Millenium Tower, 17 Ha'Arba'a St.
Tel Aviv, Israel 6473917
Tel +972-3-6844700, Fax +972-3-6855002
www.midroog.co.il

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Solvency 2 – Economic Capital – Is it?

Special Report | Insurance | March 2017

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This report is a translation of a report that was written in Hebrew. The binding version is the one in the origin language.

Contacts:

Omer Foremberg, CPA, Analyst
omer@midroog.co.il

Avi Ben-Noon, Head of Financial Institutions
avib@midroog.co.il

1. Abstract

After much anticipation, and fashionably late versus other regulation in the banking system (the “Basel” directives), in early 2016 the European Union launched the Solvency II directive, that has been promoted and developed by the European regulator (EIPOA) with the purpose of ensuring the stability of insurance companies, enhancing risk management, and supporting an efficient and flexible market.

The directive consists of three main pillars: The first addresses regulatory capital adequacy and capital requirements, The second discusses corporate governance, the quality of risk management processes and supervision by the regulator, The third pillar discusses market discipline, disclosure and reporting. Sound familiar? Bankers will probably be reminded of the three pillars of Basel.

In practice, what the directive says is that an insurance company must maintain an adequate cushion of economic capital, serving as its main cushion to absorb losses, against risks to which the company is exposed in 1-every-200 year scenarios. The main risks to which insurers are exposed are insurance risk, market risk, credit risk (including counterparty risk), and operational risk. If the insurance company has a capital cushion to the extent required under the relevant scenario and according to its exposure characteristics (solvency capital requirements – SCR – of 100%), then it has 0.5% probability of default in the range of next 12 months.

What is the status in Israel? The local regulator (the Capital Markets, Insurance and Savings department at the Finance Ministry, hereinafter "**the Authority**") adopted Solvency 2 and announced its intention to apply it gradually, starting with the financial reports for the second quarter of 2017, until achieving 100% compliance with SCR by year-end 2021, based on the current directive.

In general, the Authority translated and applied Solvency 2 as is, with some adjustments to facilitate its implementation because of the specific characteristics of the local market. Both in Europe and in Israel (after several rounds), a transition period and measures were given for the gradual implementation of the new directive and to facilitate acclimatization by the insurance companies, for some of which (locally) the effects of the initial format would have been dramatic, according to the simulations they carried out based on the directive guidelines. Some showed a significant capital deficit that affected their business flexibility and ability to payout dividends.

We view the new capital regime based on economic capital (i.e risk) as a positive development compared with the existing capital regime, based on expectations that risk management processes in the industry will continue to improve, support for improving the companies' risk profiles over time and measuring the economic capital and risks, and by that also improving over time the companies' financial strength.

In the short to medium term, the capital deficit in some of the companies may somewhat impair their business flexibility and pressure on profitability, while taking into account that solvency ratios are expected to be more volatile due to their large exposure to market variables. We believe that all the companies in the sector have sufficient tools to meet the required capital ratio, especially after the extension of the implementation period until the end of 2021, including: the continued issuance of subordinated debt, the use of reinsurers, changes in the mix of investments and a certain change in the business mix and financial hedging activity, In addition to adding equity

from current earnings, and the absence of dividend distribution in some of the insurers. However, despite this, the Solvency II model is not devoid of biases, not to say errors, and does not necessarily reflect a model of pure economic capital. This model could overestimate or underestimate certain risks, creating uneconomic “noise” because of its assumptions, depending on the insurer's business model, In particular for insurers with significant life insurance activity, with the long implementation period and the transitional measures extending it even further from an economic model until full implementation. Also, this regime and the adjustments done by the Authority could have significance influence on the local capital market, because of the central role the insurance companies play and their sheer size relative to the market. Distortions could be created in the allocation of sources in the economy, and in the development of markets, including the local debt market, notably the securitization market.

One of the biases, in our opinion, is the Authority's determination of a linear "conversion scale" for debt (which was reduced in the latest guidelines to 3 notches) between the local and international rating groups, which fails to represent the exponential nature of risk (as is also embodied in default rates and spreads in the market), which could in turn result in overestimated risk in some assets, reflected in overly high capital requirements, versus underestimation of risk in other assets, which could lead to inefficient and uneconomic allocation of capital, distortions in prices, and transfer of funds abroad.

While the debt market would apparently continue to enjoy the insurance companies' investments, because of the narrowing of the conversion scale, the existence of a securitization market is doubtful. The capital requirement that would be needed in securitization structures relative to existing alternatives (selling portfolios, mainly mortgage portfolios with LTV constraints) renders this product unattractive and costlier for the insurance companies, and for the counterparties too (the banks selling them), a process that could cause economic efficiency to be impaired.

Here some more examples:

- Under Solvency 2, assets are appraised by market value. That makes a lot of sense for the purposes of determining economic value, but is that the appropriate value for any insurer business model? The economic value of an asset is not always equivalent to its market value, especially when it comes to insurers with illiquid liabilities with long duration and appropriate duration and cash flow matching. These insurers can keep assets until maturity and are therefore less exposed to market risks, especially long-term fluctuations (their main exposure is to default risk of debt assets). For these companies, Solvency 2 requires to retain surplus capital relative to requirements under the economic model and the structure of their liabilities.
- The change in capital requirements for long-term risks will affect not only the extent of required capital, but also the calculation of the extent of liabilities and, as a corollary, the amount of available capital. Under Solvency 2, insurers are required to hold, on top of reserves calculated under best estimate practice, another layer of security – a risk margin calculated as the discounted value of the cost of capital (6%) arising from future capital requirements for full run-off of liabilities. Therefore, the higher the

amount of capital to be charged for a certain risk, and the longer the duration of the liability, the capitalized risk margin will be higher and therefore, the lower the surplus capital will be.

- The interest rate curve in use by Solvency 2 regime for capitalizing liabilities is built on the assumption that forward interest rates converge to a fixed value, the UFR – ultimate forward rate, in the long run. While this assumption is essential, if only for practical reasons, rapid convergence on the UFR tends to underestimate the duration of very long-term liabilities, and ultimately, to overestimate the capital adequacy ratio in some cases.

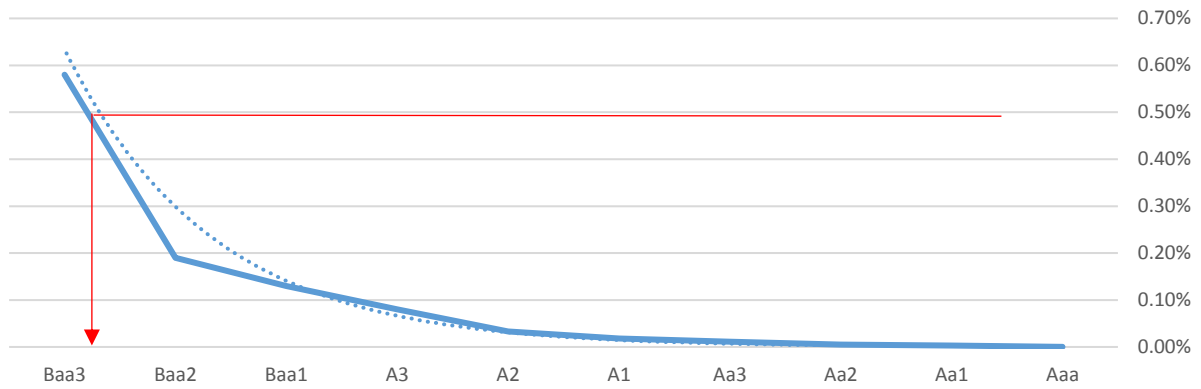
As said, Solvency 2 represents a step in the right direction towards maintaining the stability of the insurance companies and thereby supporting their ratings in the long run. However, the biases we noted and others to be elaborated below have implications for our reliance on the regulatory capital adequacy ratios as economic ratios. The degree of reliance depends on the business model of the insurer (mix of activities – for insurers oriented towards life insurance, the level of reliance will be lesser, compared with P&C insurance, which is better evaluated by the Solvency 2 model), and in any case, only after full implementation of the directive. Nonetheless, the Solvency 2 ratios will be an important factor in our general evaluation of insurance financial strength (IFS). Regardless of their financial meaning, the Solvency 2 ratios will determine the level of supervision and regulatory attention to the insurance company will therefore affect the business flexibility of the insurers.

2. Processes of calibration and transition measures have partly taken the Solvency 2 ratios away from a pure economic model

2.1 In principle, a 100% Solvency 2 ratio is consistent with Baa international rating score, as long as the ratio genuinely reflects economic capital

The Solvency 2 directive clearly states that the SCR (solvency capital requirement) shall *"be determined as the economic capital* to *be held by insurance* and *reinsurance undertakings in order to ensure that ruin occurs no more often than once every 200 cases or, alternatively, that those undertakings will still be in a position, with a probability of at least 99.5%, to meet their obligations to policyholders and beneficiaries over the following 12 months.*" In other words, the Solvency 2 ratio is designed to make an economic measurement of capital, and an insurance company with a 100% Solvency 2 ratio will have a 0.5% probability of default in the following 12 months. When mapping that probability adjusted to defaults that actually happened in the world (There is no sufficient local data base and therefore Moody's idealized default rates were used) while examining different time horizons (in order to take into account the long-term liabilities profile of most insurance companies), we see that a 100% Solvency 2 ratio is appropriate to the medium/low Baa international rating score (see Exhibit 1). By the same token, for companies with relatively less fluctuation in capital requirements, we assess that a Solvency 2 ratio of 200% would be equivalent to the international Aa rating score.

Exhibit 1 – Adjusted default rates by ratings – Global



The continuous line represents actual default rates. The broken line represents exponential conversion of actual rates (for illustration)
Source: Moody's Default Rates, Moody's Investors Service, 2-year horizon

2.2 The long calibration process revealed the difficulties in estimating economic risk at 99.5% confidence level

The long calibration process for Solvency 2 regime in Europe, which began in 2006 and spread over nine years, exposed the challenges in assessing all the risks that apply to an insurance company on a pure economic bases at the 99.5% confidence level. The following examples show how various assumptions can lead regulatory capital adequacy to generate results other than would be expected from a "pure" economic capital model. Furthermore, various transition measures, such as the period to implement the risk in equity investments (lowered capital requirement on investment in shares, gradually, over seven years) lead to substantial capital relief at insurance companies that is not characterized by an economic explanation. This relief is especially significant for the big insurance companies. For instance, according to IQIS5 exercises based on figures for December 31, 2015, Migdal Insurance Company and The Phoenix Insurance Company reported ratios of about 73% and 79% respectively, compared with about 66% and 74% excluding the transition measures. These ratios represent a significant capital benefit, amounting to about 1.2 billion NIS at Migdal and about 0.4 billion NIS at The Phoenix.

Another issue is the linear "conversion scale" (which was reduced in the updated guidelines to 3 notches) between the local and international rating groups determined by the Authority, which does not reflect the exponential nature of risk (as is also reflected by the default rates and spreads in the market), and which could result in surplus risk in some assets, reflected in surplus capital requirements versus underestimation of risk in other assets, which could lead to inefficient and uneconomic allocation of capital, price distortions, and transfer of funds abroad. The spreads in the market, among high ratings in Israel, are very much like in Europe and the United States[1] and as the rating drops, the more the spreads widen. Thus the local market also prices risk exponentially, in contrast to what the requirements of the current directive guidelines reflect.

[1] Spreads, ratings and how they are related, January 2017 (Hebrew)

Here are additional examples that show how ratios and regulatory adjustments may have a more or less conservative results than would be anticipated based on a pure economic ratio:

2.1.1 Examples where the results of Solvency 2 are more conservative than would be anticipated according to the principles of the directive

- Under Solvency 2, assets are valued at market value. It makes a lot of sense for calculating economic capital, but is that the right value for the business model of every insurer? The economic value of an asset is not always equivalent to its market value, especially for insurers with illiquid liabilities of long duration with appropriate duration and cash flow matching. These insurers can hold assets until maturity and are therefore less exposed to market risks, especially long-term fluctuations (their main exposure is to default risk of debt assets). For these companies, Solvency 2 requires them to retain surplus capital relative to requirements under the economic model and the structure of their liabilities.

  To resolve this problem, volatility adjustment (hereinafter, "**VA**") was carried out, as well as "matching adjustment" (hereinafter, "**MA**"), in order to eliminate uneconomic background noises in the calculation, by adjusting the discount rate of the liabilities beyond the default risk of the debt assets portfolio. However, the calculation methodology is not transparent enough and the influence of the adjustment does not completely eliminate the extra noise. Moreover, these mechanisms were built on a benchmark portfolio that could significantly differ from the portfolios the insurance companies manage. Therefore, for insurance companies with long-term illiquid liabilities with good cash flow matching, we would expect lower fluctuation of the economic capital adequacy ratio, which is not necessarily true under Solvency 2, even for those that employ VA and MA.
- The usage of immediate, homogenous shocks to embody long-term risks such as trends in mortality or longevity could also fail to completely reflect realistic or "economic" extreme scenarios.
- The change in capital requirements for long-term risks will influence not only the extent of capital required but also the calculation of the extent of liabilities, and as a result, the amount of available capital. Under Solvency 2, insurers are required to hold, on top of reserves calculated under the Best Estimate practice, another layer of security – a risk spread calculated as the discounted value of the cost of capital (6%) arising from future capital requirements for full run-off of liabilities. Therefore, the higher the amount of capital to be tied down for a certain risk and the longer the duration of the liability, the wider the capitalized risk margin, and therefore, the lower the surplus capital will be; and thus, bias in one place leads to a more significant accrued effect.

2.1.2 Examples where the results of Solvency 2 are less conservative than would be anticipated according to the principles of the directive

The interest rate curve in use by Solvency 2 regime for capitalizing liabilities is built on the assumption that forward interest rates converge to a fixed value, the UFR – ultimate forward rate, in the long run. While this assumption is

essential, if only for practical reasons, rapid convergence on the UFR tends to underestimate the duration of very long-term liabilities, and ultimately, to overestimate the capital adequacy ratio in some cases.

The correct interest rate for the long-term, and how to calculate it, is another problem we will not discuss here. But to demonstrate the point, in Europe, the discount rate serving to calculate capital adequacy ratios on December 31, 2015 was 2.1% and 2.5% for periods of 30 and 40 years respectively, which is higher than the derived interest rate in the swap market (1.6%) for those years, with a clear easing effect on the amount of reserves and capital adequacy ratios. As a result, the European regulator is currently examining the methodology for measuring the UFR and lowering it to 3.7%, which will bring it closer to the spot interest rates in the market, but no final decision has yet been made.

In Israel, until recently, the regulator adopted the rate set in Europe, based on the assumption that the shekel yield curve would converge in the long-term to interest of 4.2%, arising from real interest rates of 2.2% plus inflation of 2%, which is the center of the Bank of Israel's long-term target range. However, the latest regulatory update "diverged" from Europe and the examination of a rate cut there. The decision was made to raise UFR interest to 4.6%, representing real interest of 2.6% plus inflation of 2%. It is difficult to assess what is true. Does the "new normal" also characterize long-term interest? It should be noted, however, that there is a certain inconsistency in particular in light of the interest rate capitalization of pensions that currently stands at about 4%. It bears stressing that UFR rates could have a substantial influence on companies with significance life insurance portfolios, whose solvency ratios are highly sensitive to the rate of interest and shape of the curve.

A last example is the failure to tie down capital for sovereign risk. The standard formula has no capital requirement for government bonds issued by EU countries (and in the domestic market, by Israel too) irrespective of their creditworthiness and indeed, in some of them, the credit risk is not minor.

In conclusion, Solvency 2 is an important, crucial step in the development and stability of the insurance market, and over time, it should bear positive effect on the financial strength of the insurance companies. However, as in any such process, the limitations of the model and their implications warrant study: some could prove dramatic for the local capital market, for the allocation of resources in the economy, and for transferring risk in the economy, given the sheer size and importance of the insurance companies and their role in absorbing and managing risk.

3. How does all this affect ratings?

Adjustments to the transition measures are necessary (but insufficient), to gain an economic view

As explained above, some transitional measures will make the reported regulatory Solvency 2 ratios non-economic, at least for a few years to come. Consequently, we shall not be using these ratios when examining economic capital, especially as long as the transition measures are in force.

However, ratios without transition measures ("fully loaded") may not provide an accurate economic view of the insurer's solvency ratio

We believe that for insurers focusing on P&C insurance, fully-loaded Solvency 2 ratios Calculated using the standard formula, adequately capture the risks to which insurers are exposed and appropriately reflect their capital adequacy. For these insurers, we expect to gradually increase our reliance on Solvency II ratios in determining their capital adequacy rating.

On the other hand, for insurers that also engage in life insurance and long-term savings, fully-loaded Solvency 2 ratios may sometimes fail to reflect correct measurement of economic capital, as said, and therefore, our extent of reliance on these ratios will be lesser, and will vary according to our assessment of their representative economic value.

Regardless of their economic meaning, the reported Solvency 2 ratios are significant in our rating assessment, and will determine the extent of regulatory scrutiny over any given insurer, and its degree of business flexibility

As a result, even where we do not place emphasis on Solvency 2 ratios in assessing an insurer's economic capital, these ratios will be an important part of our overall assessment of the insurer's financial strength:

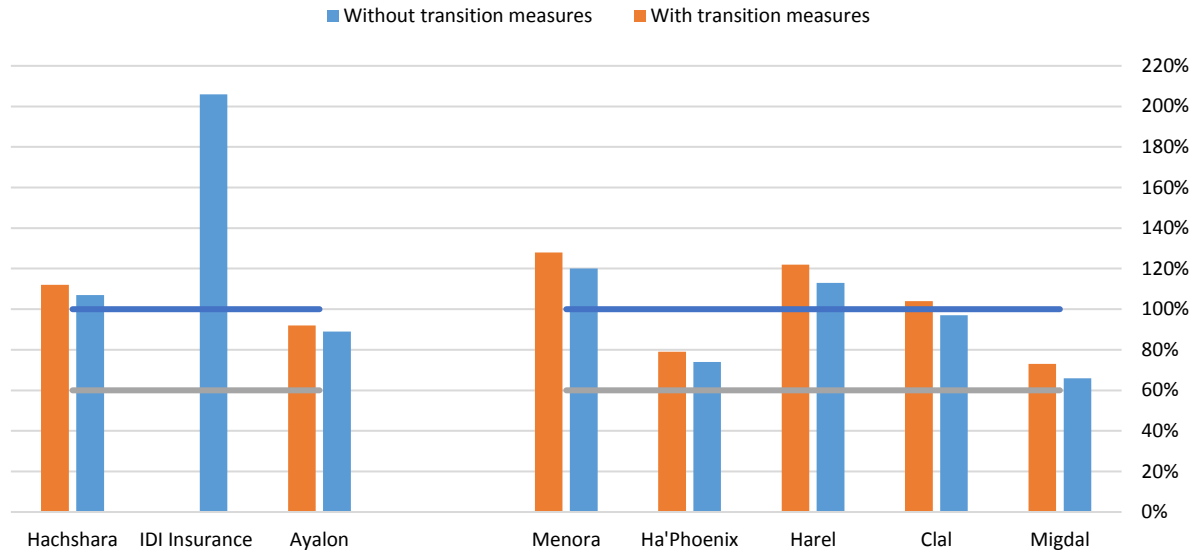
- We believe that (i) a Solvency 2 ratio with transitional measures below or near 100% or (ii) a fully-loaded Solvency 2 ratio below or close to 100%, with a low probability to reach a reasonable level above 100% at the end of the transitional period, and with high level of fluctuation, will spur more regulatory restrictions and influences. These restrictions will constrain the business and financial flexibility of the insurer and therefore, its credit profile and rating.
- Conversely, a Solvency 2 ratio at a comfortable level above 100% that is characterized by relatively low volatility, would make regulatory constraints less likely, and would therefore not have any negative impact on an insurer’s credit quality and rating.

We note that in the first circular published by the Capital Market, Insurance and Savings authority, in February 2017, transition measures were defined for complying with the required SCR ratios, such that:

- The capital required to maintain the insurance company's solvency as of June 30, 2017 will be 60% of the SCR
- The capital required to maintain the insurance company's solvency as of December 31, 2017 will be 65% of the SCR
- The capital required to maintain the insurance company's solvency as of December 31, 2017 will be 70% of the SCR
- The capital requirement will increase by an additional 10% on December 31, 2019-2021, so that at the end of 2021 the insurance companies will need to maintain a 100% SCR

In our opinion, all the companies in the sector have sufficient tools to comply with the required solvency ratio, especially after the compliance period was extended to year-end 2021, including: including: the continued issuance of subordinated debt, the use of reinsurers, changes in the mix of investments and a certain change in the business mix and financial hedging activity, In addition to adding equity from current earnings, and the absence of dividend distribution in some of the insurers.

Exhibit 2 – Status of compliance by Israel's Insurance companies with Solvency 2 ratios, relative to the transition stages (60%/100%), according to the IQIS5 exercise



**Direct Insurance did not announce its solvency ratios exclusive transition reliefs*
Source: Financial statements of the insurance companies and processing by Midroog

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