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BY SIX AND DEUTSCHE BÖRSE

COSI® NEWSLETTER

Information on collateral secured COSI® certificates

“Adequately collateralized thanks to fair values!”

Whereas the collateral level of other collateralization solutions for structured products is geared around the market price of the issuer in question, the securities deposited as collateral for COSI® are calculated by independent institutions based on external market prices. Moreover, other parameters also ensure an optimal degree of protection for these collateralized products. In this edition of the COSI® Newsletter, we take a close look at the calculation of fair value and the associated mechanism of collateralization.

The calculation of fair value is also the focus of our interview on pages 5 and 6 with Hagen Wittig, Partner and member of the board of Algofin. Algofin AG provided SIX Swiss Exchange with considerable assistance in selecting the service providers that calculate the fair value of COSI® products.

This issue of the Newsletter also includes an in-depth look at the world of collateral management. What are the main functions that collateral performs, and why has the need for security risen among investors? On pages 7 and 8 you can read more on this, while under COSI® News you will find comprehensive information on the first COSI® product issued by Bank Sarasin.

We wish you a good read!
Your COSI Newsletter editorial team

Always adequately collateralized thanks to fair values

With most collateralization solutions for structured products, the level of collateralization is governed solely by the market price reported by the issuer (typically the closing bid price on the exchange). However, this enables issuers to influence the level of collateralization according to their preferences through their own market-making practices. If they set too low a bid price in difficult times, the products will be deprived of collateral. In other words, in the absence of independent valuation there is a danger that the collateral will be insufficient given an extreme scenario.

The situation with COSI® is very different: Here externally calculated market prices - so called fair values - are are used by independent calculation agents to determine the level of the collateral that must be deposited. Furthermore, haircuts (downward valuation adjustments) on the collateral in question are enforced with a view to achieving overcollateralization of up to ten percent. This ensures that COSI® products always have an adequate level of collateralization.

Determining the level of collateralization

As Hagen Wittig of Algofin explains in an interview on pages 5 and 6, the calculation of fair values depends on assumptions such as the anticipated volatility of the underlying. Accordingly, fair values can easily deviate from one another by several percentage points as a result of different assumptions. For that reason, two fair values rather than just one are calculated for each COSI® product. Three different valuation prices therefore have a role to play in the case of COSI®: the bid price of the issuer, and two independently calculated fair values. If the bid price of the issuer is the lowest of the three prices, the collateral to be deposited will be determined by one of the independent prices (cf. Scenario no. 3 below). Only if the bid price of the issuer is higher than at least one of the fair values will this price be taken into account (cf. Scenarios 1 and 2).

Scenario no. 1	Scenario no. 2	Scenario no. 3
Issuer bid price	Fair Value II	Fair Value II
Fair Value I	**Issuer bid price**	**Fair Value I**
Fair Value II	Fair Value I	Issuer bid price

Calculation of fair values

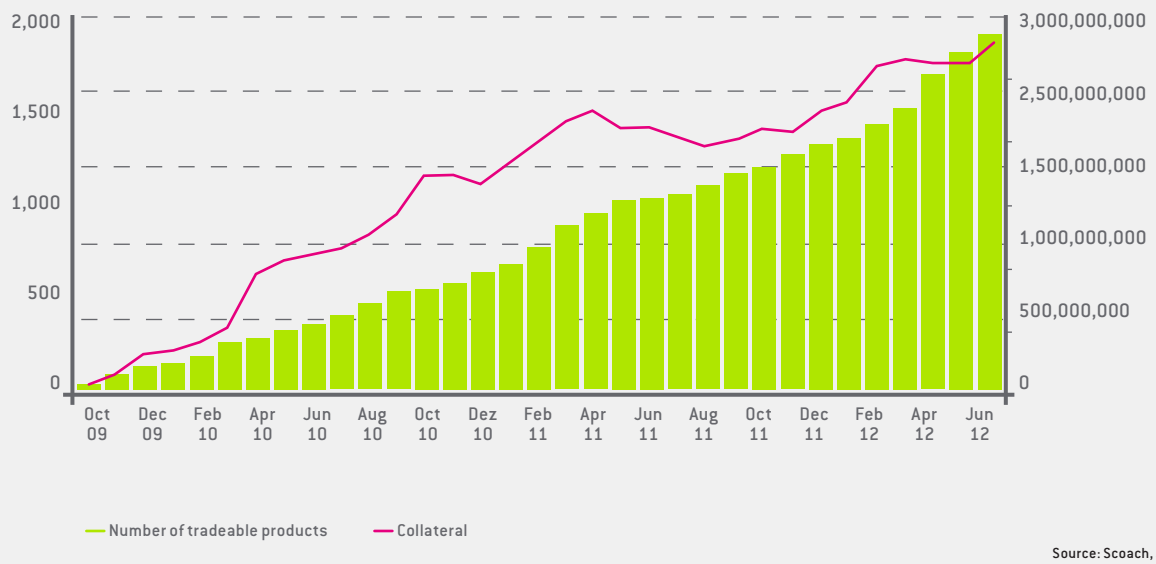
Structured products typically combine traditional financial instruments such as bonds with options. Wherever possible, a structured product is broken down into its individual components for valuation purposes. Each component of the product is then valued individually and the aggregate total is duly reported as the fair value. If it is not possible to break down the product into separate components, numerical approximation procedures (such as Monte Carlo simulations) are used to determine the fair value.

SIX provides the calculation agents with the static input parameters – such as the level of the barrier in the case of Barrier Reverse Convertibles, for example – electronically. The dynamic parameters of the products, such as the volatility of the underlying in the case of a Barrier Reverse Convertible, are typically calculated by the calculation agents on the basis of options available in the market, or alternatively the market prices may be obtained from data vendors. Using these static and dynamic input parameters, the calculation agents then calculate a fair value and update this on a daily basis. This value is conveyed to SIX, where it is used to calculate the level of collateralization. As a result, investors can always be confident that their COSI® products are appropriately collateralized.

Development since April 2012

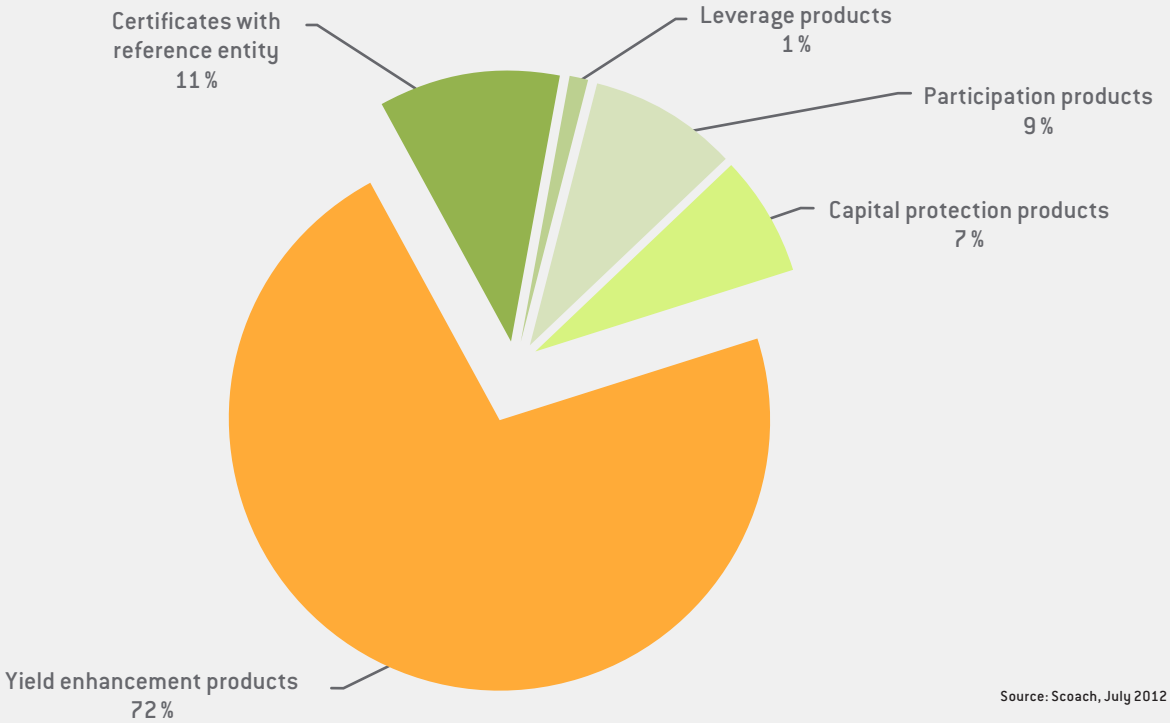
In the second quarter of 2012, the number of listed collateralized products rose to 2,342. Outstanding volumes likewise rose, and amounted to some 2.73 billion Swiss francs at the end of June.

Development of COSI® segment since launch



Source: Scoach, July 2012

Issuance of COSI® products by investment category



Source: Scoach, July 2012

Hagen Wittig is a Partner and member of the board of Algofin AG. He is responsible for the Modelling & Valuation area, and looks after a number of very different valuation projects in the segments of employee options, structured products, and other derivative financial instruments. Prior to joining Algofin AG he worked for the Investment area of Prudential Financial Inc., where he was primarily involved with alternative investments. Among other things, he was responsible for the international acquisition and valuation of investment opportunities, as well as the subsequent transaction implementation. Hagen Wittig holds a Master of Arts in Banking & Finance from the University of St. Gallen and a Master of Science in Strategic Management from the Erasmus University Rotterdam.

Interview with Hagen Wittig, Partner and member of the board of Algofin, on the calculation of fair value

What services has Algofin provided in connection with COSI®?

Algofin AG was asked to help SIX Swiss Exchange with the selection of service providers capable of calculating the fair values of COSI® products on a daily basis. Our advisory service in this respect focused on quantitative aspects, i.e. the valuation methodologies applied by the fair value service providers. In particular, we looked at whether appropriate valuation techniques were being used and whether all price-relevant parameters would be reflected in the calculations.

What is a "fair value" of a structured product?

Generally speaking, the fair value of an instrument is deemed to be the value at which two competent, independent and willing to transact parties would agree on. This principle applies to all financial instruments and assets. Where structured products in particular are concerned, this means that all price-relevant factors – including interest payments, callability features and memory characteristics – have to be incorporated into the valuation methodology applied.

Why are fair values calculated in the first place?

The areas in which this practice is most commonly found are those of accounting and risk management. Specifically, the aim is to present the "fair values" of all assets and liabilities in the financial statements and to establish changes in value as a result of shifting influence factors.

If an active market exists for an asset to be evaluated, the valuation is typically undertaken on a "mark-to-market" basis, i.e. on the basis of an observable market price. If no market exists for the asset to be valued, quantitative valuation methodologies are applied and the valuation is undertaken on a "mark-to-model" basis. A good example of the latter is the valuation of employee stock options – these cannot be traded, and have to be booked under personnel expenses with the help of fair values.

COSI® products are a special case: Here it is particularly important to verify the observable market prices, as there is a risk that these may deviate from their fair values at certain times, such as in phases of low transaction volumes. In the case of COSI® products, collateral is deposited by issuers in order to minimize the issuer risk. To ensure that the collateral has sufficient value, it is essential to know the fair value of the underlying COSI® product.

What parameters need to be taken into account when determining the price?

The quantitative assessment of fair values requires a wide range of parameters to be taken into account. The process starts with parameters that can be directly derived from the characteristics of the instrument itself, such as the barrier level, coupon payments, and number and frequency of observation intervals, and extends to a wide range of market data such as spot rates, volatilities, dividend yields and correlation structures. However, the parameters that are essential to the calculation of fair value will depend greatly on the way the instrument in question has been structured.

What are the greatest challenges when determining prices?

The most crucial step in the valuation procedure is the correct implementation of evaluation algorithms. The art lies in analyzing the instrument in question correctly, recognizing all price-relevant factors, and finally feeding all these factors into a valuation algorithm. Where complex structured products are concerned, it is often necessary to combine a number of different valuation methodologies in a single interdependent system. Once an algorithm has been set up and shown to be robust, ongoing valuation of the same instrument should essentially be no problem.

How do you value structured products that cannot be broken down into individual components?

Due to their complexity, many structured products cannot be broken down into individual components that can then be separately priced up with established and comparatively simple valuation approaches. Analysts typically rely on Monte Carlo simulation models in such a scenario. This involves simulating several hundred thousand price developement paths for the instrument in question based on the input parameters fed into the model. The average of these possible realizations ultimately represents a very precise approximation of the actual fair value.

Does every product structure require its own valuation model?

Many product structures only differ in a few particular respects. Accordingly, the same basic valuation model can often be used, subject to adjustments so that these special, price-relevant characteristics can be correctly modeled. That said, the whole thing is less modular than one might think. Even an apparently minor peculiarity of a product can often necessitate a major adjustment to the basic setup of the valuation model.

Are there major differences in the way that banks and other financial service providers value products?

Not really. If the task at hand is to determine the fair value of an asset or a liability, the ultimate objective will dictate the right way of going about things, and the valuation methodologies applied will ultimately be very similar.

What trends have you seen developing in recent years?

Since the emergence of structured products we have seen a continuous rise in complexity – established basic structures have been enhanced with new properties, and wholly new instruments have been created. This is not surprising, as essentially there are no limits to issuers' ability to innovate in this field. And the complexity of the valuation methodologies applied has evolved accordingly.

What changes do you expect to see in the future?

I suspect we will see a continual increase in the number of product structures in the future, which in turn will mean a further rise in complexity. Furthermore, it is likely that we will see a further personalization of products – to the point where each investor can be offered their own individually customized structured product. Many issuers are already prepared to create individual structures for comparatively low issue volumes.

Thank you very much for this interview!

A look at the world of collateral management

Liabilities from credit transactions and derivatives in interbank trading are typically secured by means of a pledge in the form of collateral. The key issue here is counterparty risk, which strictly speaking can only be reduced by the provision of collateral rather than eliminated altogether. While the collateral may reduce the loss potential in the event of a counterparty defaulting, certain risks nonetheless remain when it comes to realization of the pledge, the operational processes involved, and the legal parameters. The object of collateral management is to identify, control and minimize all these risks. As a result of regulatory requirements and the growing demand for collateralized transactions, the units responsible for this task within the banks have an increasingly important role to play. In the case of COSI® products, the collateral management function of the issuing banks is monitored and assured independently by SIX and Eurex Zurich.

Collateral fulfills important functions

There are many reasons why market participants may require collateral from one another:

- to reduce counterparty risk
- for the purpose of risk netting to save capital (a possibility since the introduction of Basel II)
- to facilitate additional transactions with a counterparty if certain counterparty limits have been exceeded
- because a counterparty is obliged to ensure that collateral is in place
- to improve the pricing of lending transactions
- to make it easier for a market participant to gain access to capital.

At the moment, the need to reduce counterparty risk is the key motivation behind the pledging of collateral. For the banks, however, capital optimization considerations are playing an increasingly important role.

Increased demand for security on the part of private investors

The collateralization of counterparty risks is not limited to transactions between banks and other institutional players, however – it also extends to transactions involving private individuals. For example, whenever a mortgage is granted, a property is pledged as collateral in favor of the lending bank in question by means of an entry in the land register. If the mortgage holder does not meet his payment commitments, the bank can have the property in question compulsorily sold at auction. The opposite situation applies in the case of COSI® products. Here it is the structured product investor that acts as the creditor vis-à-vis the bank, insisting on a similar collateral mechanism: He requires a pledge to protect his claim. In the case of derivatives, the collateralization of counterparty risks was formerly the province of institutional investors alone. Thanks to COSI®, private investors too now have straightforward access to a collateralization mechanism.

Huge growth of the OTC market

The over-the-counter (OTC) market in derivatives has grown hugely since the 1980s, as has the volume of collateral deposited in this area. According to estimates drawn up by the Bank of International Settlements (BIS), outstanding liabilities relating to OTC derivatives amounted to no less than USD 648 trillion at the end of December 2011.

Outstanding OTC derivative volumes at the end of 2011 (in USD trn)	
Interest rate derivatives	504
Currency derivatives	65
Credit derivatives	29
Equity derivatives	7
Commodity derivatives	3
Total	**648**

Source: Semi-annual report of the Bank for International Settlements

The majority of these transactions nowadays take place on a collateralized basis. According to surveys conducted by the International Swaps and Derivatives Association (ISDA), 70 % of all OTC derivative transactions in 2010 involved the pledging of collateral, and the largest market players now conduct more than 90% of all their OTC business on a collateralized basis. In the OTC area, the most common form of collateral is book money or government bonds, with the former by far the most frequent. However, in some cases only a proportion of the claims is covered by collateral, depending on the counterparty in question. In 2009, for example, claims against governments and supranational organizations were on average only 25 % covered by collateral, whereas transactions with hedge funds were on average 141 % covered by collateral. It may be assumed, however, that collateral requirements have increased massively in certain cases over the last two years. In the case of COSI®, the outstanding claims are always fully covered, and safety margins ensure overcollateralization by several percent on an ongoing basis.

Rehypothecation as a systemic risk

Another interesting aspect of collateral management is the possibility of repledging collateral held, a process called rehypothecation. In other words, a trader can reuse collateral he holds for his own trading and lending transactions and make a return on it. According to the ISDA, more than 90 % of all large market participants exploit this opportunity. As a result of the associated accounting regulations, rehypothecation has contributed substantially to the emergence of a shadow bank system that is not subject to government monitoring or regulation in this area. Many hedge funds have contracts that allow their brokers to engage in rehypothecation, as this means they enjoy lower credit costs. The volume of collateral used in this way is estimated to be significant. In contrast to the US, no limits apply to the rehypothecation of client collateral in Europe, something that has been criticized in many quarters since the collapse of Lehman Brothers. Rehypothecation is forbidden in the context of COSI® collateralization – the deposited securities are fully available for liquidation to cover losses in the case of an enforcement event.

Top-products

Category	Symbol	SSPA category	Underlying	ISIN Number	Total turnover in CHF
Capital protection	EFHAM	Capital Protection with Coupon	ABB / CS / Nestlé / Roche GS	CH0110622609	7,711,703
	EFGNR	Capital Protection with Coupon	ABB / Actelion / Adecco / CS / ...	CH0106308643	2,196,548
	EFHSX	Capital Protection with Coupon	Novartis / Swisscom / Syngenta / Zurich	CH0115890706	1,571,089
	EFJCK	Capital Protection Certificate with Coupon	EFG Basket	CH0123795822	1,335,960
	EFHPB	Capital Protection with Coupon	EFG 20 Stocks Basket	CH0114883124	1,321,390
Yield enhancement	EFHXZ	Reverse Convertible	EURO STOXX 50 PR Index	CH0117081379	19,768,000
	EFKXF	Barrier Reverse Convertible	Allianz / Munich Re / Zurich	CH0132499523	2,739,961
	EFKSH	Barrier Reverse Convertible	Nestlé / Novartis / Roche GS	CH0131580836	2,508,750
	EFLEN	Express Certificate	ABB / Holcim / Swiss Re	CH0135857081	2,329,600
	EFMSR	Barrier Reverse Convertible	Alcatel-Lucent / Carrefour / RWE	CH0146739351	1,765,643
Participation	JPYEXP	Tracker Certificate	EFG Japanese Exporters Basket (JPYEXP)	CH0149116581	7,755,098
	EFLMC	Tracker Certificate	EFG European Dividend Basket (EFLMC)	CH0133270261	3,248,988
	VTPAL	Outperformance Certificate	Palladium	CH0125721131	3,182,846
	EFMLM	Various Participation	EFG Dividend Basket (EFMLM)	CH0144227581	1,872,294
	EFMVF	Various Participation	EFG High Yield Basket (EFMVF)	CH0146740383	1,854,000
Leverage products	EFGAFD	Mini-Future	DAX Index Front Month Future	CH0144230601	1,961,256
	EFMTA	Mini-Future	DAX Index	CH0144229512	1,884,960
	EFGBDM	Leverage Certificate without Knock out	Linkedin / MAN / Morgan Stanley / Telefonica	CH0185657670	1,862,381
	EFGBJP	Warrant	S&P 500 Index	CH0184262068	321,543
	EFGAJS	Mini-Future	FTSE 100 Index	CH0144230817	234,625
Certificates with reference entity	VFREH	Reference Entity Certificate	CHF 3M LIBOR	CH0141498466	16,343,307
	VFREB	Reference Entity Certificate	EURIBOR 3M	CH0125722501	13,597,187
	VFREI	Reference Entity Certificate	EURIBOR 3M	CH0141498482	7,031,456
	VFRRD	Reference Entity Certificate	CHF 3M LIBOR	CH0141500402	2,449,985
	VT48DN	Reference Entity Certificate	CHF 3M LIBOR	DE000VT48DN7	1,872,388

Source: Scoach, July 2012

COSI®-News

SIX Swiss Exchange and Scoach welcome the arrival of Bank Sarasin as the sixth issuer in the Collateral Secured Instruments (COSI®) segment. Sarasin's first COSI® product is a Multi Barrier Reverse Convertible on the STOXX Europe 50 and S&P 500 indices. Furthermore, EFG Financial Products has recently issued its first COSI® denominated in Russian ruble (RUB), a Multi Barrier Reverse Convertible on Rosneft Oil and Sberbank. Since the segment was launched in September 2009, more than 3,700 COSI® products have been issued in 10 different trading currencies and with more than 1,000 different underlyings. More than 2,300 COSI® products are currently available on Scoach with a collateral volume of around CHF 2.73 billion.

COSI® in a nutshell

Number of listed products	2,342
Number of issuers	6
Leverage products	24
Yield enhancement products	1,675
Participation products	216
Capital protection products	163
Certificates with reference entities	264
Highest daily volume	CHF 70.24 m (13.09.2011)
Outstanding volume	CHF 2.73 bn

Source: Scoach, July 2012

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