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Fundamental Review of the Trading Book (FRTB)

The usage of proxies under FRTB

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Proxies under FRTB

A brief summary

The use of proxies is one of the methods which banks can employ to increase the modellability of risk factors. Banks should carefully consider the balance between potential capital reductions, and the resources that are required to develop and maintain proxies.

Proxies overview

- A proxy is utilised when there is an insufficient track record for a risk factor. A lack of historical data increases the likelihood of the risk factor failing the Risk Factor Eligibility Test (RFET).
- Consequently, using proxies ensures that the number of non-modellable risk factors (NMRFs) is reduced and capital charges are kept to a minimum.
- Although the use of proxies is allowed, regulation states that their usage must be limited, and they must have sufficiently similar characteristics to the risk factors which they represent.
- Banks must be ready to provide evidence to regulators that their chosen proxies are conceptually and empirically sound.
- Despite the potential reduction in capital, developing proxy methodologies can be time-consuming and require considerable ongoing monitoring.
- There are two main approaches which are used to develop proxies: rules-based and statistical (see next slide).
- Proxies are one of the methods for reducing the number of NMRFs and consequential capital, alongside using external data sources and modifying risk factor bucketing approaches.

Proxy decomposition

- FRTB regulation allows NMRFs to be decomposed into modellable components and a residual basis, which must be capitalised as non-modellable.
- For example, credit spreads for small issuers which are not highly liquid can be decomposed into a liquid credit spread index component, which is classed as modellable, and a non-modellable basis or spread.
- To test modellability using the Risk Factor Eligibility Test (RFET), 12-months of data is required for the proxy and basis components.
- If the basis between the proxy and the risk factor has not been identified and properly capitalised, only the proxy representation of the risk factor can be used in the Risk Theoretical P&L (RTPL). However, if the capital requirement for a basis is determined, either: (i) the proxy risk factor and the basis; or (ii) the original risk factor itself can be included in the RTPL.
- Banks should aim to produce preliminary analysis on the cost benefits of proxy development – does the cost and effort of developing proxies outweigh the capital which could be saved by increasing risk factor modellability?
- For example, proxies which are highly volatile may also result in increasing NMRF capital charges.

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Approaches for proxy selection

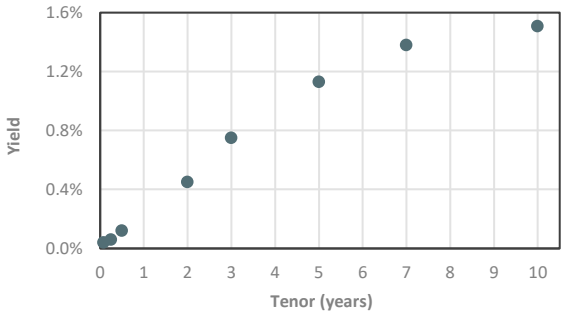
Both rules-based and statistical approaches to developing proxies require considerable effort. Banks should aim to develop statistical approaches as they have been shown to be more accurate and also more efficient in reducing capital requirements for banks.

Rules-based approach

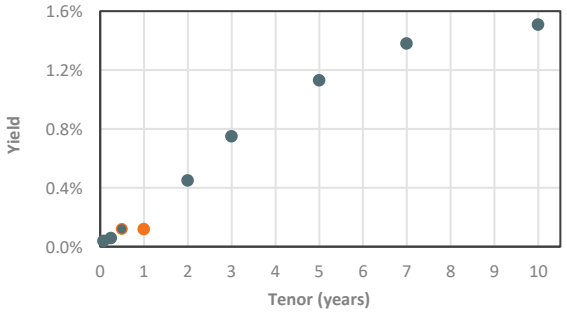
- Rules-based approaches are more simplistic, however are less accurate than the statistical approaches.
- They find the "closest fit" modellable risk factor using somewhat more qualitative methods.
- For example, picking the closest tenor on a yield curve (see below), using relevant indices or ETFs, or limiting the search for proxies to the same sector as the underlying risk factor.
- Similarly, longer tenor points (which may not be traded as frequently) can be decomposed into shorter-tenor points and cross-tenor basis spread.

Statistical approach

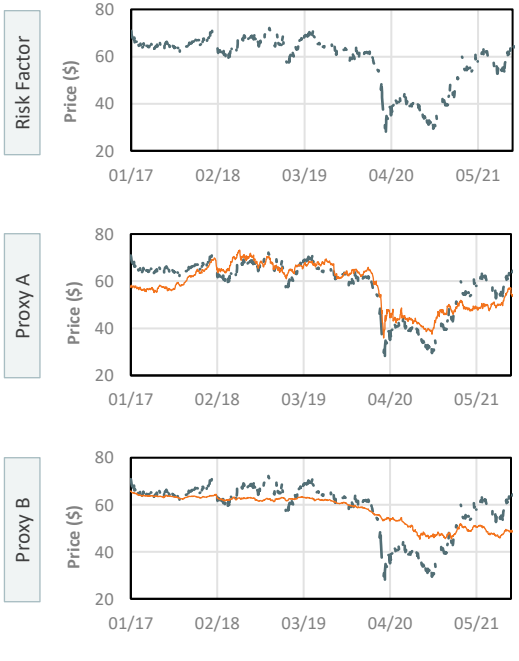
- Statistical approaches are more quantitate and more accurate than the rules-based approaches. However, this inevitably comes with computational expense.
- A large number of candidates are tested using the chosen statistical methodology and the closest is picked (see below).
- For example, a regression approach could be used to identify which of the candidates are most correlated with the underlying risk factor.
- Studies have shown that statistical approaches not only produce the more accurate proxies but can also reduce capital charges by almost twice as much as simpler rules-based approaches.



- Example scenario with missing risk factor: 1-year tenor on yield curve.



- A possible rules-based approach picks the closest tenor (6-month) as the proxy.



- For a risk factor with missing historical data (left), test multiple alternatives using statistical methodology (below) and choose the most similar to the underlying risk factor as the proxy.

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