INITIAL MARGIN AND GUARANTEE FUND CALCULATIONS

Initial Margin Calculation:

Initial margin is the guarantee amount requested in advance to compensate for the risks exposed to from the date of the default until closing out the positions in case of default. In the markets where we offer CCP service, initial margin level, in accordance with the legislation has to be calculated using at least one year's data, minimum 99% confidence level and 2 business days holding period.

The initial margin is calculated at 99.5% confidence level;

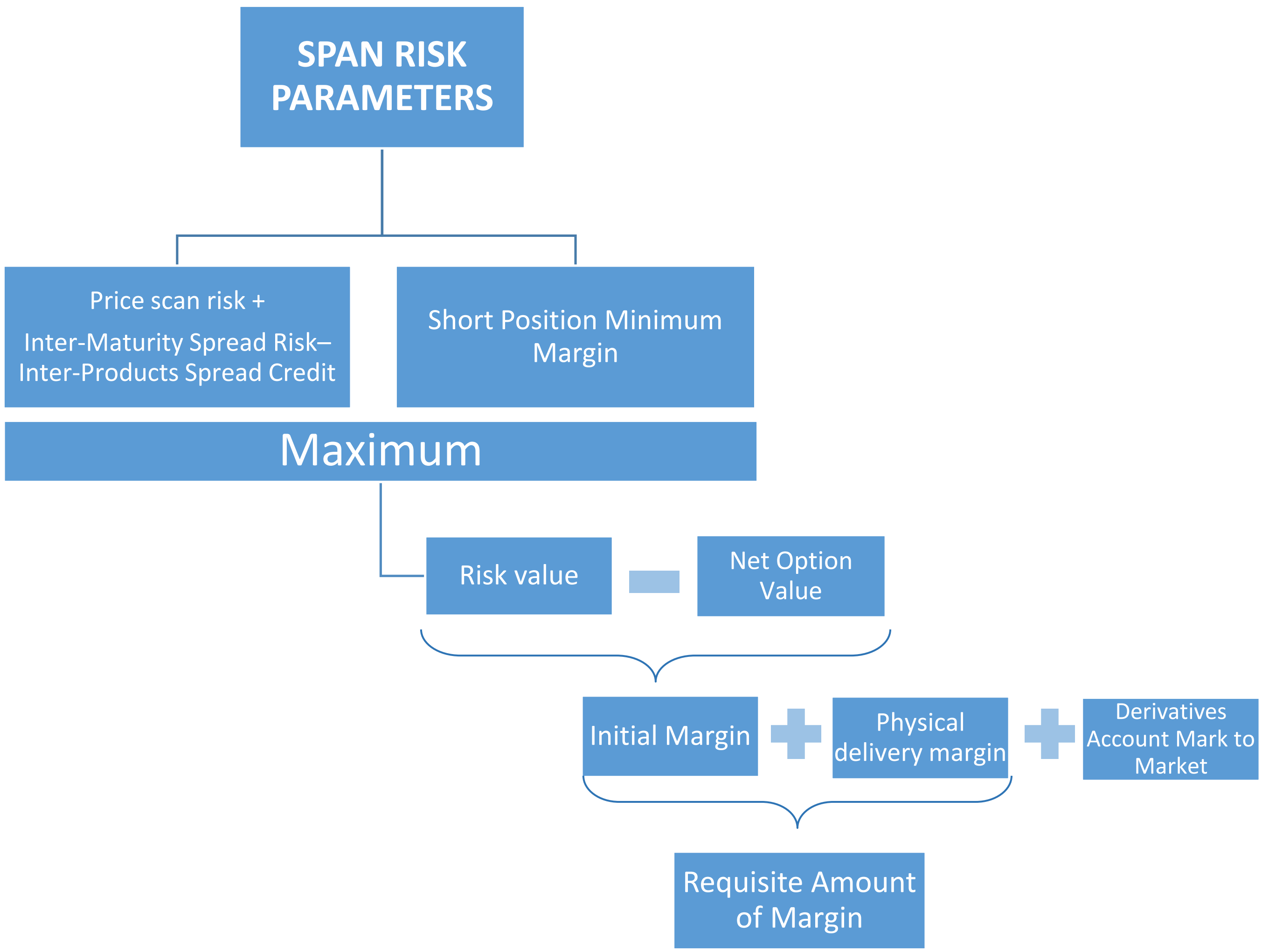
- At Borsa Istanbul Derivatives Market (VIOP) through SPAN method,
- At Takasbank Securities Lending Market through VAR method[1]

➢ Borsa Istanbul Derivatives Market (VİOP):

Initial margin is calculated using SPAN algorithm on portfolio and net margin basis. In General SPAN calculation involves 5 steps:

1. Risk is analyzed on the basis of product groups.
2. The existence of risk- reducing positions is checked through inter-group correlation.
3. SPAN risk value is calculated.
4. Initial margin is calculated.
5. The requisite amount of collateral is calculated.

[1] Value At Risk":It implies the highest amount of loss that the portfolio or the asset held could be exposed to in case of possible volatility in interest rates, FX rates, commodity or share prices for a certain period and a certain probability range which is estimated through the generally acknowledged methods.



SPAN risk analysis is performed on the basis of product groups each of which represents an underlying asset. Each product group's risk is calculated independently from the others. Each product group's risk is the sum of the scan risk and risk within the group defined as inter-maturity spread risk.

Scan risk is the risk type determined through the calculation of risk arrays which is computed by, applying related scenarios on " Price Scan Range " and " Volatility Scan Range" via SPAN algorithm for each contract. The Price Scan Range (PSR) implies the largest price change possible for an underlying asset. Volatility Scan Range (VSR) implies on the other hand the maximum volatility change possible for the price of the option's underlying asset. On product group basis the risk that shall arise under the worst scenario is defined as "Scan Risk" and in a way implied market risk.

Since SPAN assumes that at the outset, the derivatives contract price of an underlying asset changes at the same rate across different maturities, a long position for any month is netted off with a short position in another month. Consequently, portfolios where price moves could differentiate across maturities are exposed to inter-maturity price risk and to cover this risk Inter-Maturity Spread risk is calculated.

Inter-product spread credit is calculated based on the parameters set by Takasbank to incorporate price moves across product groups (correlation), which could reduce portfolio risk.

SPAN risk is calculated by subtracting the Inter-Product Spread Credit from the sum of Scan Risk and Inter-Maturity Spread Risk.

The Short Option Position Minimum Risk is calculated to incorporate conditions whereby due to sudden moves in the market the extremely out of the money short option positions' intrinsic value could increase leading to a loss which could exceed the sum of Scan Risk, Inter-Maturity Spread Risk and Inter-Product Spread Credit.

As the SPAN total requirement cannot be less than the portfolio's short option minimum risk, in calculating the Risk Value, the larger of the {Scan Risk+ Inter-Maturity Spread Charge- Inter Product Credit} and {Short Option Position Minimum Risk} is taken into account.

To reach the initial margin, the sum of Total Value of Long Option Positions and Total Value of Short Option Positions defined as Net Option Value in other words account mark to market,is subtracted from the SPAN Total Requirement.

The requisite Initial Margin amount for the portfolio is calculated by summing up the margin received for physical delivery. Moreover by adding the Derivatives Account Mark to Market, the portfolio's collateral requirement is attained.[2]

You can reach parameters list at Takasbank website.

- ### Securities Lending Market (ÖPP):

Gross margin is applied in the Securities Lending Market. Collateral is not required from lending members, the borrower member's initial margin is 115% of the market value of the security.

---

[2]Detailed information on SPAN calculations has been provided in the Procedure Concerning the Central Counterparty Service thatIstanbul Clearing, Settlement and Custody Bank Inc. will offer at the Borsa Istanbul Inc. Derivatives Market & the Settlement Principles with Respect to This Service, and the Derivatives Market (VIOP) Risk and Collateral Management Service Guidelines on Takasbank's website.

Securities Lending Market (ÖPP) Initial Margin Parameters	
Initial Margin	= 115% of the market value of the borrowed security
Requisite Initial Margin Rate	≥ 60% of the collateral after haircut
Equity Collateral Ratio	< 20% of the total collateral after

Calculation of the Guarantee Fund:

In the CCP service enabled markets, it is essential that guarantee fund size is not less than the larger of;the resourcerequirement uncovered by the initial margin, that will arise in the default event of the member with the highest amount of open positions, and such resource requirement that will arise in the default event of the second and third members with highest amount of open positions. The guarantee fund collected under this restriction is distributed among members with respect to the risks they carry. The total resource requirement is determined by comparing the uncovered risks of 3members with the largest risk. The uncovered risk amounts of the members are considered as the difference between the initial margin and the collateral requirement calculated at 99.9% confidence level and minimum 2 business days holding period.

➢ Derivatives Market (VİOP):

Guarantee fund is established to meet the loss of the defaulted members in the Derivatives Market, which exceeds the members' collateral and involves the obligatory participation from Members.

The Members' guarantee fund contributions are comprised of the deposited contributions and the additional guarantee funds, which should be deposited upon demand.

The Members have to pay their guarantee fund contributions out of the assets in their possession.

The deposited guarantee fund contributions comprise of fixed and variable guarantee fund contributions. Guarantee fund margin call is delivered when the guarantee fund obligation arises due to its exploitation under the framework of Central Counterparty Regulation, Market Directives and Procedures' provisions or any other reason (increase in risk, fall in collateral's value and so on). The guarantee fund margin call has to be met in 3 business days.

If such need arises, besides ordinary guarantee fund margin calls, members may be asked to contribute to the guarantee fund at the most 4 times in a year. The additional guarantee fund that shall be requested each time cannot exceed the guarantee fund contribution deposit on the relevant default date. The calls for additional contribution may be delivered in series. The members are required to deposit the additional contribution 5 business days following the call.

The other members' guarantee fund contributions may not be resorted to unless the defaulted member's collateral, guarantee fund contribution and Takasbank's dedicated capital for covered risks in the market are inadequate.

In determining the size of the guarantee fund, the end of day requisite collateral amounts for the past year per member are utilized.

Guarantee fund's adequacy is tested through recalculations at least every 3 months.

In Derivatives Market (VIOP) the tranche value used in guarantee fund calculation is 100,000 TRY and the multiplication factor is 15%.

Guarantee fund is divided into two parts, fixed and variable guarantee fund:

- Fixed guarantee fund contribution is the same for all members and 300,000 TRY for the Derivatives market. The amount is reviewed in light of the market and national and international developments in economics and may be revised if required.
- The variable guarantee fund is the portion of the fund, which is allotted to members based on the risks they carry.

The risk level ranges that guarantee fund is exposed to in the Derivatives market and their corresponding guarantee fund contribution amounts are as below:

Calculation Range	**Guarantee Fund Risk Exposure Value (TRY)**	**Total Contribution (TRY)**
1. Range	0-300 Thousand	300 Thousand
2. Range	300-400 Thousand	300 Thousand +(2-1) *100 Thousand
3. Range	400-500 Thousand	300 Thousand +(3-1) *100 Thousand
4. Range	500-600 Thousand	300 Thousand +(4-1) *100 Thousand
n. Range	Previous Range+100 Thousand	300 Thousand +(n-1) *100 Thousand

N: The interval, which corresponds to the risk value that guarantee fund, is exposed to.

Guarantee Fund obligations are calculated the last business day of each month and revised the first business day in the following month.

At least 30% of the members' requisite contribution amount has to be in cash TRY.

When the guarantee fund contribution falls below 90% of the requisite amount, the member is called upon to top up the guarantee fund contribution. The member is obliged to meet this call in 3 business days.

Takasbank invests the portion of the TRY guarantee fund contribution -established by members- after deduction of the requisite amount, in light of the credit risk, liquidity condition at the most favorable conditions.

- Securities Lending Market (ÖPP):

The guarantee fund consists of the contributions received from members to expend in the event of default towards the loss which exceeds the members' collateral. Not only the borrowers but also sole lenders are also obliged to deposit the guarantee fund contribution. Those members who do not deposit their guarantee fund contribution obligation in time are not allowed to execute trades in the market.

The CCP members' guarantee fund / funds contributions comprise of the deposited contributions and those additional contributions that shall be deposited upon call. Members are delivered guarantee fund margin call in case that guarantee fund obligation arises due to exploitation of the fund under the framework of Central Counterparty Regulation, Market Directive and Procedures' provision or any other reason. (Increase in risk, fall in collateral value and so on). The guarantee fund margin call has to be met within 3 business days.

In the event that the need arises outside ordinary guarantee fund margin call, the CCP members may be requested to make additional contributions at the most 4 times a year. The additional contributions may be delivered in portions. The additional guarantee fund contribution cannot exceed the requisite guarantee fund contribution amount on the relevant default date. The members are obliged to deposit the additional contributions in 5 business days following the request. If despite the request the additional guarantee fund contribution is returned without being expended to close out the default, it is deemed that such request has not occurred.

The other members' guarantee fund contributions cannot be resorted to unless the defaulted member's collateral, guarantee fund contribution and the capital allocation made from Takasbank's capital with regards to risk covered in the Securities Lending Market (ÖPP) remain insufficient.

The guarantee fund is divided into, fixed and variable:

- The fixed guarantee fund contribution is the same for every member, and for the Securities Lending Market it is 5,000 TRY. This amount is reviewed at least once a year in light of the market and national/global economic developments and may be revised by Takasbank if required.
- The variable guarantee fund is the portion of the fund allotted to members in accordance with the risks they bear. The guarantee fund's risk exposure value which shall be used in determining the guarantee fund contribution that each member shall deposit is calculated by multiplying the risk multiple by the average borrowing debt of the relevant member in the last month. The guarantee fund contribution for each member is limited to the fixed contribution where the guarantee fund risk exposure value calculated for that member is below the fixed contribution, otherwise the corresponding range's upper boundary.

The tranche value utilized in the guarantee fund calculation at the Securities Lending Market is 3,000 TRY and the multiple is 3.5%.

The ranges for the risk guarantee fund risk exposure values in the Securities Lending Market and their corresponding guarantee fund contribution amount are as below:

Calculation Range	Guarantee Fund Risk Exposure Value (TRY)	Total Contribution (TRY)
1. Range	0-5 Thousand	5 Thousand
2. Range	5-8 Thousand	5 Thousand + (2-1)* 3 Thousand
3. Range	8-11 Thousand	5 Thousand + (3-1)* 3 Thousand
4. Range	11-14 Thousand	5 Thousand + (4-1)* 3 Thousand
n. Range	Previous Range+3 Thousand	5 Thousand + (n-1)* 3 Thousand

N: The interval, which corresponds to the risk value that guarantee fund, is exposed to.

If the member’s guarantee fund contribution falls below 80% of the requisite amount, the member is called upon to top up margin. The member is obliged to meet this call in 3 business days.

Takasbank invests the TRY guarantee fund contributions established by the members at the most possible favorable conditions, within the limits set by Takasbank and subject to credit risk and liquidity conditions.