Factory Mutual Insurance Company

And Subsidiaries
Full Rating Report

Ratings

Factory Mutual Insurance Co.
Affiliated FM Insurance Co.
Appalachian Insurance Co.
FM Insurance Company Ltd.
FM Global de Mexico, S.A.

Insurer Financial Strength	AA

Rating Outlook

Stable

Financial Data

Factory Mutual Insurance Company

($ Mil.)	2015	2016
Net Earned Premium	3,579	3,601
Net Income	738	797
Combined Ratio (%)	85.3	83.2
Debt and Hybrids	—	—
Equity	11,036	11,921

Source: Company financials.

Related Research

2017 Outlook: Property/Casualty Insurance (Shift to Underwriting Loss Likely As Pricing Weakens Further) (November 2016)

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Key Rating Drivers

Very Strong Business Profile: Factory Mutual Insurance Company (FM Global) maintains a very strong franchise in the commercial property market for highly protected risks. In 2016, based on statutory results, FM Global held the No. 1 market share position in the boiler and machinery line of business among all U.S. property/casualty (P/C) groups based on direct premiums written, representing roughly one-quarter of industrywide premiums. FM Global was also the largest writer of allied lines and second-largest writer of fire business in 2016.

Solid 2016 Underwriting Results: FM Global's 2016 underwriting results were very strong as the company reported a GAAP combined ratio of 83.2%, down from 85.3% in the 2015. Results for 2016 include $407 million of membership credits that were paid to policyholders during the year, which added 8.4 points to the company's calendar-year combined ratio. These reported underwriting results drove the company's strong net earnings of $797 million, producing a 7.2% net return on surplus for the year.

Very Strong Capitalization: FM Global's capital position is very strong. Underwriting income and unrealized investment gains led to an 8.0% increase in GAAP policyholders' surplus to over $11.9 billion in 2016. Capitalization for FM Global as of year-end 2015 scored 'Very Strong' on Fitch's proprietary capital model, Prism, which is considered consistent with the company's 'AA' Insurer Financial Strength (IFS) rating.

Liquid Investment Portfolio: Fitch believes FM Global's high-quality, fixed-income portfolio provides ample liquidity to meet its policyholder obligations. As of Dec. 31, 2016, the company held approximately $1.5 billion of consolidated cash and cash equivalents.

Common Equity Allocation: FM Global maintains an investment portfolio with an above-average allocation to equities relative to industry norms. At Dec. 31, 2016, FM Global's allocation of unaffiliated equities to total cash and invested assets on a GAAP basis was approximately 46.1%. The company's long-term total return philosophy enabled it to grow its book value over the years and provides greater near-term uncertainty of investment portfolio returns.

Rating Sensitivities

Negative Rating Sensitivities: Key sensitivities for FM Global's ratings that could lead to a downgrade include severe deterioration in long-term results, to the point where the company no longer outperforms its peers; consolidated U.S. operating and net leverage approaching 0.75x and 1.75x, respectively; a sustained period of net losses or catastrophe losses out of proportion with market share; or a significant deterioration in FM Global's capitalization as measured by Prism.

Near-Term Upgrade Unlikely: Key rating sensitivities that could lead to an upgrade over the long term include achieving consistent levels of strong capital associated with higher rating levels over a multiyear period, including a Prism capital model score of 'Extremely Strong', as well as a material decline in common equity investments, reducing volatility in surplus.

Business Profile

Corporate Governance and Management

FM Global has no corporate governance issues. The company has a 13-member board of directors, who are elected by policyholders for three-year terms. Eleven of the current directors are affiliated with FM Global policyholders.

Large Presence in Market for Highly Protected Risks

- Engineering and loss prevention services are key advantages.
- Market leader in target business lines.
- Distribution channels.

Fitch believes that FM Global has a "very strong" business profile with a unique franchise, largely derived from its engineering capabilities and loss prevention services that are difficult for competitors to replicate. The organization employs more than 1,800 engineers, who are engaged in a wide variety of roles. Fitch considers FM Global the industry leader in incorporating engineering expertise into insurance products and underwriting processes.

Engineering and Loss Prevention Services Are Key Advantages

FM Global conducts onsite loss prevention and engineering reviews on the majority of its insured sites, including all of its larger policyholder sites, and Fitch believes that these reviews have a significant positive effect on the company's underwriting results. These results, Fitch believes, are due in part to the extensive engineering and loss prevention studies the company conducts at its state-of-the-art engineering test facility. Fitch views FM Global's ability to conduct these studies and the insights they bring to the company's underwriting process as key competitive advantages.

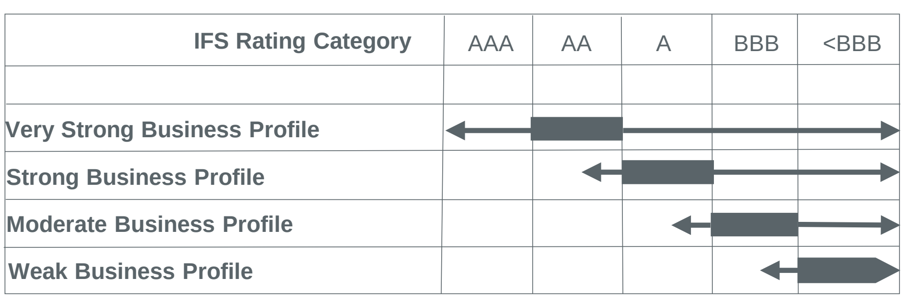
Market Leader in Target Business Lines

FM Global has built a strong franchise in the commercial property market for highly protected risks. In 2016, based on statutory results, FM Global held the No. 1 market share position in the boiler and machinery line of business among all U.S. P/C groups based on direct premiums written, representing roughly one-quarter of industrywide premiums. FM Global was also the largest writer of allied lines and second-largest writer of fire business in 2016.

Distribution Channels

Fitch believes FM Global's distribution methods generate comparatively little operating risk as the company uses direct distribution as well as brokers to market its products and maintains a relatively high degree of operational control over its distribution. The operations staff is composed of engineers and underwriters, and its members complement the company's distribution channels and have a significant amount of client interaction.

Ratings Range Based on Business Profile



Related Criteria

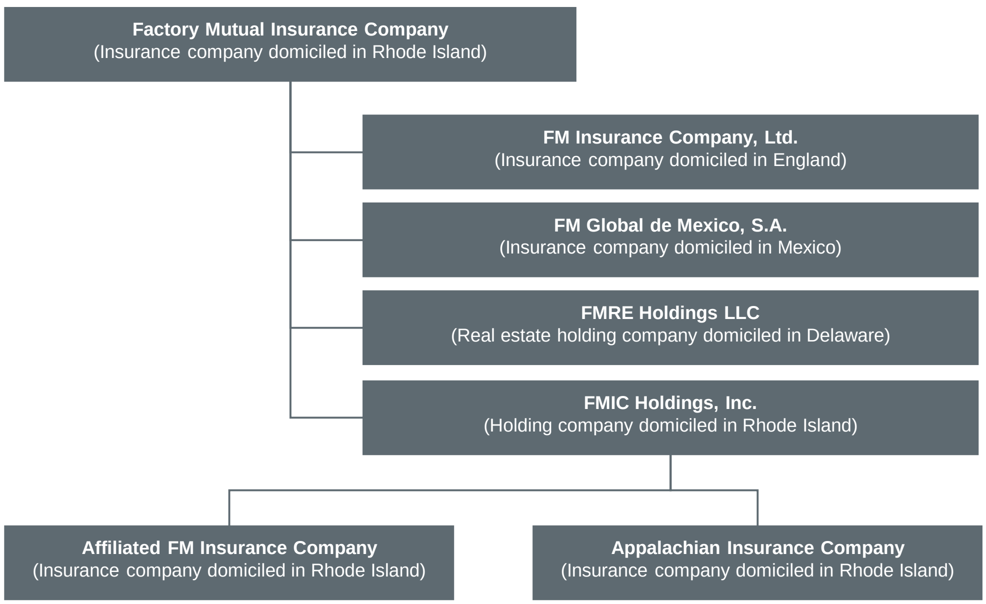
Insurance Rating Methodology (April 2017)

Ownership Is Neutral to Rating

Factory Mutual is a mutual insurance company that specializes in providing engineered loss prevention services and high-limit commercial property coverage to its member clients. FM Global was formed in mid-1999 through the merger of Allendale Mutual Insurance Company, Protection Mutual Insurance Company and Arkwright Mutual Insurance Company. Prior to the merger, these companies shared an engineering research facility, as well as ownership of FM Insurance Company, Ltd. (FMI), and participated in various reinsurance agreements with one another.

The company’s primary domestic insurance subsidiaries are Affiliated FM Insurance Company (Affiliated FM) and Appalachian Insurance Company (Appalachian). The organization conducts operations internationally through its UK-domiciled subsidiary FMI, which has branch offices worldwide, and FM Global de Mexico S.A. de C.V.

Simplified Organizational Chart



Source: FM Global.

Industry Profile and Operating Environment

Non-Life Industry Has Solid Capital, but Premium Rates Are Weakening

Key U.S. non-life industry risk factors include cyclical pricing, intense market competition, pricing and reserving uncertainty, investment risk tied to fixed-income and equity holdings, catastrophe loss exposures and regulatory issues. Industry aggregate policyholders' surplus growth is relatively flat recently. In response to limited growth opportunities, the bulk of earnings are paid out as shareholder dividends.

P/C industry capital adequacy remains very strong based on traditional operating leverage measures, RBC ratios and Fitch's Prism capital model. Strong individual capital positions support Stable Outlooks for a large majority of P/C insurer ratings.

Following three consecutive years of underwriting profits from 2013 to 2015, the P/C industry shifted to a slight underwriting loss in 2016 that is likely to moderately increase in 2017. Key factors affecting underwriting results include weaker commercial lines pricing, falling prior-period loss reserve development and a shift in catastrophe-related losses toward historical norms. Net profits are also affected by a reduced investment contribution to earnings due to lower portfolio yields. The fundamental sector outlook shifted to negative in November 2016 due to these deteriorating profit fundamentals. The industry is at a point in the underwriting cycle in which results are likely to worsen further before any meaningful shift in premium rate trends emerges.

Peer Analysis

Relative to other similarly rated 'AA' companies, FM Global is smaller in size and narrowly focused on large commercial accounts that require extensive engineering and loss prevention services. However, Fitch views FM Global's market share and competitive positioning in its key lines of business to be better than those of its peers. FM Global also is the only company in its peer group that issues no debt, which Fitch considers a positive rating factor relative to peers.

FM Global outperformed similarly rated companies on a long-term basis. The company's average combined ratio of 85.7% for the 10-year period through 2016 was roughly 4.6 points better than the peer average rated 'AA', although its combined ratio standard deviation of 14.8% was twice that of the peer median of 7.1%.

Relative to peers, FM Global has a stronger NAIC RBC and lower operating leverage. However, Fitch believes the usefulness of these measures in evaluating FM Global's capital adequacy is limited since they fail to fully capture the potential earnings volatility from catastrophes, other large losses such as fires and explosions, and the company's higher exposure to equity market risk.

Additionally, because of the short-tail nature of FM Global's business, the company has comparably less reserving risks relative to peers, outside of legacy asbestos-related exposures.

Peer Comparison

(As of Year-End 2016)	IFS	Net Premium Earned ($ Mil.)	Combined Ratio (%)	10-Year Avg. Combined Ratio (%)	Total Equity ($ Mil.)	NPW/ Equity (x)	Debt/ Capital (%)
FM Global	AA	4,008	83.2	85.7	11,921	0.3	0
Chubb Ltd.[a]	AA	28,749	88.7	87.2	48,275	0.6	21.7
American International Group	A	3,853	93.6	91.5	6,688	0.6	18.5
Travelers Cos. Inc.	AA	24,534	92.0	92.3	23,221	1.1	22.1

[a]Acquired by ACE Ltd., which combined to form Chubb Limited as of January 2016. IFS – Insurer Financial Strength. NPW – Net premium written. Note: GAAP.
Source: SNL Financial, Fitch Ratings.

Capitalization and Leverage

	2012	2013	2014	2015	2016
Policyholders' Surplus ($ Mil.)	7,525	9,153	10,142	10,547	11,519
Net Premiums Written/PHS (x)	0.5	0.3	0.3	0.3	0.3
Net Leverage (x)	1.2	1.0	0.9	0.9	0.9
Gross Leverage (x)	1.6	1.3	1.1	1.1	1.1
NAIC RBC Ratio (%)	427	439	454	462	462

PHS – Policyholders' surplus. Note: Statutory accounting.
Source: SNL Financial.

Fitch's Expectation

FM Global is expected to maintain strong capitalization, measured by the low levels of underwriting and net leverage, solid NAIC RBC ratio and a 'Very Strong' Prism score. Policyholders' surplus is expected to remain strong in 2017, given normal catastrophe loss experience during the year.

Very Strong Capitalization and Leverage

- Increase in consolidated surplus.
- Leverage is supportive of very strong ratings.
- RBC ratio stronger than peers.
- 'Very Strong' capital under Prism.

Increase in Consolidated Surplus

In 2016, FM Global's GAAP policyholders' surplus increased by 8.0%, to $11.9 billion, largely driven by net earnings of over $797 million, but was limited by $307 million of unrealized investment gains, $109 million pension adjustment loss and $111 million of foreign currency translation losses. Fitch believes that FM Global's risk-adjusted capital levels will remain strong and supportive of the company's ratings.

Leverage Is Supportive of Very Strong Ratings

FM Global continues to use a reasonable amount of operating leverage. At Dec. 31, 2016, the company's annualized ratio of net premiums written to statutory surplus was 0.3x, which is below the five-year average. Fitch believes FM Global's operating leverage remains conservative and supportive of the current rating level. FM Global issues no debt and accordingly uses zero financial leverage, which Fitch considers a positive rating factor.

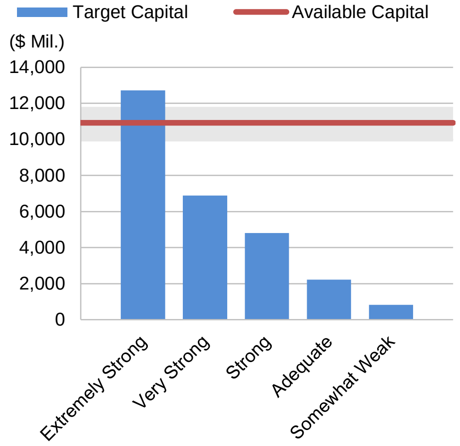
RBC Ratio Stronger than Peers

FM Global's year-end 2016 NAIC RBC ratio was 462% of the company action level. Fitch views the company's RBC ratio as being higher than many comparably rated peers, but believes that the ratio generally fails to adequately capture the underwriting volatility inherent in the company's core insurance products.

'Very Strong' Capital Under Prism

FM Global scores 'Very Strong' under Fitch's stochastic capital model Prism at year-end 2015. In particular, FM Global's results are adversely affected by catastrophe risk given the company's global market presence and exposure to property risk. See the *Reinsurance, Risk Management and Catastrophe Risk* section of this report on page 10 for further details on FM Global's catastrophe risks and risk mitigation tools. Prism results for 2016 will be available in summer 2017.

2015 Prism Score — Factory Mutual Insurance Company



($ Bil.)	2014	2015
Prism Score	Very Strong	Very Strong
AC/TC at Prism Score (%)	168	158
AC/TC at Higher Prism Score (%)	90	86
Statutory Surplus	10.1	10.5
Affiliated Investments	(0.3)	—
Unrealized Bond Gains/(Losses)	0.2	—
Other Adjustments	1.2	0.4
Available Capital (AC Base)	11.2	10.9
Target Capital Contributors (%)		
Underwriting	19	18
Reserves	3	3
Investments	17	15
Catastrophe	42	44
Other	20	20

AC – Available capital. TC – Target capital. Note: Red line is available capital base; shaded area represents the high and low of AC due primarily to value of affiliated life subsidiary and unrealized bond gains/(losses).
Source: Fitch Ratings, SNL Financial.

Financial Performance and Earnings

($ Mil.)	2012	2013	2014	2015	2016
Net Earned Premiums	3,306	3,226	3,182	3,259	3,307
Net Income	712	800	804	651	696
Return on Assets (%)	6.0	6.8	6.5	4.5	4.8
Return on Surplus (%)	10.2	9.6	8.3	6.3	7.2
Combined Ratio (%)	84.2	78.2	76.2	86.5	83.6

Note: Statutory accounting.
Source: SNL Financial.

Fitch's Expectation

Assuming normal catastrophe loss experience in 2017, Fitch would expect FM Global's underwriting results to remain at levels comparable with the company's long-term results.

Long-Term Underwriting Success with Potential for Volatility

- 2016 earnings strong despite catastrophe activity.
- Very strong long-term underwriting results.
- History of paying membership credits.

FM Global developed a very successful underwriting operation over the long term, built on a foundation of unparalleled engineering expertise that gives the company a distinct competitive advantage over its peers.

2016 Earnings Strong Despite Catastrophe Activity

FM Global's 2016 underwriting results were strong as the company reported a GAAP combined ratio of 83.2%, down from 85.3% in the 2015. Adverse development from asbestos-related reserves added 3.5 percentage points to the prior combined ratio. Results for 2016 include $407 million of membership credits that were paid to policyholders during the year, which added 8.4 points to the company's calendar-year combined ratio. These reported underwriting results drove the company's strong net earnings of $797 million, producing a 7.2% net return on surplus for the year.

Very Strong Long-Term Underwriting Results

FM Global's operating performance over the long term has been very strong despite exposure to periodic catastrophe losses, reflecting the company's underwriting expertise, expense efficiencies and generally favorable market conditions. Fitch believes there is a significant amount of inherent volatility in FM Global's year-to-year operating performance because of the company's large book of property insurance and its corresponding exposure to both natural and man-made catastrophe-related losses. Due to this potential volatility, Fitch believes FM Global's underwriting results are best viewed on a cumulative basis over a relatively long period.

History of Paying Membership Credits

FM Global paid membership credits to its policyholders a total of nearly $2.6 billion between 2007 and 2016. In May 2017, the company announced an additional membership credit of $435 million to be paid across 2017 and 2018. The payment of membership credits effectively reduces the level of net earned premium reported by the company. Over the past three years, the payment of membership credits increased FM Global's combined ratio by an average of 9.7 percentage points.

Investment and Asset Risk

	2012	2013	2014	2015	2016	Fitch's Expectation
Cash and Invested Assets ($ Mil.)	11,877	13,857	15,047	15,765	17,051	Fitch expects FM Global to maintain an above-average investment allocation to equity securities, which is consistent with the company's long-term total return strategy.
Invested Assets/Surplus (x)	1.6	1.5	1.5	1.5	1.5	
Investment Yield (%)	2.1	1.9	1.9	2.0	1.8	
Risky Assets Ratio (%)	73	77	76	73	74	
Liquid Assets/Technical Reserves (%)	326	449	488	478	493	

Source: SNL Financial.

FM Global Remains Exposed to Above-Average Equity Market Risk

- Above-average allocation to common equity securities.
- High-quality, fixed-income portfolio.

FM Global's investment portfolio is managed on a total return basis with a long-term investment horizon. The company invests in fixed-income securities to support the relatively short-duration liabilities generated by its property insurance reserves and equities to support surplus growth. As a result, FM Global is significantly overweight in common stock investments relative to the industry.

Above-Average Allocation to Common Equity Securities

At Dec. 31, 2016, Fitch estimated FM Global's surplus exposure to unaffiliated equities on a GAAP basis was approximately 46.1%. Because of the high correlation of the portfolio to the Standard & Poor's 500 Index, the company remains exposed to potential surplus volatility in the near to intermediate term. Additionally, FM Global's higher than industry average allocation to equities is reasonable in the long term, while recognizing that investment returns will tend to fluctuate year to year.

High-Quality, Fixed-Income Portfolio

FM Global's bond portfolio exhibits high credit quality and liquidity. At Dec. 31, 2016, approximately 97% of the portfolio consisted of publicly traded investment-grade bonds, which translates into statutory surplus exposure to below investment-grade bonds of 3%.

Reserve Adequacy

($ Mil.)	2012	2013	2014	2015	2016
Loss Reserves	2,482	2,191	2,154	2,352	2,381
Loss Adjustment Expense Reserves	239	212	214	223	235
Asbestos Reserves Adverse Development	—	185	—	125	—
Other Adverse/(Favorable) Reserve Development	(64)	2.4	(198)	(49)	(217)
Adverse/(Favorable) Reserve Development/NPE (%)	(1.9)	5.8	(6.2)	2.3	(6.6)
Adverse/(Favorable) Reserve Development/PHS (%)	(1.0)	2.5	(2.2)	(0.7)	(2.1)

NPE – Net premiums earned. PHS – Prior-year policyholders' surplus. Note: Statutory accounting.
Source: SNL Financial, Factory Mutual Insurance Co. and subsidiaries.

Fitch's Expectation

FM Global is expected to maintain its adequate reserve position in the near term. The company is not expected to report material adverse reserve development in 2017.

Reserve Position Is Sufficient

- Consolidated statutory reserve levels are sufficient.
- Asbestos-related exposures still material.

Fitch believes FM Global's loss reserves are sufficient and that the company follows a disciplined approach when establishing reserves. Fitch also believes that the relatively short duration of FM Global's reserves reduces reserve uncertainty. The vast majority of the company's loss reserves tend to develop into paid losses within three years.

Consolidated Statutory Reserve Levels Are Sufficient

Fitch uses a reserve adequacy model and reported paid loss and incurred loss data from Schedule P are used to estimate ultimate accident-year losses and required accident-year reserves. Using FM Global's year-end 2016 data, Fitch's model estimates a sufficient level of reserves using paid loss data and case-incurred data.

Starting with accident-year 2002, each subsequent accident year developed favorably since FM Global's initial reserve estimates, displaying conservatism in setting the company's reserves that compare favorably with peers and the overall industry.

Asbestos-Related Exposures Still Material

Unfavorable development on asbestos-related reserves generated adverse reserve movement in three of the past 10 years, with a total of $542 million of reserve strengthening since 2007. Despite these unfavorable developments, FM Global produced strong calendar-year underwriting results over that 10-year period.

Fitch believes that FM Global's reserves for asbestos-related claims are strong and, unlike many of its peers, FM Global bolstered its asbestos reserves while still generating strong calendar-year profitability. The company's gross and net survival ratios based on three-year average paid asbestos losses were 16.0x and 18.2x, respectively, at year-end 2016. Fitch also believes that FM Global is solidly reserved for environmental claims. At year-end 2016, the company's gross and net survival ratios based on three-year paid environmental losses were 35.8x and 27.3x, respectively. Net asbestos and environmental reserves totaled $698 million at year-end 2016, representing approximately 27% of FM Global's overall net loss reserves.

Reinsurance, Risk Management and Catastrophe Risk

Strong Reinsurance Program Protects Against Property Risks

- Extensive catastrophe reinsurance program.
- High-quality reinsurance recoverables.
- Detailed analysis of catastrophe exposures.

Fitch believes that FM Global's reinsurance programs provide adequate protection against the large losses the company could face and that the credit quality of the company's reinsurers is good. FM Global has a significant exposure to natural and man-made catastrophic losses from its large book of property insurance. As a result, Fitch believes that reinsurance is a very important component of FM Global's risk management process.

Extensive Catastrophe Reinsurance Program

FM Global's excess of loss reinsurance program consists of a per-risk program and a catastrophe program. The per-risk program provides the company with coverage on individual claim losses in excess of $300 million, and the company's catastrophe reinsurance program separately provides coverage on catastrophe losses from all perils in excess of $550 million.

High-Quality Reinsurance Recoverables

FM Global uses a diverse mix of financially sound reinsurers, and Fitch believes the overall credit quality of the company's reinsurance recoverable is strong. FM Global's most substantial reinsurance recoverable exposures are to large companies with high credit ratings such as Swiss Re Group and Berkshire Hathaway Inc., which provide Fitch with confidence in FM Global's ability to recover funds owed to the company in the wake of a large claim.

Detailed Analysis of Catastrophe Exposures

FM Global manages its capital by examining catastrophe exposure using a probabilistic approach relative to capital and by evaluating growth in total insured values relative to growth in surplus. The company uses location-based insured data to determine its exposure in catastrophe-prone areas. As such, the company performs a ground-up analysis and does not rely solely on catastrophe model simulations to determine its potential shock losses.

Fitch also believes the quality of data FM Global uses in its catastrophe exposure analysis is enhanced by the engineering standards it maintains at its insured properties.

Appendix A: Additional Financial Exhibits

Reported and Cumulative Statutory Combined Ratios

(%)	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Reported	69.7	99.0	67.1	78.3	120.2	84.2	78.1	76.2	86.5	83.6
Cumulative 2007–2016	69.7	84.3	78.2	78.2	86.9	86.4	85.1	83.9	84.2	84.1
Cumulative 2013–2016	—	—	—	—	—	84.2	81.2	79.6	81.3	81.7
Cumulative 2014–2016	—	—	—	—	—	—	—	76.2	81.4	82.1

Note: Statutory accounting principles. Cumulative combined ratios include membership credits of $341 million in 2007, $360 million in 2008, $183 million in 2010, $208 million in 2011, $201 million in 2013, $437 million in 2014, $431 million in 2015 and $407 million in 2016.
Source: Factory Mutual Insurance Company and subsidiaries.

Appendix B: Other Ratings Considerations

Below is summary of additional ratings considerations of a “technical” nature that are also part of Fitch’s ratings criteria.

Group IFS Rating Approach

Fitch considers all rated subsidiaries as Core, thus Fitch applies a group rating methodology as the company has the willingness and ability to provide support to group members. FM Global is a party to a pooling arrangement with its wholly owned subsidiaries Appalachian Insurance Co. and Affiliated FM Insurance Co. As a result of the pooling agreement, Fitch considers these U.S.-based insurance subsidiaries to be Core. UK-domiciled FM Insurance Company Ltd. and Mexico-domiciled FM Global de Mexico, S.A. benefit from significant reinsurance support from FM Global as well policy level guarantees. All operating companies have a ‘AA’ IFS rating based on a combined group assessment.

Notching

For notching purposes, the regulatory environment of the U.S. is assessed by Fitch as being Effective and classified as following a Ring-Fencing approach.

Notching Summary

IFS Ratings
A baseline recovery assumption of Good applies to the IFS rating, and standard notching was used from the IFS “anchor” rating to the implied operating company IDR.
Holding Company IDR
No holding company relationship exists.
Holding Company Debt
The company issues no debt.
Hybrids
The company issues no hybrid securities.

IFS – Insurer Financial Strength. IDR – Issuer Default Rating.

Hybrids — Equity/Debt Treatment

Not applicable.

Exceptions to Criteria/Ratings Limitations

None.

The ratings above were solicited by, or on behalf of, the issuer, and therefore, Fitch has been compensated for the provision of the ratings.