

PD is commonly used in risk management with the concept of “through the cycle (TTC)”. It is conceptually different to requirements in IFRS 9 which requires looking forward over the lifetime of a financial instrument while considering economic scenarios.

In FlexFinance, one can decide which of the following variants shall be used:

- Variant A, in which a PD known from the implementation of the capital guidelines is transferred to a PD (PIT)
- Variant B, in which the available historical scoring information is evaluated in combination with macroeconomic parameters for the direct derivation of a PD (PIT)

Depending on the variant selected, different components are used:

- Variant A:
 - Component "Macroeconomic Factor"
 - Component "Transfer PD (TTC) to PD (PIT)".
- Variant B:
 - Component "PD (PIT) Roll Rate of DpD".
 - Component "PD (PIT) Rating/Scoring Migration Analysis".

Variant A - Transfer PD (TTC) to PD (PIT)

This variant has to be applied if a customer decides to transfer an existing PD (TTC) to a PD (PIT) applying macroeconomic factors.

It requires a PD (TTC) as a starting point that can be calculated in another model or can be imported from an external source.

Component "Transfer PD (TTC) to PD (PIT)"

PD (TTC) is commonly used in risk management with the concept of “through the cycle (TTC)”. It is conceptually different to requirements in IFRS 9 which requires looking forward over the lifetime of a financial instrument while considering economic scenarios.

The target of this component is to use the existing PD (TTC) by applying macroeconomic factors. By adjustment via macroeconomic factors, the economic scenario in a specific period is considered. PD (PIT) for each period in the future is calculated by applying PD (TTC) with a correlation between derivation of the default rate and the projected macroeconomic parameters of that period.

The output of this component is the PD (PIT) for time periods in the future. This output will be considered as input in the components “PwECL Simulation” and “PwECL Calculation”.

The input of this component is

- Correlation between derivation of the default rate and macroeconomic parameters (output from component “Macroeconomic Factor”).
- PD (TTC) at segment/portfolio or at deal level.
- Estimation of macroeconomic parameters for future periods. If an estimation of macroeconomic parameters for future periods is not available, the moving average method will be applied for forecasting macroeconomic parameters (e.g. baseline/normal). Shift scenarios (such as -25 bps or 25 bps) will be configured for other scenarios (e.g. upside, downside).

Component "Macroeconomic Factor"

This component derives macroeconomic factors on the basis of macroeconomic parameters.

This component calculates macroeconomic factors and is only required if the PD (TTC) is to be transferred to PD (PIT). If the component “PD (PIT)” is in use, the functionality of the component “Macroeconomic Factor” is already embedded.

The component considers macroeconomic parameters for 3 different macroeconomic scenarios. These scenarios are named “Scenario 1, Scenario 2 and Scenario 3” in the component. It is up to the bank to decide for each scenario if it will represent a baseline, upside and downside scenario or maybe two different downside scenarios in addition to the baseline scenario.

The component studies the correlation between default patterns in past periods with the relevant macroeconomic parameters available in those periods. By applying the regression method, a correlation can be set up between the derivation of the default rate for a specific period compared with the average default rate over the periods and underlying macroeconomic parameters. For each scenario, the bank needs to input a maximum of 5 macroeconomic parameters for a timeline. In addition, internal or external historical default rates (or accounting data) in past periods/years (by segment/portfolio) need to be provided.

Variant B - PD (PIT)

Component "PD (PIT) Roll Rate of DpD"

This component derives the PDs (PIT) for the lifetime of a deal directly from the available historical default data and macroeconomic parameters. The PDs (PIT) will be used directly in ECL calculation in IFRS 9.

The Roll Rate Analysis of days past due is based on a Markov chain process, and the states of this process are buckets of loans for days past due. By characterising one or several buckets as an indicator for default, a PD can be calculated as the probability of a loan ending up in this type of bucket.

The component needs the following historical data information as input:

- deal ID
- exposure
- days past due
- values of macroeconomic parameters

Component “PD (PIT) Rating/Scoring Migration Analysis”

The Rating/Scoring Migration Analysis is very similar to the Roll Rate Analysis. It is also based on a Markov chain process. The states of this process are rating or scoring values, but might also be buckets of days past due, where one or several scores/days past due buckets are defined as default. In contrast to the Roll Rate Analysis, however, the Rating/ Scoring Migration Analysis allows the transition from one state to each other state. In addition, it calculates the probability of a counterparty to default instead of an asset.

To calculate the PD (PIT) for periods in the future, the component needs the following historical data as input:

- Reference date
- Customer ID
- Score
- Flag indicating whether the score is considered as a default state
- (optional) ratings corresponding to scores
- Values of macroeconomic parameters