**Margin Period of Risk (MPR):**

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Even with daily margin call frequency, there is a significant delay δt, known as the margin period of risk (MPR), between a margin call that the counterparty does not respond to and the closeout/replacement of the portfolio if the counterparty defaults.

– Margin calls can be disputed, and it may take several days for the bank to realize that

the counterparty is defaulting rather than disputing the call

– There is a grace period after the bank issues notice of default.

During this grace period the counterparty may still post collateral

– It may take time to close out and replace complex trades

While δt is not known with certainty, it is usually assumed to be a fixed number, specified at the margin agreement level.

– Assumed value of δt depends on margin call frequency and trade liquidity

– Typical assumption for daily calls and liquid trades is δt = 2 weeks(DEFAULT MPR 10 days)

Including MPR in the Model:

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Suppose that at time t − δ t we have collateral C(t − δ t) and portfolio value is V(t − δ t)

Then, the amount ΔC(t) that should be posted by time t is

ΔC (t ) = max {V (t −δ t ) − C (t −δ t ) − cptyThreshold, −C(t −δ t )}

Negative ΔC(t) means that collateral will be returned

Collateral C(t) available at time t is

C (t ) = C (t − δ t ) + ΔC (t ) = max {V (t − δ t ) − cptyThreshold ,0}

For comparison,

collateral under the “naive” model is C\_naive (t ) = max {V (t ) − cptyThreshold ,0}

Thus, to determine collateralized exposure at time t,

we need to simulate portfolio value both at t − δt and at t .

MPR calc is driven by various measures

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Collateral disputes.

Hard to replace

Liquidity of underlying assets

etc..

We can look to pick one of the measure, which is Liquidity of the underlying assets.

This is something that has been picked recently by regulators and the banks have looked to implement it into their models.

As part of latest Basel-3 requirement, trades secured with posted collaterals or an OTC derivative that cannot be easily replaced, a supervisory floor of 20 business days is imposed for margin period of risk.

**The Objective** is to identify all Held collaterals(with its underlying securities) and tag them as illiquid / Liquid based on a defined classification criteria.

**The reason** to follow this exercise is in situations where trades are deemed illiquid but are not marked daily and are subjected to specific accounting treatment for valuation purpose.

eg: OTC or REPO transactions referencing securities whose fair value is determined by models with inputs that are not observed in the market.

For our presentation we can look to cover the following **products**.

-OTC derivative trades

-REPO (repurchase order)

-Stock Lend Borrow

-Central cleared counterparty trades (Exchange trades futures and options)

The Liquid collateral/Trades can be categorized under.

-Cash

-US govt or Agency securities

-G7 and Swiss Govt securities

-Corporate Bonds (-Investment grade US corporate)

-Issue (or underlying security rating(Moody, Fitch, SNP) to be considered)

-In case of unavailability of information a defaulting Issuer rating rule applies in categorization.

-Equity (-will take the exchanges its been trades.

-Presence on major indices.

-Also consider Held Value of Quity and the Trading Volume. )

Once all securities are tagged as discussed above.

==> How to tag? do simulation or just simply tag based on the input data?

We will have to look at **a portfolio**, which comprises of the following identifiers.

==> do you have a portfolio in mind? or can we simply pick a portfolio from input?

Does input have those identifiers?

ie Counterparty + BookingEntity(a banks booking center regionally) + Products(Asset classes)

+ NettingAgreements(used to net positions, based on a ISDA or legal agreements)

Lets call them Business area(BA).

Now if under one of underlying security in the trades process for exposure calculation in a BA has Illiquid securities. The holding periods used in the exposure calculation will be marked to 20 days of supervisory MarginPeriodOfRisk(MPR). ==> how to do exposure calculation? should we do this in our project?

For BA's with only Liquid assets will NOT receive MPR floor of 20 in the calculation.

As an example:

MPR is one of the key parameters in the Exposure calc along with other details confidence-level,

stress period window, etc along with the Market factors linked to each trades under each BA(portfolio).

We can even show a BA exposure calculation data set, with Trades/Sensitivities/HoldingPeriod(20 and non-20) and see the difference in exposure calculated.

This exposure number (PotentionalExposure or EffectiveExposure) is in turn used to drive the Risk Weighted Asset Which is the amount of capital reserve a financial institution needs to hold.

These exposure number also constitutes to the EAD(exposure at default) calculated against each counterparty.