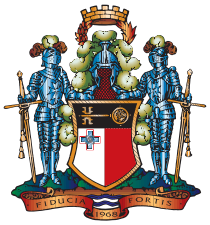

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METHODOLOGICAL UPDATE ON THE CALCULATION OF THE LIQUID ASSETS RATIO FOR INSURANCES AND INVESTMENT FUNDS

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BOX 4: METHODOLOGICAL UPDATE ON THE CALCULATION OF THE LIQUID ASSETS RATIO FOR INSURANCES AND INVESTMENT FUNDS[1]

Recent events, such as the COVID-19 pandemic, the 2022 UK gilt crisis, and the 2023 US regional bank turmoil, have highlighted the importance of accurate monitoring of liquidity risk, not only for banks, but also for non-bank financial institutions. Essentially, the monitoring of liquidity risk requires a comprehensive understanding of the liquidity channels and market dynamics.

This box presents the outcomes of a review conducted on the current liquidity measurement methodologies for domestically-relevant insurance companies and investment funds. It introduces new methodologies tailored for each sector, with the aim of providing a more reliable assessment of the overall liquidity ratios for these institutions. Collectively, these institutions represented approximately a third of Malta's GDP in 2023.

1. Insurance sector

The traditional insurance business relies primarily on premia and income from investment portfolios as the major sources of liquidity. The reverse cash flow cycle where incoming premia precede outgoing claims, typically establishes a stable funding source for insurance operations, thereby mitigating somewhat liquidity risk. However, unforeseen circumstances, such as shifts in policyholder behaviour by either surrendering their policies due to decreased disposable income or redirecting their investments elsewhere, can pose challenges for insurers. Additionally, sudden increases in claims, possibly due to natural disasters which need to be settled in a short period of time, can lead to unexpected cash outflows for insurers.

From an investments standpoint, rising interest rates may prompt significant margin calls, compelling insurers to pursue alternative liquidity sources, such as fire sale of assets, which could in turn, exacerbate pressures across financial markets, through the asset liquidation channel.

Such events highlight the importance of monitoring liquidity ratios in the insurance sector to protect policyholders while at the same time, preserve financial stability.

1.1 Creating a liquidity indicator

The Solvency II framework does not provide specific quantitative requirements or standardised metrics for assessing insurers' liquidity positions akin to the LCR and NSFR for the banking sector. As a result, various approaches were developed across different prudential regimes and by international institutions which primarily involves the classification of assets through methods such as bucketing and the assignment of different factors. Notably, the Basel Framework, as well as the European Systemic Risk Board (ESRB) and the International Association of Insurance Supervisors, exemplify this practice.

Previous methodology

The Bank adopted a similar method where assets were assigned factors according to the perceived ease of converting the asset into cash. Liquid assets were determined by aggregating the weighted products of each asset group, as follows:

$$Liquid\ Assets = \sum_{i=1}^{n} Asset\ (category)_i * Weight_i$$

[1] Prepared by Ms Luana Camilleri, Senior Analyst, and Mr Renan Dos Santos Carinha, Analyst, both from the Financial Stability Surveillance and Research Department. The authors would like to express their gratitude to Mr Andrew Spiteri, Manager of the Financial Stability Surveillance Office, and Ms Wendy Zammit, Head of the Financial Stability Surveillance and Research Department, for their invaluable suggestions.

where, "i" denotes each specific asset class, ranging from the first category ($i = 1$) to the $n\text{^}th$ category.

Subsequently, the liquid assets ratio was calculated by dividing the total liquid assets by the total assets, excluding assets held in UL and IL contracts:

$$Liquid\ Asset\ Ratio = \frac{Liquid\ Assets}{Total\ assets\ (excluding\ UL/IL)}$$

However, this methodology has its shortcomings. Firstly, assets are categorised solely according to their asset type, thereby lacking the depth required for a thorough examination of each asset class's liquidity profile according to their credit quality (see Table 1). Moreover, the methodology is not comparable with approaches used by other authorities and across jurisdictions. This is mainly due to the differences in classifications and factors.

Revised methodology

In response to these recognised limitations of the previous approach, the revised methodology fully adopts the methodology of the European Insurance and Occupational Pensions Authority (EIOPA), ensuring comparability with results for other countries as reported by EIOPA.[2] This methodology maintains the Bank's prior approach of assigning varying factors to different asset classes, then summing these weighted assets to calculate the liquid assets ratio. However, the revised methodology introduces significant improvements in its weighting mechanism, notably by incorporating considerations of asset creditworthiness and geographical factors (see Table 1). For instance, while all government paper was previously rated as highly liquid with a factor of 100%, securities issued from non-EU countries with a credit quality step (CQS) rating of 2 to 3 now receive a lower factor of 85%, implying a haircut of 15%. This reflects that the current market value may not be achieved in times of stress, hence accounting for any price drops that may occur when liquidating the instrument within a tight timeframe. Securities with a rating of CQS 4-6 or unrated are deemed entirely illiquid and assigned a 0% weight.[3] Additionally, equities and bonds issued by financial institutions, or their affiliates are also considered illiquid and are assigned a factor of 0%. As a result, the updated methodology tends to be more conservative.

1.2 Impact on liquid assets ratios

This section compares the results of the two methodologies when applied to December 2023 data. Under the previous methodology, the liquid assets ratio for the life sector would have stood at 74.1%, while the revised methodology yielded a lower ratio of 58.8% (see Chart 1). This decrease was primarily attributed to the changes in the weighting criteria, notably for equities, which accounted for the most significant drop in liquid assets. The lower weight reflects the notion that during stressed periods, it is highly unlikely that the current market value of equities would be realised, and as such, the new methodology is more conservative and adopts a factor of 50% if listed and a 0% if unlisted, with the latter considered as illiquid. Additionally, corporate bonds were impacted due to the exclusion of securities issued by financial institutions and affiliates, as well as considerations of credit ratings. Changes in the weights of government bonds and property had a relatively lower impact.

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[2] Further insights into the EIOPA methodology can be found in the following report: Report on the Impact of Inflation on the Insurance Sector - European Union (europa.eu).

[3] The CQS is a standardised measure of credit risk, graded from 1 to 6. Grades 1 to 3 indicate investment-grade status, while grades 4 to 6 signify non-investment grade.

Table 1
CLASSIFICATION OF LIQUID ASSETS

Assets (excluding assets held for UL/IL):	Factor	
	Previous Methodology	EIOPA Methodology
Cash and cash equivalents	100%	100%
Deposits other than cash equivalents	80%	
Collateralised securities:		
- Extremely high-quality collateralised securities (CQS0/1)	30%	65%
- Other collateralised securities		0%
Collective investments undertakings	30%	60%
Corporate bonds:[1]		
- Extremely high-quality corporate debt securities (CQS0/1)		85%
- High-quality corporate debt securities (CQS2/3)	80%	50%
- Other corporate debt securities		0%
Covered bonds:[2]		
- Extremely high-quality covered bonds (CQS0/1)		93%
- High-quality covered bonds (CQS2)	85%/ 100%	85%
- Other covered bonds		0%
Derivatives	30%	0%
Equities:		
- Listed equities[3]	100%	50%
- Unlisted equities	30%	0%
Government bonds:		
- Issued/guaranteed by EU member states (all CQSs) and issued by highly-rated non-EU countries (CQS0/1)	100%	100%
- Issued/guaranteed by high-rated non-EU countries (CQS2/3)		85%
- Other government bonds		0%
Exposures to ECB, Central banks, multilateral development banks & international organisations:[4]		
- Issued or guaranteed by ECB, EU central banks, supranational institutions (BIS, IMF, EC,…) or multilateral development banks	100%	100%
- Issued or guaranteed by central banks of non-EU countries (CQS 0/1)		85%
- Issued by other supranational institutions		0%
Other investments	30%	0%
Own shares (held directly)	30%	0%
Pension benefit surplus	30%	0%
Property (other than for own use)	30%	0%
Property, plant & equipment held for own use	40%	0%
Structured notes	30%	0%

[1] In the EIOPA methodology, corporate bonds issued by a financial institution or its affiliate are excluded.

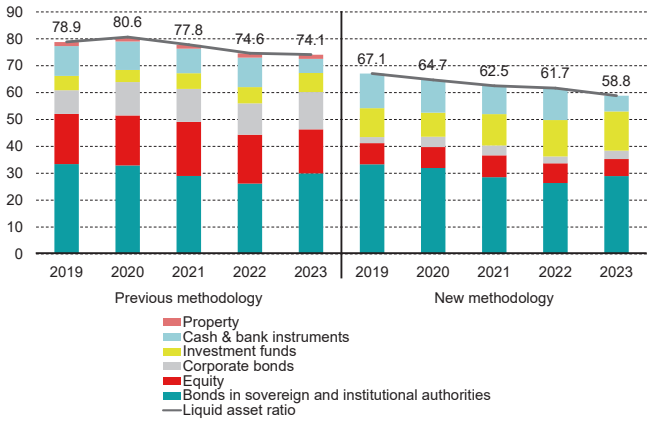
[2] In the previous methodology, covered bonds were categorised with government or corporate bonds, depending on the issuer. This led to weightings of either 100% (for government bonds) or 85% (for corporate bonds).

[3] In the EIOPA methodology, listed equities issued by a financial institution or its affiliate are excluded.

[4] In the previous methodology, bonds issued by supranational institutions were categorised as part of government bonds.

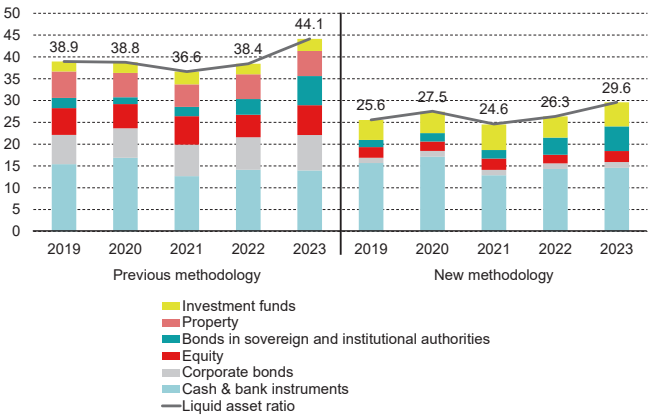
Similarly, in the non-life sector, the liquid assets ratio decreased from 44.1% to 29.6% (see Chart 2). In this case, the decline was primarily driven by the holdings of corporate bonds. The zero-factor attributed to property in the liquid assets' calculation, also played a significant role in this decrease, closely followed by the impact of equities. Meanwhile, the effect on government bonds remained minimal, given that most holdings are euro area sovereign bonds which continued to carry a factor of 100%.

Chart 1
PREVIOUS AND NEW LIQUID ASSET RATIO – LIFE INSURANCE COMPANIES
(per cent)



Source: Central Bank of Malta.

Chart 2
PREVIOUS AND NEW LIQUID ASSET RATIOS – NON-LIFE INSURANCE COMPANIES
(per cent)



Source: Central Bank of Malta.

Incorporating data from both the life and non-life sectors, the median ratio stood at 40.9%, slightly below the 46.0% median ratio observed for the European Economic Area (EEA) countries as reported by EIOPA.[4] However, the domestic weighted average ratio surpassed both figures, reaching 53.5%.

The optimal ratio of liquid assets for an insurance company depends on a number of factors such as the types of insurance policies underwritten, the duration of their liabilities, and the stability of cash flows. Such aspects are also influenced by regulatory requirements, business model, the company's own risk tolerance, and prevailing market conditions.

2. Investment funds

The active management and monitoring of liquidity in a fund is of utmost importance. Funds invest in a range of assets with different degrees of liquidity, and typically offer liquidity premia as compensation for holding long-term illiquid assets. Such a strategy disincentivises a pernicious situation where many investors wish to redeem their holdings, forcing the fund manager to sell illiquid assets at a significant discount. Under a scenario of severe market distress, liquidity mismatches experienced by the investment fund sector can create significant vulnerabilities in financial markets. As an attempt to meet redemptions, sub-funds are sometimes forced to sell assets at fire-sale prices, which in turn, can generate procyclical and spillover effects. This is also more relevant for domestically-relevant

[4] Refer to the EIOPA Financial Stability Report June 2023: Financial Stability Report (europa.eu).

investment funds, given their strong domestic interconnectedness. These factors, underscore the importance of addressing and mitigating potential liquidity challenges.

Since 2019, the Maltese investment funds sector recorded a substantial growth of over 30% in terms of assets. By end 2023, the sector's total assets surpassed €23.5 billion, with domestic assets accounting approximately for 12%. On the liability side, Maltese residents are investing nearly €2.2 billion with such funds. In the event of significant market distress, funds may be met with challenges in meeting a spike in redemptions should they have inadequate liquid assets, albeit such risks are mitigated through the implementation of redemption gates, limits, and fees.

2.1 Previous methodology

In the previous methodology, estimates of liquidity ratios grouped various assets together regardless of their liquidity profile. Sovereign bonds, bank bonds and equities were considered to be highly liquid attributing a factor of 100%. The only cut-off was for sovereign and bank securities rated as non-investment grade.[5] The previous methodology of liquidity estimation also failed to capture the impact of non-financial and non-bank financial corporate bonds on the ratio due to the fact that such securities were not taken into account, regardless of their ratings. The overall amount of liquid assets was therefore obtained by summing the weighted assets, as per below:

$$Liquid\ Assets = \sum_{i=1}^{n} (Type\ of\ Asset)_i * Weight_i$$

where, i refers to the type of asset, ranging from *n* categories while, *Weight*, refers to the attributed factors used as explained in Table 2.

Therefore, the liquid assets ratio is calculated by dividing the total liquid assets by the total assets.

$$Liquid\ Asset\ Ratio = \frac{Liquid\ Assets}{Total\ assets}$$

Although such methodology provided a good estimate of the proportion of assets commonly considered as liquid, it failed to provide a more accurate perspective that can only be attained through a more granular approach, considering security-by-security exposures.

2.2 Revised methodology

The updated methodology aligns the liquidity assessments with the concept of HQLA as defined by BASEL III, in accordance with the guidelines set forth by the European Securities and Markets Authority (ESMA).[6] Liquidity is assessed by looking at the proportion of HQLA to total assets. Therefore, the same concept of the previous methodology is adopted where each asset class is attributed a factor depending on the ease with which the asset is turned into cash, and the sum of such weighted assets assessed as a share of overall assets. However, under this approach, securities undergo individual scrutiny, taking into consideration the issuer and its credit rating to ensure a more thorough and nuanced analysis on creditworthiness and hence assess more accurately the liquidity profile of the asset. A comparison between both methodologies and further details on how different types of securities are treated can be found in Table 2.

[5] Non-investment grade securities are securities rates BB+ (or equivalent) and less.

[6] Refer to Section 4.4.1. Corporate debt funds: HQLA approach and RCR within the Recommendation of the ESRB on liquidity risk in investment funds. Available on https://www.esma.europa.eu/sites/default/files/library/esma34-39-1119-report_on_the_esrb_recommendation_on_liquidity_risks_in_funds.pdf.

Table 2
COMPARISON BETWEEN METHODOLOGIES

Type of Asset	Issuer	Previous methodology		Revised methodology	
		External rating	Factor	External rating	Factor
Cash & deposits	-	-	100%	-	100%
Bonds	Government	(BBB- to AAA)	100%	(BBB- to AAA)	100%
	Banks	(BBB- to AAA)	100%	(AA-to AAA) (BBB- to A+)	85% 50%
	NFCs & NBFIs	-	0%	(AA- to AAA) (BBB- to A+)	85% 50%
Equities	All Issuers	(BBB- to AAA)	100%	(BBB- to AAA)	50%
Other financial assets (including loans, derivatives & fixed assets)	All Issuers	-	0%	-	0%

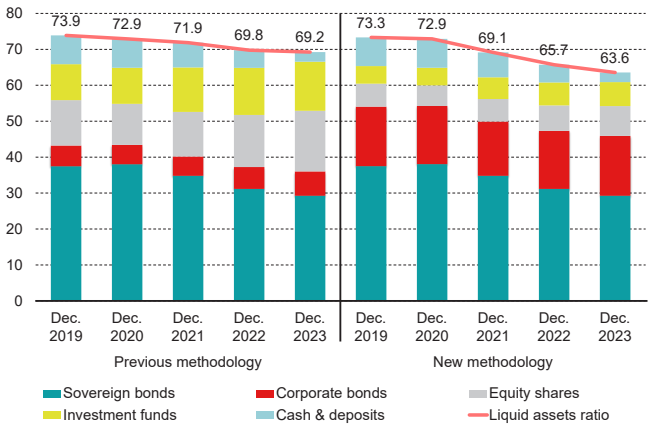
Sources: BIS; ESMA; Central Bank of Malta.

In this context, notable changes have been observed, namely the positive weight attributed to bonds issued by NFCs and non-bank financial institutions. Meanwhile, equities and bank bonds experienced a reduction in their weighting, mainly because these assets could be exposed to the lack of market demand. When estimating the revised liquidity metric, some data gaps were however evident, with some credit ratings for private securities not available. In such instances, the sovereign rating[7] of the issuer's country was considered, but with a two-notch downgrade to ensure a conservative approach. For example, if for private securities with missing credit ratings, the sovereign rating of the issuer country stood at BBB, post the two-notch downgrade this would be considered as BB+ and therefore assigned a factor of 0%. This adjustment aligns with the approaches found in academic literature and applied fields such as portfolio analysis and stress testing, hence ensuring a more cautious and comprehensive evaluation of results.

2.3 Impact on liquid assets ratios

The change in methodology had no material impact on the liquidity levels of domestically-relevant investment funds until March 2020, as changes in factors offset each other (see Chart 3). However, due to the bearish market during the pandemic and the subsequent shift in strategies by portfolio managers, a divergence thereafter between the two estimations were observed.

Chart 3
LIQUIDITY METHODOLOGY COMPARISON
(per cent)



Source: Central Bank of Malta.

[7] For Sovereign ratings, our methodology involves utilizing the publicly accessible Long-Term Foreign Currency Rating (LT FC) provided by S&P Global.

This gap widened further on account of the geopolitical events since March 2022, which triggered inflationary shocks and the beginning of a monetary tightening phase. In response to these market dynamics, these sub-funds pursued higher exposures towards equities which have a larger discount factor in the new methodology. Of note, however, the overall decline in liquidity was captured under both methodologies, though there seems to be a slight uptick due to a recent increase in holdings of debt securities, reflecting the market recovery observed in the last quarters of 2023.

Under the previous methodology, the higher weights attributed to equities contributed to around 30 percentage points of the previously estimated 69.2% liquid assets ratio as at December 2023. Meanwhile, under the new methodology, given the larger discount factor, the same equities contribute to only about 15 percentage points to the revised 63.6% liquid asset ratio.[8] Parallel to that, bank bonds rated between BBB- to A+ also had larger discount factors, albeit to a much lower extent. Such adverse developments were partly offset by debt issued by NFCs, OFIs and insurance companies, which were assigned a 0% weight in the previous methodology and hence considered illiquid, whereas now such instruments carry a factor in the range of 50% to 85%. This resulted in the share of debt securities to increase by almost 11 percentage points to contribute to 45.9 percentage points of the new ratio. The rest is attributable to cash and deposits which remain at face value under both methodologies.

The optimal liquidity ratio for investment funds can vary widely depending on the fund's investment strategy, asset class focus, investors' redemption terms, and market conditions. Some funds, such as money market funds, are required to maintain high levels of liquidity to meet daily redemptions, while others, such as private equity funds, may have longer investment horizons and less frequent liquidity needs. Balancing liquidity with the pursuit of investment returns is a key consideration for fund managers.

The new liquidity methodology represents a significant enhancement, contributing to a more comprehensive evaluation of liquidity risks within the Maltese Investment Funds sector. This particularly in the context of the domestically-relevant investment funds which are interconnected with the domestic financial system, mainly with core domestic banks due to ownership (see Chapter 4.2). However, these companies operate as separate legal entities, subject to the regulatory provisions outlined in the Maltese Companies Act and the Investment Services Act. Furthermore, in the event of significant market distress, several liquidity management tools such as redemption gates and fees remain available for most of the funds to mitigate fire sales and redemptions.

In summary, while there is no one-size-fits-all answer to the optimal level of liquid assets for insurance companies, and investment funds, these institutions typically aim to strike a balance between liquidity needs that suit their business model, profitability, and risk management in line with regulatory requirements and business objectives.

[8] According to the results published in Box 6 of the November 2023 ECB FSR, the HQLA as a share of net assets for euro area open-ended bond funds ranged between just above 90% for those which invest mainly in advanced economy sovereign bonds, to about 6% for those who invest mainly in high-yield corporate bonds.