Munich Reinsurance Company

And Subsidiaries

Full Rating Report

Ratings

Insurer Financial Strength Rating	AA
Long-Term Foreign-Currency IDR	AA−
Subordinated Debt	A
Senior Unsecured Debt (Issued by Munich Reinsurance America Corporation)	AA−

Outlooks

Insurer Financial Strength Rating	Stable
Long-Term Foreign-Currency IDR	Stable

Financial Data

Munich Reinsurance Company

	31 Dec 17	31 Dec 16
Total assets (EURbn)	265.7	267.8
Total equity (EURbn)	28.2	31.8
Gross written premiums (EURbn)	49.1	48.9
Net income (EURbn)	0.4	2.6
P&C reinsurance combined ratio (%)	114	96
Primary insurance (ERGO intl.) combined ratio (%)	95	98

Related Research

European Reinsurance Dashboard - 2017 Results (April 2018)

European Reinsurers Resilient to Catastrophe Losses (April 2018)

Global Reinsurers: 2018 Forecast and 2017 Results (May 2018)

Global Reinsurance: Significant Catastrophe Losses; Modest Rate Rises (January 2018)

Fitch 2018 Outlook: Global Reinsurance (December 2017)

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Key Rating Drivers

Very Strong Business Profile: Fitch Ratings regards Munich Reinsurance Company (Munich Re) as one of a select group that has the scale, diversity and financial strength to attract the highest-quality business that is placed in the global reinsurance market. Our view is supported by strong and consistent property & casualty (P&C) reinsurance results and strong capitalisation.

'Very Strong' Capitalisation: Munich Re's available capital fell in 2017 on lower shareholders' equity following dividend payments, share buy-backs and repayment of subordinated debt, among other factors. Based on Fitch's Prism Factor-Based Capital Model (Prism FBM), Munich Re's capitalisation remained 'Very Strong', however. Fitch does not foresee a material weakening of its capital strength in the medium term, assuming a normal level of catastrophe activity.

Catastrophe Losses Hit P&C Earnings: Munich Re's reported P&C combined ratio deteriorated to 114% in 2017 (2016: 96%) because of significant losses from natural catastrophes, which totalled EUR3.7 billion in 2017 (2016: EUR0.9 billion). The reported combined ratio, normalised for reserve variations and major losses, deteriorated to 101% in 2017 (2016: 100%), reflecting the effects of a protracted weakness in the market.

ERGO Returns to Profitability: The restructuring of Munich Re's primary insurance businesses constrains ERGO Group AG's (ERGO) contribution to net earnings. However, ERGO recorded a net profit of EUR273 million for 2017, significantly exceeding Munich Re's forecast of EUR200 million-EUR250 million. ERGO reported a combined ratio of 97.5% in the P&C Germany segment, ahead of its mid-year forecast of 98%. ERGO International also came in ahead of budget, with a reported combined ratio of 95% compared to a forecast of 97%.

Life Re Hit by Recaptures: The life reinsurance technical result was adversely affected by the recapture of loss-making US contracts. This led to a one-off cost in 2017 but should improve results in future years. Munich Re reported claims expenditure within the expected bounds, including for mortality business in the US. However, the Australian disability business performed poorly, reflecting higher-than-expected claims. Health reinsurance also reported a slight loss as a result of some reserve strengthening in the US.

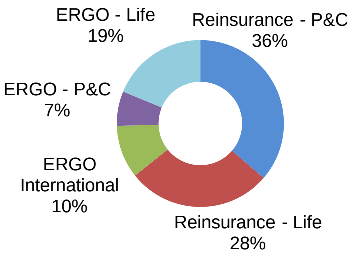
Low Financial Leverage: Financial leverage decreased to 12% at end-2017 (end-2016: 15%), which is low in absolute terms and compared with peers. The reduction was due to the redemption of EUR1.4 billion of subordinated bonds in 2Q17.

Rating Sensitivities

Deterioration in Capitalisation/Financial Performance: The key rating triggers that could result in a downgrade include: a sustained material drop in the company's risk-adjusted capital position to below 'Very Strong', as measured by Prism FBM; a cross-cycle Fitch-calculated combined ratio of 97% or above; or net income return on equity consistently below 6%.

Upgrade Unlikely: An upgrade could be possible if there is a significant and sustained improvement in capitalisation and financial performance. However, we believe this is unlikely in the foreseeable future.

Gross Premium by Segment, 2017



Source: Munich Re

Business Profile

Very Strong Business Profile

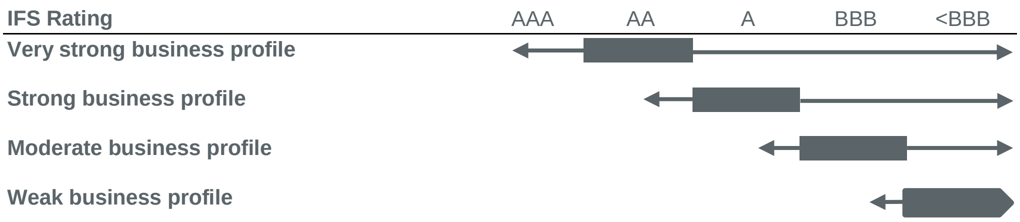
- Large, well-diversified portfolio
- ERGO on recovery path
- Primary operations concentrated in Germany
- Multi-channel distribution

Large, Well-Diversified Portfolio

Fitch views Munich Re as one of a small group of global reinsurers with the scale and financial strength to attract the highest quality reinsurance business that is placed in the market.

Measured by premium volume, Munich Re is the world's largest reinsurer, with reinsurance gross written premiums (GWP) totalling EUR31.5 billion in 2017. The reinsurance segment, of which the P&C business is the largest within the group, is strengthened by an excellent franchise. Overall, Fitch considers that the Munich Re group has a leading global business profile and large scale.

Ratings Range Based on Business Profile



Source: Fitch

ERGO on Recovery Path

In June 2016, Munich Re's primary insurance group ERGO Group AG announced a restructuring programme, which will last until 2020. Munich Re is investing about EUR1 billion to improve ERGO's competitiveness and profitability, largely through modernising IT platforms. The programme targets a sustainable annual net profit of at least EUR600 million after 2020, including net cost savings of EUR280 million per annum. ERGO has significantly reorganised its sales force, having already cut about 70% of the jobs targeted.

Primary Operations Concentrated in Germany

Although Munich Re's reinsurance business is written globally, most of the primary business is concentrated in Germany. In 2017, 69% (2016: 69%) of GWP written by ERGO derived from Germany, with the remaining 31% coming mainly from central and eastern European countries. ERGO has also extended its activities in Asia, in markets such as India, China, Singapore, Thailand and Vietnam.

Multi-Channel Distribution

The group's reinsurance business comes direct from primary insurers or via brokers. It has strong partnerships with leading broker firms and receives business from large clients through captives or alternative risk-transfer initiatives. ERGO's strategy encompasses various distribution channels. In addition to its own sales network of 12,500 tied agents, ERGO has forged partnerships with a variety of brokers and manages its direct business via ERGO Direkt.

Related Criteria

Insurance Rating Methodology (November 2017)

Munich Re group accepts risks in the US principally through Munich Reinsurance America Corporation and benefits from writing business through a US entity, which helps the group avoid being treated as an "alien reinsurer" in the US and therefore potentially having to collateralise its reinsurance obligations.

Corporate Governance and Management

Corporate governance and management are effective and neutral to the rating.

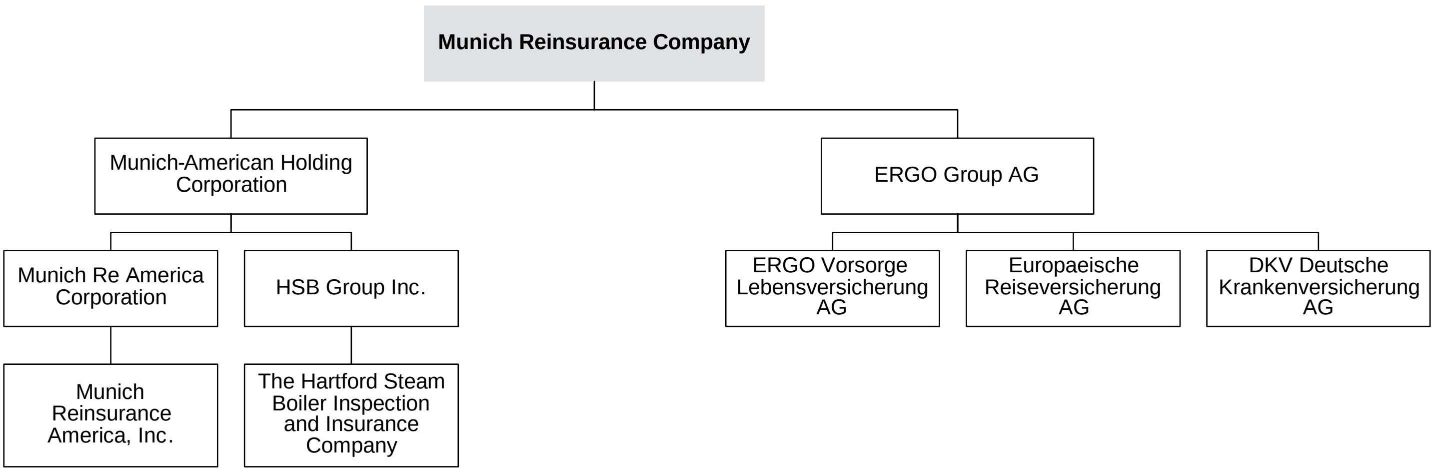
Ownership Neutral to Rating

Munich Re is a listed group, with the majority of its shares held by institutional investors (80.4% at end-February 2018) and private investors (19.6%).

Shareholders are mainly European, with 41.2% of share capital held in Germany, 11.4% in the UK and 21.4% in the rest of Europe, while 25.7% are held in North America.

Group Structure

(Showing entities rated by Fitch)



Wholly owned subsidiaries
Source: Munich Re annual report, Fitch

Sovereign and Country-Related Constraints

Fitch rates the sovereign obligations of Germany at 'AAA' with a Stable Outlook, and the Country Ceiling is also 'AAA'. Therefore, the ratings of German insurance organisations and other corporate issuers are not constrained by sovereign or macroeconomic risks.

Industry Profile and Operating Environment

Reinsurers Withstand Catastrophe Losses; M&A Activity Persists

The record-breaking 2017 (re)insurance industry catastrophe losses pushed the global reinsurance sector to an underwriting loss for the year. Fitch's universe of monitored reinsurers posted a 2017 aggregate combined ratio of 110.1%, up from 91.2% in 2016, and the weakest underwriting result since the reading of 112.9% in 2011. All but three members of the group reported a higher reinsurance combined ratio in 2017 than in 2016.

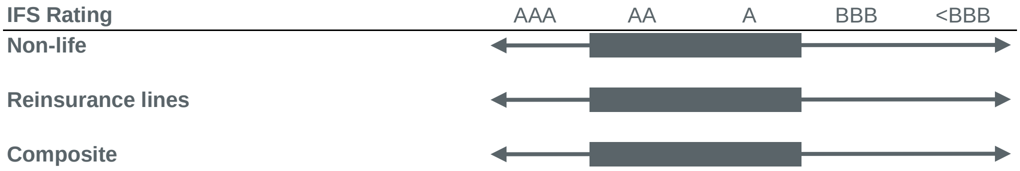
The four major European reinsurers posted overall profits for 2017, despite the significant catastrophe losses. With the exception of Hannover Re, they recorded losses on their P&C (re)insurance underwriting, but positive contributions from life and health (re)insurance, and solid investment returns more than offset losses. Nevertheless, overall profits for 2017 were significantly lower than in 2016.

Intense market competition and enduring alternative capital capacity continue to depress premium rates, while low investment yields further strain reinsurer profitability. However, the weakness in the reinsurance market finally reached a bottom following the increased catastrophe losses in 2H17. Nevertheless, rates did not increase as much as many market participants anticipated in January 2018 and have lost momentum throughout the year.

Life reinsurance continued to contribute strongly to the reinsurance companies' profitability, driven by franchise growth in traditional markets and emerging economies, and despite a deterioration in the performance of US mortality business. Investment returns also contributed positively to results in 2017.

M&A activity is increasing, as evidenced by the announcements that AXA SA will purchase XL Group Ltd. and American International Group (AIG) will purchase Validus Holdings Ltd. Fitch expects M&A to continue in 2018 as companies face limited organic growth opportunities and challenging reinsurance market conditions.

Ratings Range Based on Industry Profile/Operating Environment



Source: Fitch

Peer Analysis

Very Well-Diversified Business Profile, but Profitability Lags Peers

The group of businesses that form the Munich Re group reduces the utility of some comparative ratios that Fitch used to assess the reinsurer against its closest peers. Munich Re has sizeable primary operations, which accounted for 36% of the group's premiums written in 2017.

Munich Re's average reinsurance combined ratio between 2013 and 2017 was 96.8%, which is at the high end of the range among its natural peer group. This is partly because of the greater level of proportional (generally lower-margin, but less-volatile) business written compared with peers, which typically results in a higher combined ratio, all else being equal.

Munich Re's regulatory solvency and financial leverage ratios compare very favourably to multinational primary insurance groups; they also compare favourably to other large European reinsurers.

Peer Analysis

		Gross premiums written[b]		Combined ratio (%)	Combined ratio volatility (pp)[e]	Shareholders' equity	
(USDm)[a]	IFS Rating[d]	2017	2016	Five-year average[c]	Five-year average	2017	2016
Berkshire Hathaway Inc.	AA+/Stable	60,597	45,881	90.1	18.0	348,296	282,070
Munich Reinsurance Company	**AA/Stable**	**55,961**	**53,886**	**96.8**	**9.8**	**33,834**	**33,446**
Lloyd's of London	AA-/Negative	43,708	40,147	91.6	15.1	36,143	34,177
Swiss Re	AA-/Stable	34,775	35,622	91.6	11.8	34,294	35,716
Hannover Re	AA-/Stable	20,270	18,039	95.8	2.4	11,143	10,250
SCOR S.E.	AA-/Stable	16,850	15,251	93.4	5.3	7,469	7,045
PartnerRe Company Ltd	A+/Stable	5,588	5,357	90.0	6.2	6,745	6,688

Combined ratio: Net losses and loss-adjustment expenses divided by net premiums earned plus underwriting expenses divided by net premiums earned
Shareholders' equity is organisation-wide equity and therefore depends on the company's reporting practices; it may include equity that supports operations other than property/casualty reinsurance operations
Financial statement figures for some European reinsurers have been translated into US dollars using year-end or 12-month average rates of exchange, as appropriate. This has led to some exchange-rate distortion between financial years
[a] Foreign-exchange rates used for GWP = Full year average rate
[b] GWP includes primary and reinsurance business
[c] 2013-2017, non-life reinsurance business
[d] Denotes operating company insurer financial strength rating
[e] Standard deviation
Source: Company annual reports, financial supplements, and SEC filings

Capitalisation and Leverage

(EURbn)	2013	2014	2015	2016	2017	Fitch's expectation
Group Solvency II coverage (%)	262	308	302	267	244	We expect capitalisation and leverage to remain very strong. Future capital management through share buy-back programmes will depend on the level of major losses.
Gross leverage (x)	4	3	3	3	3	
Net leverage (x)	3	3	3	2	3	
Net premiums written/equity (x)	1.1	0.9	0.9	0.7	0.8	
Financial leverage ratio (%)	16	15	14	15	12	
Total financing and commitments ratio (x)	0.4	0.4	0.4	0.4	0.3	

Source: Fitch

Very Strong Capitalisation and Leverage

- 'Very Strong' Prism FBM score
- 'Average' total financing commitments ratio
- Solvency II SCR above target range
- Moderate financial leverage

'Very Strong' Prism FBM Score

Munich Re's available capital fell in 2017 on lower shareholders' equity following dividend payments, share buy-backs and repayment of subordinated debt, among other factors. Based on Fitch's Prism Factor-Based Capital Model (Prism FBM), Munich Re's capitalisation remained 'Very Strong', however. Fitch does not foresee a material weakening of its capital strength in the medium term, assuming a normal level of catastrophe activity.

Average Total Financing Commitments Ratio

Munich Re's TFC ratio fell slightly to 0.3x at end-2017 (end-2016: 0.4x) as a result of a reduction in securities lending. Munich Re's end-2017 TFC ratio fell within the 'below average' range when considered in the broader context of the (re)insurance sector. Fitch recognises that a significant proportion of the ratio numerator consists of utilised letter-of-credit (LOC) facilities. We believe that in the unlikely event that the LOC facilities were to become unavailable, Munich Re would have sufficient financial resources to maintain the business currently backed by the LOC facilities.

Solvency II SCR Above Target Range

Munich Re's coverage of the solvency capital requirement (SCR) under Solvency II fell to 244% at end-2017 from 267% at 1 January 2017, mainly as a result of the share buy-backs and dividend payments alongside the impact of reduced earnings generation following the significant catastrophe losses in 2017.

However, coverage remains well above the 220% top end of the reinsurer's target range. We expect the company will manage this down over time.

Low Financial Leverage

Financial leverage declined to 12% at end-2017 (end-2016: 15%), which is low in absolute terms and compared with peers. The reduction was due to the redemption of EUR1.4 billion of subordinated bonds in 2Q17.

TFC Range and Ratio Descriptions

TFC range (x)	Qualitative description
1.5 and over	Well above average
0.8–1.5	Above average
0.4–0.8	Average
Under 0.4	Below average

Source: Fitch

Debt-Service Capabilities and Financial Flexibility

(%)	2013	2014	2015	2016	2017	Fitch's expectation
Fixed-charge coverage ratio[a]	13	10	16	11	3	We expect fixed-charge coverage to remain very strong across the rating horizon, assuming catastrophe losses do not exceed the long-term average.

[a] Excluding realised and unrealised gains
Source: Fitch

Holding Company Liquidity

Munich Re AG is the group's holding company and main reinsurance operating company. Munich Re has no refinancing requirements until 2021.

Very Strong Coverage and Adequate Financial Flexibility

- Very strong fixed-charge coverage
- Share buy-backs dependent on major losses

Fixed-Charge Coverage Affected by Catastrophe Losses

Munich Re's five-year average fixed-charge coverage ratio, excluding realised and unrealised gains and losses, has fallen because of the significant catastrophe losses in 2017. However, following the redemption of EUR1.4 billion of subordinated debt with a coupon of 5.767%, we expect fixed-charge costs to fall in 2018. Assuming an average level of natural catastrophe losses, Fitch expects Munich Re to maintain very strong fixed-charge coverage.

Share Buy-Backs Dependent on Major Losses

Fitch views the continued management of capital through share repurchase programmes as dependent on the level of major loss activity. We believe that the programmes announced for the past five years reflect the strength of Munich Re's balance sheet and the lower level of major losses incurred by the reinsurance sector, notwithstanding the losses in 2017. During 2017, Munich Re repurchased EUR1 billion of shares (2016: EUR1 billion). Since 2006, the reinsurer has returned EUR20 billion to its shareholders via share buy-backs and dividends.

Financial Performance and Earnings

(%)	2013	2014	2015	2016	2017	Fitch's expectation
Net income (EURm)	3,304	3,152	3,107	2,580	376	Fitch expects Munich Re's reinsurance combined ratio to return to below 100%, assuming a normal level of catastrophe activity.
Combined ratio – P&C RI	92	93	90	96	114	
Combined ratio – primary – Germany	97	95	98	97	98	
Combined ratio – primary – Intl	99	97	105	98	95	
Return on equity	12	11	10	8	1	
Change in gross written premiums	-2	-4	3	-3	1	

Source: Munich Re

Significant Losses on P&C Reinsurance

- P&C Re: significant catastrophe losses
- Life Re affected by recaptures
- ERGO returns to profitability

P&C Re: Significant Catastrophe Losses

Munich Re's reported P&C combined ratio deteriorated to 114% in 2017 (2016: 96%) because of the significant losses from natural catastrophes. Aggregate losses from natural catastrophes totalled EUR3.7 billion for Munich Re in 2017 (2016: EUR0.9 billion). The three major hurricanes which hit the US and Caribbean – Harvey, Irma and Maria – cost Munich Re EUR2.7 billion after retrocession, with further significant losses from California wildfires and Mexico earthquakes. The combined ratio, normalised for reserve variations and major losses, deteriorated to 101% in 2017 (2016: 100%), reflecting the effects of a protracted soft market.

At the 1 January 2018 renewals, when Munich Re renewed roughly half of its P&C book, resulted in a positive price change for the first time in four years. Munich Re reported substantial rate increases in loss-affected business and stabilisation in rates elsewhere. It reported overall rate increases of 0.8% (1.6% adjusted for interest-rate changes), with a 0.5% improvement on the proportional book and a 3% improvement in non-proportional business. Munich Re also reported significant top-line growth at the January renewals, with various opportunities in proportional P&C business, including a few very large transactions.

Life Re Affected by Recaptures

The 2017 technical result was adversely affected by the recapture of loss-making US contracts in 2Q17 and 3Q17. The recaptures led to a one-off cost to the IFRS result but should improve results in future years.

Munich Re reported that claims expenditure on life reinsurance lines was within the expected bounds, including for mortality business in the US. However, Australia disability business performed poorly, caused in particular by regular claim payments being paid for longer than expected. Health reinsurance also reported a slight loss as a result of some reserve strengthening in the US.

ERGO Returns to Profitability

The restructuring of Munich Re's primary insurance businesses constrained ERGO's contribution to net earnings. However, for 2017, ERGO recorded a profit of EUR273 million, significantly exceeding Munich Re's forecast of EUR200 million-250 million. The company is targeting net profit of EUR530 million in 2020.

In the P&C Germany segment, ERGO reported a combined ratio of 97.5%, ahead of the mid-year forecast of 98%. ERGO International also came in ahead of budget, with a reported combined ratio of 95% compared to a forecast of 97%. ERGO Life and Health Germany also achieved its premium target, with GWP of EUR9.2 billion, above the target of EUR9 billion.

After 2020, ERGO is targeting a sustainable contribution to Munich Re's results of EUR600 million or more per annum. If ERGO's restructuring programme is successful, its profitability should be much more in line with Munich Re's reinsurance operations, in our view. In recent years, ERGO's contribution to the group has fallen well below that of other units.

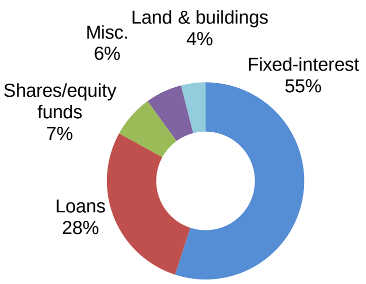
Fitch regards ERGO's restructuring programme as positive. A successful implementation would make ERGO a positive contributor to Munich Re's credit profile; historically we have viewed ERGO as more of a drag on profits.

Investment and Asset Risk

(%)	2013	2014	2015	2016	2017	Fitch's expectation
Risky assets to equity	48	55	56	60	80	Fitch expects Munich Re to retain its conservative strategy on investment risk. Equity exposure could increase slightly.
Non-investment-grade bonds to equity	12	16	20	17	23	
Unaffiliated equity investments to equity	29	34	32	37	49	
Affiliated investments to equity	6	5	4	5	8	

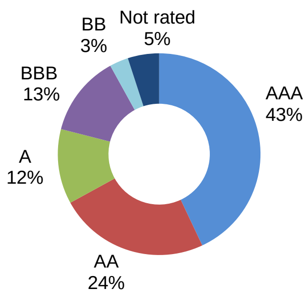
Source: Fitch

Investment Portfolio, 2017



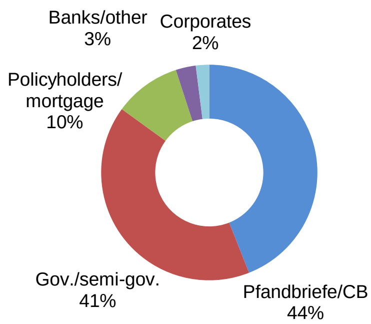
Source: Munich Re

Fixed-Income Portfolio 2017



Source: Munich Re

Loans Portfolio, 2017



Source: Munich Re

Increased Exposure to Risky Assets

- Increased, but still low, equity exposure
- Some credit risk exposure
- Good-quality loan portfolio

Increased, but Still Low, Equity Exposure

Munich Re's investment portfolio consists largely of highly rated fixed-interest instruments and loans, making up 83% of total investments. The carrying amount of the group's equity portfolio marginally increased to EUR16.9 billion at end-2017 (end-2016: EUR14.4billion), or 7.3% of total investments (end-2016: 6.1%). Equity exposure after hedging increased to 6.7% of total investments at end-2017 (end-2016: 5%). Unaffiliated equities totalled 49% of shareholders' funds (end-2016: 42%), which Fitch views as very strong.

Some Credit Risk Exposure

Munich Re is taking on slightly more risk on its fixed-income portfolio but overall credit quality remains strong. At end-2017, 67% of fixed-income securities were rated 'AA' or 'AAA' (end-2016: 71%). More than half of the fixed-income portfolio is invested in government and semi-government bonds of overall high credit quality.

Munich Re is exposed to some credit risk in its corporate bond portfolio (11% of the fixed-income portfolio). Of the overall fixed-income portfolio, 8% was not rated or rated below investment-grade at end-2017. Within the bank portfolio (2% of the fixed-income portfolio), the portion of subordinated bonds and loss-bearing bonds is limited.

Good-Quality Loan Portfolio

The investment portfolio contained sizeable loans totalling EUR65 billion at end-2017 (2016: EUR67 billion). The loans are of high quality, with 85% being rated either 'AAA' or 'AA', and a further 11% being secured against mortgages.

Asset/Liability and Liquidity Management

(%)	2013	2014	2015	2016	2017	Fitch's expectation
Liquid assets to policyholder liabilities	67	72	70	72	68	Fitch expects the duration gap between assets and liabilities to remain close to its current level of 0.3 years.
Duration gap (years)	0.1	0.1	0.1	0.1	0.3	

Source: Fitch

Sophisticated Asset-Liability Management

- Very strong liquidity in investment portfolio
- Limited duration gap
- Receiver swaptions mitigate interest-rate exposure
- IFRS equity exposed to currency movements

Very Strong Liquidity in Investment Portfolio

Fitch regards liquidity in Munich Re's investment portfolio as very strong. Of the group's EUR232 billion investment portfolio, 55% is fixed-income securities. At end-2017, Munich Re held 3% of its investments in real estate and 28% in loans, which are relatively illiquid. Munich Re has sufficient investment-grade bonds and cash to cover its technical reserves despite the large loan portfolio. The Fitch-calculated liquid-assets-to-policyholder-liabilities ratio was 68% for 2017 (2016: 72%).

Limited Duration Gap

Fitch views Munich Re's efforts to reduce the duration gap of assets and liabilities at group level as being positive for the rating. At end 2017, the duration of assets and liabilities at group level had been fairly closely matched, with asset duration of 7.8 years and liabilities of 7.5 years. Within Munich Re's reinsurance operations, the duration of assets (5.8 years) remains longer than liabilities (4.2 years). However, in the primary operations, the reverse is the case, with a liability duration (9.5 years) that is longer than the asset duration (8.8 years). This offsets the duration gap from the group perspective.

Receiver Swaptions Mitigate Interest-Rate Exposure

ERGO has derivatives in place to protect the life operations against reinvestment risk in a sustained low interest-rate environment. As interest rates fall, the value of these receiver swaptions rises and offsets the increased economic value of the liabilities caused by interest-rate falls, providing additional protection against further declines in interest rates. Fitch sees this transaction as tangible evidence of strong risk management and considers the potential relief that such transactions can provide as credit-positive. In times of rising interest rates, the receiver swaptions will negatively affect the life operation's IFRS profitability. In addition to the hedge against low interest rates, ERGO has also acquired structured products that provide a hedge against rapidly increasing interest rates.

IFRS Equity Exposed to Currency Movements

Munich Re applies economic steering principles that aim to limit currency risk, including extensive matching of assets and liabilities. Although the company runs a largely neutral economic currency position, under IFRS a stronger US dollar and weaker euro tend to benefit shareholders' equity and can also benefit the profit and loss account.

Reserve Adequacy

(%)	2013	2014	2015	2016	2017	Fitch's expectation
Loss reserves/CY incurred losses	3	3	3	3	3	Fitch expects Munich Re to maintain its prudent reserving standards, which should continue the trend of positive prior-year development.
Change in loss reserve/earned premium ratio	13	10	-1	6	6	
One-year development/PY equity	-3	-5	-5	-5	-3	
One-year development/PY loss reserves	-2	-3	-3	-3	-2	

Source: Fitch

Prudent Reserving Approach

- Consistently favourable reserve development
- 'Neutral' growth, 'positive' adequacy
- Asbestos and environmental liabilities in line with peers

Consistently Favourable Reserve Development

Fitch maintains a credit-favourable view of Munich Re's reserving approach, which has been undertaken consistently and has led to many successive years of positive development.

'Neutral Growth, 'Positive' Adequacy

Over a three- and five-year period, Fitch assesses loss-reserve growth as 'Neutral', indicating that reserve growth has been in line with underwriting exposures. We view Munich Re's reserve adequacy as 'Positive', indicating that reserves are towards the higher end of the best-estimate range.

Asbestos and Environmental Liabilities in Line with Peers

Fitch regards asbestos liability as an important area of uncertainty in relation to reserves and believes that this source of risk could limit future earnings. Munich Re's asbestos and environmental three-year survival ratios at end-2017 were 14.1x (end-2016: 11.3x) and 16.1x (end-2016: 20x), respectively. The asbestos survival ratio is towards the lower end of the range for the industry, whilst the environmental ratio is closer to the average. Munich Re's survival ratio for asbestos risks has been stable in recent years and Fitch would expect any reported reserve deterioration to be substantially lower in future years.

Reinsurance, Risk Management and Catastrophe Risk

(%)	2013	2014	2015	2016	2017	Fitch's expectation
NWP/GWP	97	96	96	96	96	Fitch expects Munich Re's prudent risk management and conservative reinsurance purchasing to continue.

Source: Fitch

Reinsurance, Risk Management and Catastrophe Risk

Material but Manageable Exposure to Catastrophe Risk

- Catastrophe exposure high but manageable
- Limited use of retrocession and other risk mitigation
- Prudent risk management

Catastrophe Exposure High but Manageable

Munich Re was more exposed to the catastrophe events in 2017 than some of its peers, although its losses were not out of line with the company's market share. Because Munich Re uses limited retrocession coverage or other forms of risk mitigation relative to peers, net losses remained close to gross losses and had a bigger impact on earnings than for some peers.

For its peak exposures, some of Munich Re's losses are covered by retrocession and catastrophe bonds, resulting in net exposure of EUR4.3 billion (2016: EUR4.4 billion) for a return period of 200 years for Atlantic hurricane, EUR3.6 billion (2016: EUR4.2 billion) for North American earthquake and EUR2.1 billion (2016: EUR2.3 billion) for European storm. The decrease in net exposures was driven mainly by an appreciation of the euro against the US dollar.

Limited Use of Retrocession and Other Risk Mitigation

Munich Re acts as an opportunistic purchaser of retrocession capacity focussing on economic efficiency. The group also uses derivatives and risk swaps as tools to damp volatility in earnings. Since end-2006, Munich Re has been more active in supplementing its retrocession programme through the use of alternative capital market instruments, which act as a diversification within the group's risk management programme.

Overall, Munich Re's tail risk is manageable due to its highly geographically diversified catastrophe portfolio and strong capital position. Fitch regards the current retrocessional programme as effective. The security of the retrocessionaires remains strong.

Prudent Risk Management

Munich Re's risk management function is advanced and has proved effective in monitoring and mitigating investment risk in response to varying economic conditions. Risk management has a central role within the organisation, and Fitch expects progress in enterprise risk management to aid in the identification, quantification and control of risks.

Fitch views Munich Re's cycle management and peak exposure management as effective.

Appendix: Other Ratings Considerations

Below is a summary of additional ratings considerations of a 'technical' nature that are part of Fitch's ratings criteria.

Complete Ratings List (Core Entities)

Munich Reinsurance Company

IFS: AA

Munich Reinsurance America Corporation

IDR: AA-

Munich Reinsurance America, Inc.

IFS: AA

Hartford Steam Boiler Inspection and Insurance Company

IFS: AA

ERGO Group AG

IDR: AA-

DKV Deutsche Krankenversicherung AG

IFS: AA

ERGO Vorsorge Lebensversicherung AG

IFS: AA

Europaeische Reiseversicherung AG

IFS: AA

Group IFS Rating Approach

The entities listed to the left are considered 'Core' entities under Fitch's group rating methodology. The operating entities share the same IFS Ratings based on Fitch's evaluation of the strength of the group as a whole.

Notching

For notching purposes, the regulatory environment of Germany is assessed by Fitch as being Effective, and classified as following a Group Solvency approach.

Notching Summary

Holding company
Not applicable (as the top company is also the main operating company of the group).
IFS Ratings
A baseline recovery assumption of 'Good' applies to the IFS Ratings, and standard notching was used from the IFS 'anchor' rating to the operating company IDRs.
Debt
Outstanding senior unsecured debt issued by Munich Reinsurance America Corporation (MRAC) has been rated using a baseline recovery assumption of 'Average'. Based on standard notching, the rating is therefore aligned with the IDR of MRAC.
Hybrids
For all outstanding subordinated note issues, a baseline recovery assumption of 'Below Average' and a non-performance risk assessment of Moderate was used. Notching of -2 was applied relative to the IDR, which was based on -1 for recovery and -1 for non-performance risk.

Source: Fitch

Short-Term Ratings

Not applicable.

Hybrids – Equity/Debt Treatment

Fitch regards this subordinated debt as 100% capital within its capital adequacy ratio and as 100% debt within its financial leverage ratio calculation.

Outstanding Hybrid Issues

Hybrid	Amount	CAR Fitch (%)	CAR reg. override (%)	FLR debt (%)
Munich Reinsurance Company				
XS0608392550, call 2021, 2041	EUR1,000m	0	100	100
XS0764278528, call 2022, 2042	EUR900m	0	100	100
XS0764278288, call 2022, 2042	GBP450m	0	100	100

Source: Fitch

Criteria Variations

None.

The ratings above were solicited and assigned or maintained at the request of the rated entity/Issuer or a related third party. Any exceptions follow below.