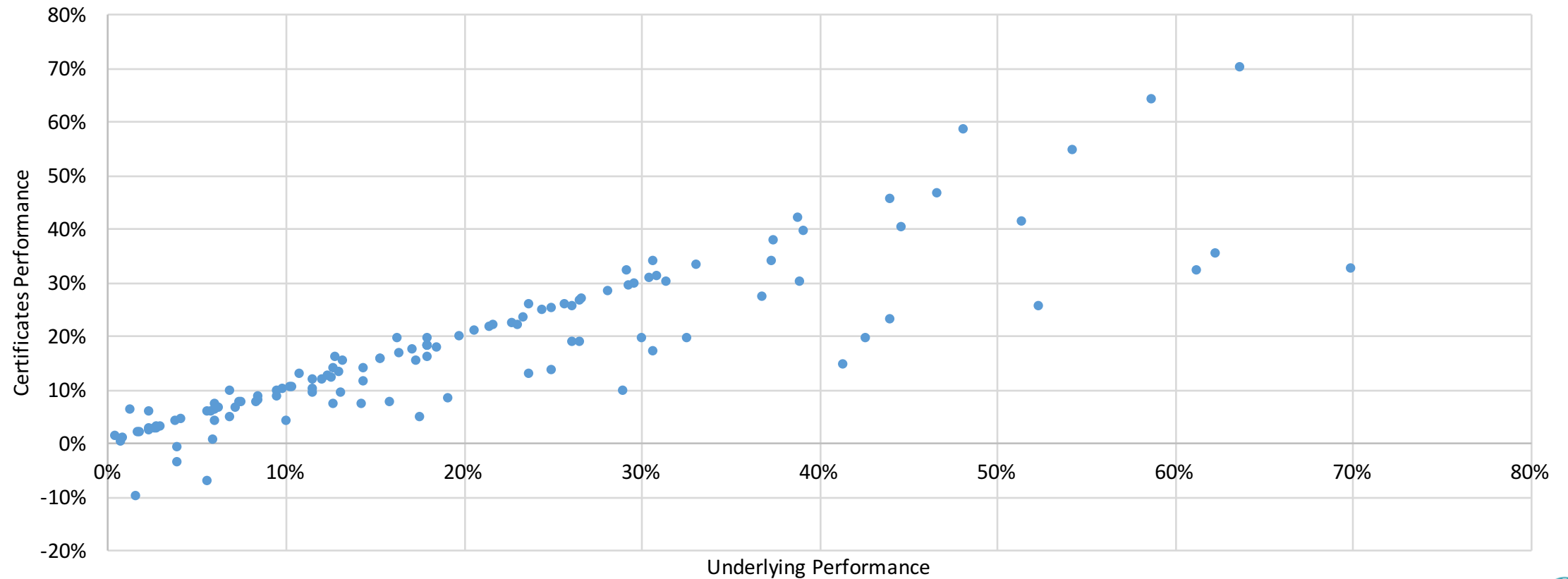
Scatter-plot: underlying with negative yields

Certificates with a underlying's negative performance have been considered. The certificates performance was, on average, better than the underlying's one



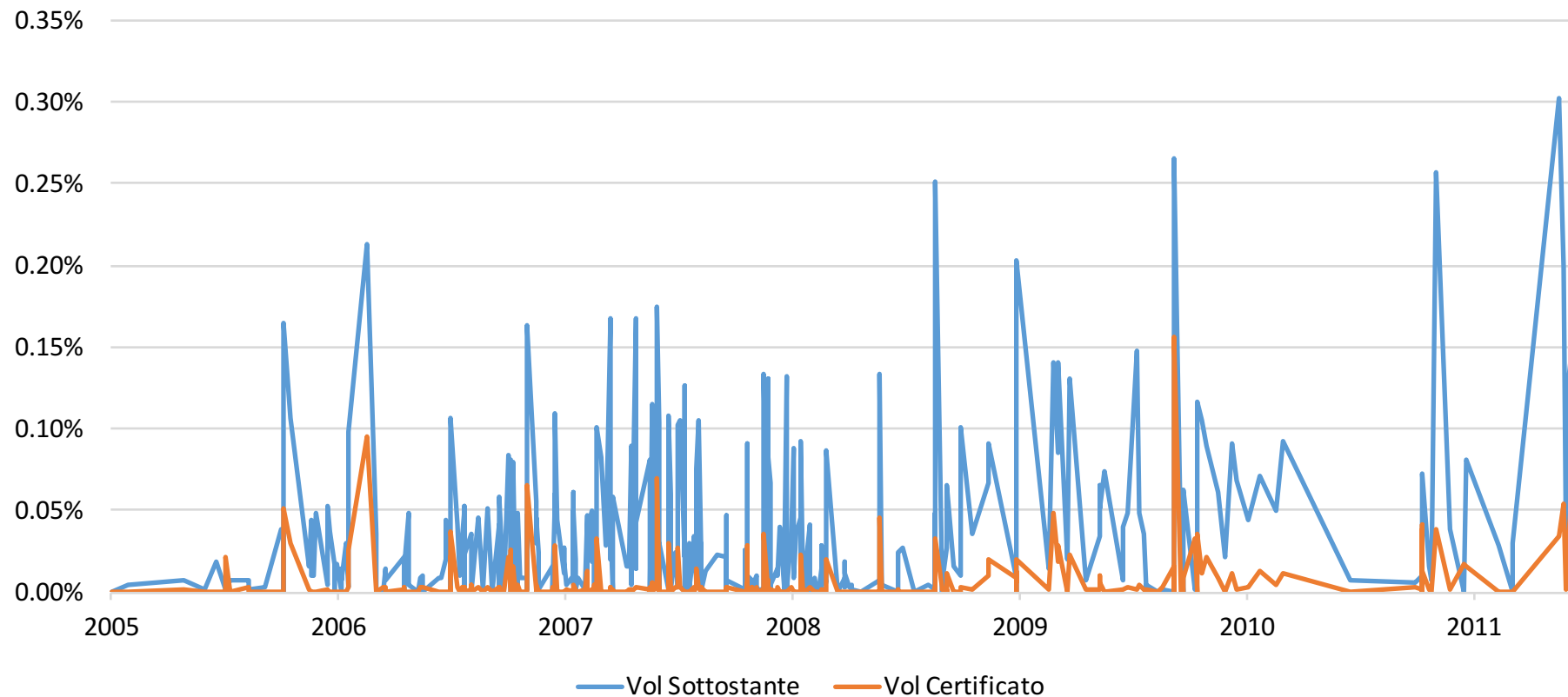
Scatter-plot: underlying with positive yields

Certificates with a underlying's positive performance have been considered. The average performance of the certificates has been positive



Volatility

The graph shows the volatility of the performance of the underlying and certified on the difference years of issue



Average volatility on underlying yields

0,297

Average volatility on certificates yields

0,115

The volatility of the underlying performance is greater than the certificates' one

Volatility has been calculated using this formula:

$$Vol_t = \sqrt{\frac{1}{n-1} * \sum_{i=1}^t (r_t - \mu)^2}$$

Consideration of dividends

- It's important to take into consideration that the investors do not receive dividends with certificates. This doesn't happen in case of a direct investment in the underlying
- This statement is completely true in the case of certificates that have equities as underlyings
- In the case of products on indices or baskets, where a direct investment in the underlying is not possible, the dividends' issue is more controversial. Risks such as tracking error may also intervene
- For the analysis, dividends paid by the various underlying in relation to the maturities and early redemptions of the certificate have been considered

Yield adjusted with dividends

2004
2007

TYPOLOGY	NUMBER	UNDERLYING AVERAGE YIELD	CERTIFICATES AVERAGE YIELD	DIVIDEND YIELD	ALPHA	ALPHA ADJUSTED
EQUITY PROTECTION	87%	-34,34%	-1,08%	3,63%	33,26%	29,63%
EQUITY PROTECTION CAP	12%	-35,39%	0,98%	3,86%	36,36%	32,50%
BUTTERFLY	1%	-44,61%	0,80%	4,10%	45,41%	41,31%

2008
2009

TYPOLOGY	NUMBER	UNDERLYING AVERAGE YIELD	CERTIFICATES AVERAGE YIELD	DIVIDEND YIELD	ALPHA	ALPHA ADJUSTED
EQUITY PROTECTION	39%	-18,88%	0,24%	3,82%	19,13%	15,31%
EQUITY PROTECTION CAP	52%	-21,58%	2,17%	3,94%	23,75%	19,81%
BUTTERFLY	9%	-24,32%	0,74%	3,95%	25,06%	21,11%

2010
2014

TYPOLOGY	NUMBER	UNDERLYING AVERAGE YIELD	CERTIFICATES AVERAGE YIELD	DIVIDEND YIELD	ALPHA	ALPHA ADJUSTED
EQUITY PROTECTION	56%	-9,60%	-1,57%	3,62%	8,04%	4,42%
EQUITY PROTECTION CAP	44%	14,28%	13,53%	4,05%	-0,75%	-4,80%