

Bayerische Motoren Werke AG BMW (XETR) | ★★★★★

Last Price	Fair Value	Uncertainty	Economic Moat™	Moat Trend™	Stewardship	Industry Group
82.93 EUR	105.00 EUR	High	Narrow	Negative	Standard	Autos

BMW Reports Headline Numbers Showing Record 2016; EUR 105 Fair Value Unchanged

Updated Forecasts and Estimates from 09 Mar 2017

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Investment Thesis 15 Feb 2017

Because of the strength of intangible assets, including brand and intellectual property, BMW has a narrow economic moat rating. Brand strength has enabled premium pricing across all of BMW's products, while intellectual property supports the brand image with strong product execution, especially in powertrain.

BMW continues to outperform the overall car market despite global economic uncertainties and is one of only a handful of automakers we have assigned an economic moat, albeit a narrow one. As emerging-market consumers become wealthier, many will purchase more luxury items. Given the aspirational nature inherent in the company's brands, including BMW cars and motorcycles, Mini, and Rolls Royce, as well as the growth potential from increasing wealth in developing markets, we believe the company will continue to reward investors with solid returns.

BMW has been able to consistently produce vehicles that command superior pricing as well as margin, and to generate revenue increases above global vehicle growth rates. Under its long-term strategy to 2020, management set an interim 2016 goal of annually selling more than 2 million vehicles but had already surpassed the volume objective by 2014. BMW recently set the goal to achieve an automotive segment return on capital employed (roughly equivalent to Morningstar's calculation of return on invested capital) of 26%, which translates into an EBIT margin of 8%-10%. The company has achieved a 10-year historical median EBIT margin of 7.2%, already well on its way toward achieving its 2020 objectives.

Vital Statistics

Market Cap (EUR Mil)	54,469
52-Week High (EUR)	91.76
52-Week Low (EUR)	63.38
52-Week Total Return %	6.1
YTD Total Return %	-6.6
Last Fiscal Year End	31 Dec 2015
5-Yr Forward Revenue CAGR %	3.6
5-Yr Forward EPS CAGR %	2.3
Price/Fair Value	0.79

Valuation Summary and Forecasts

	Fiscal Year:			
	2014	2015	2016(E)	2017(E)
Price/Earnings	10.2	10.1	7.9	7.6
EV/EBITDA	10.0	10.5	10.0	9.1
EV/EBIT	15.4	16.3	15.4	14.2
Free Cash Flow Yield %	6.4	10.6	8.8	6.4
Dividend Yield %	2.9	3.0	3.9	3.9

Financial Summary and Forecasts (EUR Mil)

	Fiscal Year:			
	2014	2015	2016(E)	2017(E)
Revenue	76,760	87,411	88,493	98,842
Revenue YoY %	6.5	13.9	1.2	11.7
EBIT	8,011	8,536	8,698	9,454
EBIT YoY %	12.3	6.6	1.9	8.7
Net Income, Adjusted	5,798	6,367	6,860	7,191
Net Income YoY %	9.3	9.8	7.8	4.8
Diluted EPS	8.84	9.70	10.45	10.95
Diluted EPS YoY %	9.3	9.8	7.8	4.8
Free Cash Flow	996	3,621	4,136	3,035
Free Cash Flow YoY %	-42.6	263.6	14.2	-26.6

Historical/forecast data sources are Morningstar Estimates and may reflect adjustments.
Analyst Note: Financial Services on an Equity Basis, Valued at 1.5x Book Value

Profile

In addition to being one of the world's leading premium light-vehicle manufacturers, BMW Group produces BMW motorcycles and provides financial services. Premium light-vehicle brands include BMW, Mini, and ultraluxury brand Rolls-Royce. Operations include 24 production facilities in 13 countries, with a sales network reaching 140 countries. Worldwide annual volume is approximately 2 million automobiles and more than 120,000 motorcycles.

Important Disclosure

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The primary analyst covering this company does not own its stock.

Research as of 09 Mar 2017
Estimates as of 09 Mar 2017
Pricing data through 21 Mar 2017
Rating updated as of 21 Mar 2017

Currency amounts expressed with "\$" are in U.S. dollars (USD) unless otherwise denoted.

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Morningstar Analysis

BMW Reports Headline Numbers Showing Record 2016; EUR 105 Fair Value Unchanged 09 Mar 2017

Narrow-moat-rated Bayerische Motoren Werke AG, the maker of luxury automobiles and premium motorcycles, preannounced full-year 2016 headline numbers, including EPS of EUR 10.45, surpassing the consensus estimate of EUR 10.25 and well above the prior year's EUR 9.70. Record automotive unit volume rose 5.3% to 2.4 million, while all-time-high consolidated revenue was EUR 94.2 billion, up 2.2%. Automotive revenue increased 1% to EUR 86.4 billion, but excluding the negative currency effect, 2016 revenue would have been 3.1% higher. Management expects another record year for volume in 2017, forecasting "slightly" higher year-over-year units. BMW will release full financial statements and more outlook details when it meets with analysts on March 21.

Our investment thesis remains intact and includes BMW's ability to maintain an aspirational nature in its various brands' images, its ability to consistently produce vehicles that command superior pricing, as well as margin and revenue increases above global vehicle growth rates. Given our expectations for continued revenue increases above the growth in global passenger vehicle demand plus industry leading profit margins, our fair value estimate of EUR 105 remains unchanged. Even so, the market seems to have priced BMW stock as though demand in key markets will decline significantly this year, at nearly a 20% discount to our fair value, resulting in an attractive opportunity for investors to own the 4-star-rated shares.

Valuation, Growth and Profitability 15 Feb 2017

Our EUR 105 fair value estimate takes into consideration our belief BMW maintains one of the highest levels of profitability among global automobile manufacturers, as well as continued recovery in European demand, partially offset by sharp declines in the South American and Russian markets. We assume a 14.4% normalized sustainable

midcycle EBITDA margin in the final year of our forecast, representing a 50-basis point contraction relative to the 10-year historical median margin of 14.9%.

In our view, BMW faces the same difficult challenges from intense competition as any other global automaker, as well as higher research and development costs as the company steps up spending for its long-term plan under the banner, "Strategy NUMBER ONE>Next". Striving to maintain its reputation of being a technology leader, BMW wants to expand its "i" product range (all-electric passenger vehicles) and ensure a leading role in automated driving with "Project i 2.0"

Morningstar's 2.25% long-term inflation outlook underpins the capital cost assumptions in our discounted cash flow model. BMW's assumed cost of equity is 9%, in-line with the 9% rate of return we expect investors will demand of a diversified equity portfolio. This reflects BMW's sensitivity to the economic cycle, relatively lower financial leverage, and industry-leading operating performance versus other automotive manufacturers.

Our pretax cost of debt assumption rises to 6.5%, incorporating a normalized long-term real rate environment into our model and takes into account the spread creditors are likely to demand given BMW's credit quality. We assume a long-run effective tax rate of 33.5% based on BMW's historical results and the German statutory tax rate. Over the last 10 years, average total debt/total capital for the automotive operations with the financial services group on an equity basis has been only 10%. Consequently, our tax-effected, weighted average cost of capital for BMW is 8.5%.

Scenario Analysis

We have modeled three scenarios around the rate of growth in BMW's top line. The base scenario (EUR 105 fair value) assumes continued recovery in European demand with solid

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revenue prospects from the U.S and modest increases in equity earnings from China. We assume EBITDA margin peaks at 15.6% midway through our five-year Stage I forecast. We assume the European recovery continues in 2016 but spending on new vehicle launches remains high. Our midcycle profit assumptions in year five of our forecast includes an EBITDA margin of 14.4%, considering a 10-year high of 17.5%, a low of 7.6% and a median of 14.9%.

Our best-case scenario (EUR 162 fair value estimate) assumes a 10% annualized revenue growth rate for greater-than-expected share of the global luxury market, better-than-anticipated emerging market growth, and faster-than-expected recovery in European demand. Our EBITDA margin assumptions exceed the high end of the historical range in years three and four of our five-year forecast via enhanced operating leverage on better-than-expected volume and pricing relative to the base case.

In our worst-case scenario (EUR 64 fair value), we model annualized revenue growth of only 3% on disappointing North American demand, protracted below-trend sales in an anemic European market plus emerging market luxury

vehicle demand that drops off a cliff. We also assume EBITDA margins that peak in the 13% range early in the explicit forecast period, then erode to the 10% range in the last year to reflect a scenario in which unfavorable operating leverage squeezes margin and low demand takes management by surprise, resulting in a slow response to cut costs. We consider the probability of the upside or the downside scenarios actually occurring to be one in four.

Economic Moat

Given the strength and global recognition of the BMW Group brands, technological leadership in powertrain, the ability to command premium pricing from consumers that regularly rate its vehicles as one of the best to own, and the ability to consistently generate excess returns, we assign a narrow moat rating to BMW. Even though the venerable Rolls-Royce and BMW brand names command premium pricing, consumers can easily switch to other brands like Bentley or Audi, and a seemingly bulletproof brand image can tarnish quickly. However, owing to an ingrained culture that obsesses over the details that the company's customers demand, we think BMW will continue to successfully manage its brand images, ranging from premium-priced BMW motorcycles and Mini Cooper passenger cars to luxury BMW passenger cars and crossovers to ultra-luxury Rolls-Royce cars--leading to economic value creation for investors.

The company has won numerous industry accolades and awards that demonstrate its ability to consistently produce vehicles that consumers aspire to drive year after year, including the BMW 3 Series, which has appeared for an impressive 21 consecutive years on the Car and Driver "10 Best Cars" list. Since 1995, BMW engines have consistently been included in the Ward's Automotive 10 Best Engines list. Over the past 10 years, BMW was repeatedly counted among the top five in J.D. Power's APEAL Study. The BMW brand ranks 11th in Interbrand's Top 100 Global Brands, 15th in Brand Finance's Top 500 Global Brands, and was number

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9 in Forbes' World's Most Powerful Brands.

BMW Group engines have been included in Ward's 10 Best Engines list more than any other automaker, appearing 31 times since Ward's began compiling the list in 1995. To be eligible for the competition, engines must be all new or improved and available in a regular-production, U.S.-specification model during the first quarter of the respective year of the list. Each year, there is a certain price cap for vehicles to be included so that high-end and exotic sports cars are excluded. Ward's Automotive says its editors drive the vehicles in their routine commutes during October and November and score each based on power, technology, refinement, and observed fuel economy. The frequency and longevity with which BMW engines have appeared in the 10 best lists demonstrates the company's ability to regularly improve and maintain its leadership in automotive powertrain technology.

J.D. Power's Automotive Performance, Execution and Layout Study examines what consumers like or dislike about their new vehicles after 90 days of ownership. Since 2003, BMW brand vehicles have scored in the top five of all makes in the survey a total of nine times, second only to Porsche. The APEAL Study examines how gratifying a new vehicle is to own and drive, based on owner evaluations of more than 80 vehicle attributes. These 80 attributes fall into one of eight categories of vehicle performance and design: engine/transmission; ride, handling, and braking; comfort and convenience; seats; cockpit and instrument panel; heating, ventilation, and cooling; sound system; and styling and exterior. BMW's repeated appearance in the top five of the APEAL Study indicates consistently well-executed vehicles that solidly connect with the customer base.

The company's focus on ultra-luxury, luxury, and premium segments, with an obsessive attention to details that impress its target clientele, has enabled BMW to generate

substantial excess returns over its weighted average cost of capital. In 10 out of the past 11 years, the company's returns exceeded its cost of capital (by more than 5 percentage points in eight of those years), an outstanding performance for an automotive manufacturer.

Moat Trend

Even though BMW has successfully defended against pricing pressure, our negative moat trend rating reflects the industry's growing excess capacity, which could threaten the company's intangible asset economic moat pillar. For the next several years, industry capacity additions will be driven by the growth in global vehicle production, primarily in China but also in India, Brazil, and Russia. Utilization rates are likely to keep pace with the increase in capacity, but as capacity grows, the risk of underutilization grows too. As excess capacity grows, the potential for irrational pricing behavior will also grow, threatening excess returns above cost of capital.

The company effectively competes in global luxury markets, but consumers easily substitute automotive brands and, under inauspicious circumstances, brands can quickly lose their luster (as in the example of Toyota recalls). Given the industry's highly competitive nature, manufacturers must consistently and frequently execute in design and development of manufacturing processes and the vehicles that they produce. We liken this to a swimmer who vigorously treads water with an extra 35 kilograms tied around their waist. As soon as they stop, they immediately find themselves struggling even harder just to get back up to the surface.

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Bulls Say/Bears Say

Bulls Say

- ▶ BMW possesses sustainable competitive advantages, given the strength and global recognition of the brands, technological leadership in powertrain, and ability to command premium pricing from consumers that regularly rate its vehicles as some of the best to own, resulting in excess returns.
- ▶ BMW's presence in global markets reduces reliance on any one regional economy and improves growth prospects as developing markets offset mature regions.
- ▶ The BMW, Mini, and Rolls-Royce brand images command a premium among consumers in all parts of the world.

Bears Say

- ▶ BMW operates in the highly cyclical, capital-intensive automotive business, where overcapacity restricts pricing and constrains economic profits.
- ▶ Substantial share ownership allows the Quandt family to block major decisions, leaving management susceptible to the family's agenda.
- ▶ While BMW has had favorable union relations, heavily unionized workforces tend to limit profit because of wage demands in prosperous times and work rules that reduce manufacturing flexibility.

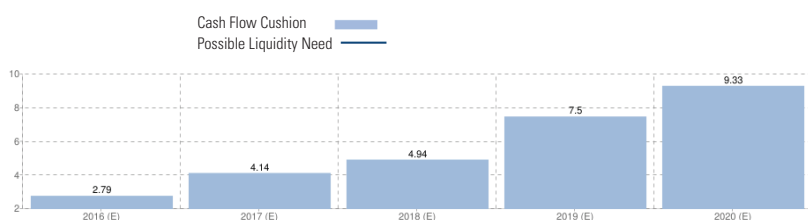
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Five Year Adjusted Cash Flow Forecast (EUR Mil)

	2016(E)	2017(E)	2018(E)	2019(E)	2020(E)
Cash and Equivalents (beginning of period)	3,952	5,132	5,305	4,971	5,115
Adjusted Available Cash Flow	2,125	992	117	576	1,462
Total Cash Available before Debt Service	6,077	6,124	5,423	5,548	6,577
Principal Payments	-1,250	-725	-500	-250	-250
Interest Payments	-605	-419	-254	-135	-90
Other Cash Obligations and Commitments	-324	-334	-344	-355	-365
Total Cash Obligations and Commitments	-2,179	-1,478	-1,098	-740	-705

Cumulative Annual Cash Flow Cushion



Adjusted Cash Flow Summary

	EUR Millions	% of Commitments
Beginning Cash Balance	3,952	63.8
Sum of 5-Year Adjusted Free Cash Flow	5,272	85.1
Sum of Cash and 5-Year Cash Generation	9,224	148.8
Revolver Availability	6,000	96.8
Asset Adjusted Borrowings (Repayment)	—	—
Sum of Cash, 5-Year Cash Generation, Revolver and Adjustments	15,224	245.6
Sum of 5-Year Cash Commitments	-6,199	—

Financial Health

BMW enjoys solid financial health with solid balance sheet flexibility. The company has averaged EBITDA margins of 13% for the past 10 years, generating solid cash flow and enabling moderate dividend payments to shareholders. Balance sheet leverage has been overly conservative with an average total debt/total capital ratio of 10%, with financial services accounted for on an equity basis. Also excluding financial services, manufacturing operations' total adjusted debt/EBITDAR averages a minuscule 0.7 times. We view BMW's liquidity position as extremely robust, with the manufacturing operations' cash balance exceeding EUR 5 billion since 2010 and revolver availability that also exceeds EUR 5 billion. BMW's line of credit expires in October 2018 but can be extended by one year at the company's request. BMW's capital structure is fairly complex because of the financial services group which, in addition to consumer and dealer lending operations, contains insurance and banking operations. The company has historically garnered an investment-grade rating, which enables the financial services group access to capital at relatively lower rates. BMW's total debt/total capital ratio has not exceeded 20% over the past 10 years. We estimate that debt maturities (excluding short-term commercial paper) are relatively well spread out and manageable, given the company's hefty cash balance, as well as its ability to generate free cash flow.

Enterprise Risk

BMW operates in the cyclical, capital-intensive, highly competitive, global automotive manufacturing industry. Consequently, high operating leverage is exacerbated during cyclical swings in demand from peak to trough. Another possible downside is execution risk associated with new-vehicle launches, but we see only a minimal probability of occurrence. Given the fragile state of developed world economies, an unexpected, exogenous event could tip either the U.S. or Europe back into a recession.

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Management & Ownership

Management Activity

Name	Position	Shares Held	Report Date*	Insider Activity
NA	NA	NA	NA	NA

*Represents the date on which the owner's name, position, and common shares held were reported by the holder or issuer.

Fund Ownership

Top Owners	% of Shares Held	% of Fund Assets	Change (k)	Portfolio Date
Dodge & Cox International Stock Fund	1.46	1.66	-472	31 Dec 2016
Vanguard Total Intl Stock Idx Fund	0.59	0.14	37	28 Feb 2017
FvS SICAV Multiple Opportunities	0.46	2.33	—	30 Nov 2016
Oakmark International Fund	0.41	1.00	2,706	31 Dec 2016
WisdomTree Europe Hedged Equity Fund	0.41	2.59	12	20 Mar 2017
Concentrated Holders				
iShares STOXX Europe 600 Auto & P (DE)	0.04	10.49	—	20 Mar 2017
Arte Financiero FI	—	7.10	—	31 Jan 2017
Price Inversiones SICAV	—	6.34	—	30 Sep 2016
ComStage 1 DivDAX® ETF	—	6.29	—	28 Feb 2017
iShares DivDAX® (DE)	0.07	6.26	—	20 Mar 2017

Institutional Transactions

Top 5 Buyers	% of Shares Held	% of Fund Assets	Shares Bought/Sold (k)	Portfolio Date
Harris Associates L.P.	0.42	1.00	2,769	31 Dec 2016
International Value Advisers, LLC	0.08	0.41	548	31 Dec 2016
Orbis Investment Advisory Pty Ltd	0.06	1.01	407	31 Dec 2016
British Columbia Inv Management Corp	0.05	0.05	343	31 Mar 2010
Eurizon Capital S.A.	0.05	1.07	261	30 Nov 2016
Top 5 Sellers				
Assenagon Asset Management SA	0.10	2.57	-545	31 Jul 2016
Dodge & Cox	1.59	1.53	-464	31 Dec 2016
BlackRock Advisors LLC	0.04	0.12	-218	31 Jan 2017
Union Investment Privatfonds GmbH	0.11	0.74	-205	31 Jan 2017
Santander Asset Management SGIC	0.01	1.19	-178	31 Dec 2016

Management 15 Feb 2017

We have assigned a Standard stewardship rating to BMW. The company annually pays a dividend, even during cyclical trough demand years, albeit at a reduced rate. Executive compensation seems reasonable. We especially like that the majority of executive pay is derived from variable compensation rather than fixed salaries. However, we are less encouraged that variable compensation is based on net profit, dividend levels, and return on sales rather than return on invested capital.

Control of BMW is held by the Quandt family, which owns 46.7% of the voting rights. Common and preferred equity share equally in net income and dividends, with the exception of the preferred shareholders' right to EUR 0.02 per share ahead of the common shareholders. For the right to receive the additional EUR 0.02 per share, preferred holders give up their voting rights except in only certain special circumstances.

In accordance with German regulations, the company has a two-tier board structure comprised of a supervisory board and a management board. BMW's supervisory board consists of 20 members divided evenly among shareholder and employee representatives. While we would rather the board have a majority of independent directors, this lack of independence is common among international companies. The supervisory board monitors the management board's performance and is required to vote on major strategic and capital decisions. The management board is comprised of eight members, each representing a specific functional area of the organization.

While German law mandates an 80% supermajority vote to implement changes in controlling interests, the Quandt family's ownership of 46.7% of the voting rights does enable the exercise of significant influence over the company's financial and operational policies. Excluding Quandt family board members, executive ownership accounts for less than

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1% of issued stock, which is much lower than we prefer. Also, even though it's common among European companies, union representation on the supervisory board is concerning. However, thus far, the Quandt family's ownership and union representation on the board have not had any meaningfully negative effects on managerial decisions or BMW's success.

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Analyst Notes

Trump Victory Brings Uncertainty to Auto Sector Around U.S. Trade Agreements 09 Nov 2016

Many automotive stocks declined on the morning of Nov. 9 on fear of a Donald Trump presidency. We think selling for now is due to massive uncertainty on what Trump will do on a variety of policies, and we will not be changing our auto fair value estimates on indiscriminate selling until we have more clarity on policy. Still, despite a Republican House and Senate, many Republican members did not support Trump and may oppose his anti-free trade agenda. We think abolishing NAFTA or the Trans-Pacific Partnership are far from a sure thing and depend on Trump's negotiations with his own party. We think renegotiations of the agreements are more likely.

If Trump succeeds in changing these agreements, then we'd assume prices on all vehicles would go up over time, even for Detroit Three-made vehicles as they do import electronics content. TPP is favorable to Japanese automakers since it allows them to source over half a vehicle from non-TPP nations, such as China, and still sell it in the U.S. tariff-free. Abolishing TPP would be negative for Japanese automakers selling in the U.S. but regardless of trade agreements, firms have to offer great product. Toyota has been making Tundra pick-ups in the U.S. for over a decade to avoid the 25% U.S. tariff on pick-up trucks (aka the chicken tax) but that has not meaningfully hurt the Detroit Three's dominance in the full-size pick-up segment. TPP or no TPP, Japan is likely to remain effectively closed to American automakers and the Japanese OEMs have a big market share lead in many Southeast Asian markets--like Malaysia, which is part of the TPP--that a trade agreement is not likely to change.

Terminating or amending NAFTA would be bad for every major automaker since every major automaker uses Mexico, not only to import into the U.S. but also to export to Europe and South America. If production in Mexico moves to the U.

S. it adds costs that hurts profits and hurts consumers who pay more for a vehicle.

Trump may end up redoing NAFTA rather than abolishing it. How he responds to lobbying by his own party once in office remains to be seen. With so much uncertainty the best we can expect for now is high volatility. A weaker dollar all else equal will hurt European automakers and help Detroit Three automakers, but we think the fear and uncertainty that causes the currency change overrides any impact of currency on stock prices.

BMW Reports Record Q3 Results, Confirms Guidance; Maintaining EUR 105 Fair Value Estimate 04 Nov 2016

Narrow-moat BMW, maker of premium Mini cars, BMW passenger vehicles and motorcycles, and ultraluxury Rolls-Royce cars, reported record third-quarter EPS of EUR 2.75, solidly beating the consensus EPS of EUR 2.66 by EUR 0.09 and jumping EUR 0.36 versus last year's EPS of EUR 2.39. Industrial revenue (excludes financial services) rose 3% on an increase in BMW global unit volume of 7%, due mostly to a 17% rise in China demand (including joint-venture volume) but also continued healthy European demand recovery, as demonstrated by a 9% increase in the region. However, we were somewhat disappointed that BMW's adjusted EBITDA (including China joint-venture equity income) was slightly below the prior year, hitting EUR 3.22 billion, down from EUR 3.31 billion, on heated competition in the Americas region and as spending related to future programs ticked higher.

While the earnings result was at a record third-quarter level, management reaffirmed its full-year 2016 guidance. BMW forecasts that it will set new highs for sales volume and group profit before tax this year. Automotive and motorcycle EBIT margins are forecast to be between 8% and 10%, which the company has achieved every year since the Great Recession. As a result, management expects the group-level EBIT margin, which includes financial services, to be 10%.

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Analyst Notes

Our 2016 estimates include 6% higher revenue on a 6% increase in global volume and about 9% EBIT margin, excluding financial services and before China JV equity income.

BMW is one of a handful of automakers that we view as possessing an economic moat, arising from intellectual property and brand strength. This 4-star-rated stock currently trades at roughly a 25% discount to our EUR 105 fair value estimate. In our opinion, long-term investors have an opportunity to own BMW at an attractive valuation relative to our forecast of future cash flow and returns on invested capital.

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Morningstar Analyst Forecasts

Financial Summary and Forecasts

Fiscal Year Ends in December

	3-Year Hist. CAGR	Forecast					5-Year Proj. CAGR
		2013	2014	2015	2016	2017	
Growth (% YoY)							
Revenue	6.9	0.6	6.5	13.9	1.2	11.7	3.6
EBIT	2.6	-9.7	12.3	6.6	1.9	8.7	1.0
EBITDA	4.4	-5.5	12.4	7.2	1.5	10.5	2.8
Net Income	7.7	4.1	9.3	9.8	7.8	4.8	1.8
Diluted EPS	7.7	4.0	9.3	9.8	7.8	4.8	2.3
Earnings Before Interest, after Tax	24.9	14.0	23.5	38.2	-23.9	3.5	-5.7
Free Cash Flow	-6.2	-60.5	-42.6	263.6	14.2	-26.6	2.7

	3-Year Hist. Avg	Forecast					5-Year Proj. Avg
		2013	2014	2015	2016	2017	
Profitability							
Operating Margin %	10.0	9.9	10.4	9.8	9.8	9.6	9.1
EBITDA Margin %	15.4	15.2	16.0	15.1	15.1	15.0	14.7
Net Margin %	7.4	7.4	7.6	7.3	7.8	7.3	7.1
Free Cash Flow Margin %	2.6	2.4	1.3	4.1	4.7	3.1	3.4
ROIC %	18.1	20.1	15.4	18.8	19.4	19.3	17.1
Adjusted ROIC %	18.1	20.1	15.4	18.8	19.4	19.3	17.1
Return on Assets %	7.1	7.1	7.1	7.1	7.1	7.1	6.6
Return on Equity %	16.0	16.1	16.0	16.0	15.3	14.4	13.2

	3-Year Hist. Avg	Forecast					5-Year Proj. Avg
		2013	2014	2015	2016	2017	
Leverage							
Debt/Capital	0.10	0.06	0.12	0.12	0.08	0.05	0.04
Total Debt/EBITDA	0.36	0.21	0.42	0.44	0.32	0.18	0.14
EBITDA/Interest Expense	23.36	26.69	22.91	20.48	22.13	35.34	79.88

Valuation Summary and Forecasts

	2014	2015	2016(E)	2017(E)
Price/Fair Value	—	—	—	—
Price/Earnings	10.2	10.1	7.9	7.6
EV/EBITDA	10.0	10.5	10.0	9.1
EV/EBIT	15.4	16.3	15.4	14.2
Free Cash Flow Yield %	6.4	10.6	8.8	6.4
Dividend Yield %	2.9	3.0	3.9	3.9

Key Valuation Drivers

Cost of Equity %	9.0
Pre-Tax Cost of Debt %	6.5
Weighted Average Cost of Capital %	8.5
Long-Run Tax Rate %	32.1
Stage II EBI Growth Rate %	3.4
Stage II Investment Rate %	56.7
Perpetuity Year	15

Additional estimates and scenarios available for download at <http://select.morningstar.com>.

Discounted Cash Flow Valuation

	EUR Mil	Firm Value (%)	Per Share Value
Present Value Stage I	13,126	23.6	20.03
Present Value Stage II	13,190	23.7	20.13
Present Value Stage III	29,340	52.7	44.78
Total Firm Value	55,656	100.0	84.95
Cash and Equivalents	3,952	—	6.03
Debt	-5,832	—	-8.90
Preferred Stock	—	—	—
Other Adjustments	10,607	—	16.19
Equity Value	64,383	—	98.27
Projected Diluted Shares	655		
Fair Value per Share (EUR)	105.00		

The data in the table above represent base-case forecasts in the company's reporting currency as of the beginning of the current year. Our fair value estimate may differ from the equity value per share shown above due to our time value of money adjustment and in cases where probability-weighted scenario analysis is performed.

Bayerische Motoren Werke AG BMW (XETR) | ★★★★★

Last Price	Fair Value	Uncertainty	Economic Moat™	Moat Trend™	Stewardship	Industry Group
82.93 EUR	105.00 EUR	High	Narrow	Negative	Standard	Autos

Morningstar Analyst Forecasts

Income Statement (EUR Mil)

Fiscal Year Ends in December

	2013	2014	2015	Forecast	
				2016	2017
Revenue	72,050	76,760	87,411	88,493	98,842
Cost of Goods Sold	52,256	55,375	64,148	64,817	72,451
Gross Profit	19,794	21,385	23,263	23,676	26,391
Selling, General & Administrative Expenses	6,289	6,846	7,458	7,610	8,500
Research & Development	3,048	3,067	3,105	3,186	3,657
Income from Equity Investments	-397	-683	-464	-508	-558
Depreciation & Amortization (if reported separately)	3,720	4,144	4,628	4,690	5,337
Operating Income (ex charges)	7,134	8,011	8,536	8,698	9,454
Restructuring & Other Cash Charges	—	—	—	—	—
Impairment Charges (if reported separately)	—	—	—	—	—
Other Non-Cash (Income)/Charges	—	—	—	—	—
Operating Income (incl charges)	7,134	8,011	8,536	8,698	9,454
Interest Expense	410	537	644	605	419
Interest Income	1,169	1,233	1,330	1,623	1,660
Pre-Tax Income	7,893	8,707	9,222	9,716	10,695
Income Tax Expense	2,564	2,890	2,828	2,828	3,476
Other After-Tax Cash Gains (Losses)	—	—	—	—	—
Other After-Tax Non-Cash Gains (Losses)	—	—	—	—	—
(Minority Interest)	-26	-19	-27	-28	-29
(Preferred Dividends)	—	—	—	—	—
Net Income	5,303	5,798	6,367	6,860	7,191
Weighted Average Diluted Shares Outstanding	656	656	656	656	656
Diluted Earnings Per Share	8.08	8.84	9.70	10.45	10.95
Adjusted Net Income	5,303	5,798	6,367	6,860	7,191
Diluted Earnings Per Share (Adjusted)	8.08	8.84	9.70	10.45	10.95
Dividends Per Common Share	2.50	2.60	2.90	3.20	3.26
EBITDA	10,944	12,305	13,191	13,388	14,792
Adjusted EBITDA	10,944	12,305	13,191	13,388	14,792

Bayerische Motoren Werke AG BMW (XETR) | ★★★★★

Last Price	Fair Value	Uncertainty	Economic Moat™	Moat Trend™	Stewardship	Industry Group
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Morningstar Analyst Forecasts

Balance Sheet (EUR Mil)

Fiscal Year Ends in December

	2013	2014	2015	Forecast	
				2016	2017
Cash and Equivalents	6,768	5,752	3,952	5,132	5,305
Investments	—	—	—	—	—
Accounts Receivable	2,304	2,015	2,592	2,972	3,708
Inventory	9,577	11,081	11,064	11,696	13,651
Deferred Tax Assets (Current)	1,002	1,186	1,240	1,291	1,342
Other Short Term Assets	19,959	23,183	24,766	25,616	26,466
Current Assets	39,610	43,217	43,614	46,707	50,472
Net Property Plant, and Equipment	15,079	17,148	17,729	19,284	21,459
Goodwill	—	—	—	34	34
Other Intangibles	5,709	6,053	6,947	7,100	7,100
Deferred Tax Assets (Long-Term)	2,226	3,253	4,114	4,269	4,424
Other Long-Term Operating Assets	19	3	—	—	—
Long-Term Non-Operating Assets	14,619	16,719	21,230	21,230	21,230
Total Assets	77,262	86,393	93,634	98,625	104,720
Accounts Payable	6,968	7,121	7,119	7,307	8,294
Short-Term Debt	725	3,250	3,211	1,250	725
Deferred Tax Liabilities (Current)	1,021	1,050	810	829	847
Other Short-Term Liabilities	22,144	22,623	24,642	25,804	26,967
Current Liabilities	30,858	34,044	35,782	35,190	36,833
Long-Term Debt	1,604	1,933	2,621	3,000	2,000
Deferred Tax Liabilities (Long-Term)	1,072	421	429	453	477
Other Long-Term Operating Liabilities	3,902	5,802	5,946	6,275	6,603
Long-Term Non-Operating Liabilities	4,183	6,756	6,092	6,092	6,092
Total Liabilities	41,619	48,956	50,870	51,009	52,005
Preferred Stock	—	—	—	—	—
Common Stock	656	656	657	657	657
Additional Paid-in Capital	1,990	2,005	2,027	2,027	2,027
Retained Earnings (Deficit)	33,167	35,621	41,027	45,787	50,834
(Treasury Stock)	—	—	—	—	—
Other Equity	-358	-1,062	-1,181	-1,095	-1,050
Shareholder's Equity	35,455	37,220	42,530	47,376	52,468
Minority Interest	188	217	234	240	246
Total Equity	35,643	37,437	42,764	47,616	52,715

Bayerische Motoren Werke AG BMW (XETR) | ★★★★★

Last Price	Fair Value	Uncertainty	Economic Moat™	Moat Trend™	Stewardship	Industry Group
82.93 EUR	105.00 EUR	High	Narrow	Negative	Standard	Autos

Morningstar Analyst Forecasts

Cash Flow (EUR Mil)

Fiscal Year Ends in December

	2013	2014	2015	Forecast	
				2016	2017
Net Income	5,303	5,798	6,369	6,888	7,219
Depreciation	3,810	4,294	4,655	4,690	5,337
Amortization	—	—	—	—	—
Stock-Based Compensation	—	—	—	—	—
Impairment of Goodwill	—	—	—	—	—
Impairment of Other Intangibles	—	—	—	—	—
Deferred Taxes	-540	-267	-502	-164	-164
Other Non-Cash Adjustments	332	639	2,492	—	—
(Increase) Decrease in Accounts Receivable	47	365	-551	-380	-736
(Increase) Decrease in Inventory	-196	-971	297	-632	-1,955
Change in Other Short-Term Assets	—	—	—	-748	-850
Increase (Decrease) in Accounts Payable	1,108	-15	-85	188	987
Change in Other Short-Term Liabilities	—	—	—	1,162	1,162
Cash From Operations	9,864	9,843	12,675	11,005	11,002
(Capital Expenditures)	-6,660	-6,090	-5,883	-6,195	-7,512
Net (Acquisitions), Asset Sales, and Disposals	-101	127	-493	-340	—
Net Sales (Purchases) of Investments	-544	144	-1,087	—	—
Other Investing Cash Flows	-942	-2,478	-2,286	329	329
Cash From Investing	-8,247	-8,297	-9,749	-6,206	-7,183
Common Stock Issuance (or Repurchase)	17	15	23	—	—
Common Stock (Dividends)	-1,653	-1,715	-1,917	-2,101	-2,143
Short-Term Debt Issuance (or Retirement)	1,812	-1,012	-498	-1,961	-525
Long-Term Debt Issuance (or Retirement)	-1,265	-1,008	-1,673	379	-1,000
Other Financing Cash Flows	-1,238	1,059	-695	-22	-22
Cash From Financing	-2,327	-2,661	-4,760	-3,704	-3,690
Exchange Rates, Discontinued Ops, etc. (net)	-6	99	34	86	45
Net Change in Cash	-716	-1,016	-1,800	1,180	173

Bayerische Motoren Werke AG BMW (XETR) | ★★★★★

Last Price	Fair Value	Uncertainty	Economic Moat™	Moat Trend™	Stewardship	Industry Group
82.93 EUR	105.00 EUR	High	Narrow	Negative	Standard	Autos

Comparable Company Analysis

These companies are chosen by the analyst and the data are shown by nearest calendar year in descending market capitalization order.

Valuation Analysis

Company/Ticker	Price/Fair Value	Price/Earnings			EV/EBITDA			Price/Free Cash Flow			Price/Book			Price/Sales		
		2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)
Tata Motors Ltd 500570 IND	0.83	13.8	13.6	13.3	5.7	4.4	4.8	—	20.8	NM	—	1.7	1.6	—	0.5	0.5
Toyota Motor Corp TM USA	0.99	11.5	8.2	10.7	12.2	9.4	12.0	—	10.0	13.9	—	1.2	1.2	—	0.7	0.7
Daimler AG DAI DEU	0.88	9.9	8.9	8.5	8.1	8.5	8.6	13.6	13.4	13.5	1.5	1.3	1.1	0.6	0.6	0.6
Volkswagen AG VOW3 DEU	0.71	NM	15.6	6.4	6.4	4.6	4.5	14.5	37.6	13.0	1.0	0.7	0.7	0.5	0.4	0.4
Honda Motor Co Ltd HMC USA	1.07	13.2	16.2	11.4	11.6	11.0	10.1	—	9.8	79.7	—	1.0	1.1	—	0.4	0.5
Average		12.1	12.5	10.1	8.8	7.6	8.0	14.1	18.3	30.0	1.3	1.2	1.1	0.6	0.5	0.5
Bayerische Motoren Werke AG	0.79	10.1	7.9	7.6	10.5	10.0	9.1	9.4	11.3	15.6	1.5	1.1	1.0	0.7	0.6	0.6

Returns Analysis

Company/Ticker	Last Historical Year Total Assets (Mil)	ROIC %			Adjusted ROIC %			Return on Equity %			Return on Assets %			Dividend Yield %		
		2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)
Tata Motors Ltd 500570 IND	— INR	19.6	14.6	12.3	19.4	14.5	12.2	—	14.8	13.8	5.7	3.9	4.4	0.4	0.1	0.1
Toyota Motor Corp TM USA	— JPY	12.6	12.1	8.8	12.6	12.1	8.8	—	14.3	10.6	7.8	7.9	5.9	2.1	3.8	4.0
Daimler AG DAI DEU	— EUR	16.1	14.3	12.4	16.1	14.3	12.4	17.3	15.3	14.3	6.9	6.3	6.2	3.2	4.6	—
Volkswagen AG VOW3 DEU	— EUR	15.5	10.6	10.0	13.1	8.9	8.5	-6.0	4.8	11.0	-2.4	1.8	4.3	2.9	0.5	3.6
Honda Motor Co Ltd HMC USA	— JPY	5.1	5.7	7.2	5.1	5.7	7.2	—	4.8	7.3	4.3	2.8	4.1	2.2	2.9	2.5
Average		13.8	11.5	10.1	13.3	11.1	9.8	5.7	10.8	11.4	4.5	4.5	5.0	2.2	2.4	2.6
Bayerische Motoren Werke AG	— EUR	18.8	19.4	19.3	18.8	19.4	19.3	16.0	15.3	14.4	7.1	7.1	7.1	3.0	3.9	3.9

Growth Analysis

Company/Ticker	Last Historical Year Revenue (Mil)	Revenue Growth %			EBIT Growth %			EPS Growth %			Free Cash Flow Growth %			Dividend/Share Growth %		
		2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)
Tata Motors Ltd 500570 IND	2,625,265 INR	—	2.8	14.2	—	-18.1	-3.8	-3.0	-28.1	25.7	165.6	29.6	-95.0	-1.3	-85.9	—
Toyota Motor Corp TM USA	25,643,508 JPY	—	3.7	-5.0	—	4.3	-26.2	19.6	6.9	-20.0	92.7	46.1	-14.9	40.6	32.4	5.0
Daimler AG DAI DEU	130,505 EUR	14.6	1.6	2.9	40.0	3.1	4.4	21.0	1.3	4.1	-45.2	146.6	-22.9	8.9	32.7	-100.0
Volkswagen AG VOW3 DEU	183,936 EUR	3.6	1.1	1.8	1.4	2.0	1.6	-148.6	-180.7	144.4	142.6	-73.1	4.8	27.7	-85.6	561.1
Honda Motor Co Ltd HMC USA	11,772,549 JPY	—	8.4	-4.7	—	-35.0	57.7	-11.4	-32.4	61.8	-3.2	483.8	-92.3	11.4	—	—
Average		9.1	3.5	1.8	20.7	-8.7	6.7	-24.5	-46.6	43.2	70.5	126.6	-44.1	17.5	-26.6	155.4
Bayerische Motoren Werke AG	87,411 EUR	13.9	1.2	11.7	6.6	1.9	8.7	9.8	7.8	4.8	263.6	14.2	-26.6	11.5	10.3	2.0

Bayerische Motoren Werke AG BMW (XETR) | ★★★★★

Last Price	Fair Value	Uncertainty	Economic Moat™	Moat Trend™	Stewardship	Industry Group
82.93 EUR	105.00 EUR	High	Narrow	Negative	Standard	Autos

Comparable Company Analysis

These companies are chosen by the analyst and the data are shown by nearest calendar year in descending market capitalization order.

Profitability Analysis

Company/Ticker	Last Historical Year Net Income (Mil)	Gross Margin %			EBITDA Margin %			Operating Margin %			Net Margin %			Free Cash Flow Margin %		
		2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)
Tata Motors Ltd 500570 IND	128,291 INR	—	35.2	35.6	14.5	13.7	12.8	9.3	7.4	6.3	4.9	3.6	3.9	—	2.3	-0.1
Toyota Motor Corp TM USA	2,173,360 JPY	—	19.2	17.6	13.2	13.4	11.3	9.9	9.9	7.7	8.5	8.4	7.2	—	7.0	5.4
Daimler AG DAI DEU	8,424 EUR	26.6	26.6	26.7	13.2	13.4	13.5	9.2	9.3	9.4	6.5	6.4	6.5	4.7	4.3	4.1
Volkswagen AG VOW3 DEU	-5,293 EUR	32.5	32.3	32.4	16.0	16.4	16.4	9.0	9.1	9.1	-2.9	2.3	5.7	3.3	1.0	2.7
Honda Motor Co Ltd HMC USA	509,366 JPY	—	2.4	3.9	9.3	7.5	9.1	4.0	2.4	3.9	4.3	2.7	4.6	—	4.4	0.7
Average		29.6	23.1	23.2	13.2	12.9	12.6	8.3	7.6	7.3	4.3	4.7	5.6	4.0	3.8	2.6
Bayerische Motoren Werke AG	6,367 EUR	26.6	26.8	26.7	15.1	15.1	15.0	9.8	9.8	9.6	7.3	7.8	7.3	7.8	5.4	3.5

Leverage Analysis

Company/Ticker	Last Historical Year Total Debt (Mil)	Debt/Equity %			Debt/Total Cap %			EBITDA/Interest Exp.			Total Debt/EBITDA			Assets/Equity		
		2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)
Tata Motors Ltd 500570 IND	725,328 INR	135.6	90.7	64.2	57.6	47.6	39.1	7.3	7.7	8.8	1.9	1.9	1.6	—	3.4	2.9
Toyota Motor Corp TM USA	1,248,808 JPY	8.5	8.6	8.2	7.8	7.9	7.5	138.6	132.6	105.5	0.4	0.4	0.5	—	1.8	1.7
Daimler AG DAI DEU	25,938 EUR	48.4	44.8	32.8	32.6	30.9	24.7	57.2	56.6	61.9	1.5	1.5	1.2	2.5	2.4	2.2
Volkswagen AG VOW3 DEU	9,557 EUR	10.9	6.3	5.4	9.8	6.0	5.1	1,003.0	899.8	272.6	0.3	0.2	0.2	2.6	2.6	2.5
Honda Motor Co Ltd HMC USA	592,620 JPY	10.0	9.0	8.6	9.1	8.2	7.9	146.3	158.4	149.7	0.5	0.5	0.4	—	1.8	1.8
Average		42.7	31.9	23.8	23.4	20.1	16.9	270.5	251.0	119.7	0.9	0.9	0.8	2.6	2.4	2.2
Bayerische Motoren Werke AG	5,832 EUR	13.7	9.0	5.2	12.1	8.2	4.9	20.5	22.1	35.3	0.4	0.3	0.2	2.2	2.1	2.0

Liquidity Analysis

Company/Ticker	Market Cap (Mil)	Cash per Share			Current Ratio			Quick Ratio			Cash/Short-Term Debt			Payout Ratio %		
		2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)	2015	2016(E)	2017(E)
Tata Motors Ltd 500570 IND	1,607,345 INR	60.68	50.75	63.31	1.00	1.03	1.03	0.71	0.72	0.72	1.09	0.91	1.11	5.6	1.1	0.9
Toyota Motor Corp TM USA	167,345 USD	1,244.32	1,161.60	1,318.38	1.37	1.46	1.52	1.08	1.18	1.25	5.75	5.01	5.76	28.6	33.7	47.3
Daimler AG DAI DEU	75,477 EUR	7.82	8.18	8.85	2.07	2.13	2.16	1.47	1.51	1.53	1.17	1.26	1.40	31.1	40.8	—
Volkswagen AG VOW3 DEU	67,374 EUR	31.48	28.99	36.49	1.12	1.00	1.02	0.65	0.57	0.60	—	—	—	-47.5	8.5	22.9
Honda Motor Co Ltd HMC USA	55,853 USD	764.88	924.88	870.71	1.63	1.54	1.61	1.09	1.09	1.06	3.11	5.32	5.01	39.1	57.4	38.6
Average		421.84	434.88	459.55	1.44	1.43	1.47	1.00	1.01	1.03	2.78	3.13	3.32	11.4	28.3	27.4
Bayerische Motoren Werke AG	54,469 EUR	6.02	7.82	8.08	1.22	1.33	1.37	0.91	0.99	1.00	1.23	4.11	7.32	29.9	30.6	29.8

Research Methodology for Valuing Companies

Overview

At the heart of our valuation system is a detailed projection of a company's future cash flows, resulting from our analysts' research. Analysts create custom industry and company assumptions to feed income statement, balance sheet, and capital investment assumptions into our globally standardized, proprietary discounted cash flow, or DCF, modeling templates. We use scenario analysis, in-depth competitive advantage analysis, and a variety of other analytical tools to augment this process. Moreover, we think analyzing valuation through discounted cash flows presents a better lens for viewing cyclical companies, high-growth firms, businesses with finite lives (e.g., mines), or companies expected to generate negative earnings over the next few years. That said, we don't dismiss multiples altogether but rather use them as supporting cross-checks for our DCF-based fair value estimates. We also acknowledge that DCF models offer their own challenges (including a potential proliferation of estimated inputs and the possibility that the method may miss short-term market-price movements), but we believe these negatives are mitigated by deep analysis and our long-term approach.

Morningstar's equity research group ("we", "our") believes that a company's intrinsic worth results from the future cash flows it can generate. The Morningstar Rating for stocks identifies stocks trading at a discount or premium to their intrinsic worth—or fair value estimate, in Morningstar terminology. Five-star stocks sell for the biggest risk-adjusted discount to their fair values, whereas 1-star stocks trade at premiums to their intrinsic worth.

Four key components drive the Morningstar rating: (1) our assessment of the firm's economic moat, (2) our estimate of the stock's fair value, (3) our uncertainty around that fair value estimate

and (4) the current market price. This process ultimately culminates in our single-point star rating.

1. Economic Moat

The concept of an economic moat plays a vital role not only in our qualitative assessment of a firm's long-term investment potential, but also in the actual calculation of our fair value estimates. An economic moat is a structural feature that allows a firm to sustain excess profits over a long period of time. We define economic profits as returns on invested capital (or ROIC) over and above our estimate of a firm's cost of capital, or weighted average cost of capital (or WACC). Without a moat, profits are more susceptible to competition. We have identified five sources of economic moats: intangible assets, switching costs, network effect, cost advantage, and efficient scale.

Companies with a narrow moat are those we believe are more likely than not to achieve normalized excess returns for at least the next 10 years. Wide-moat companies are those in which we have very high confidence that excess returns will remain for 10 years, with excess returns more likely than not to remain for at least 20 years. The longer a firm generates economic profits, the higher its intrinsic value. We believe low-quality, no-moat companies will see their normalized returns gravitate toward the firm's cost of capital more quickly than companies with moats.

To assess the sustainability of excess profits, analysts perform ongoing assessments of the moat trend. A firm's moat trend is positive in cases where we think its sources of competitive advantage are growing stronger; stable where we don't anticipate changes to competitive advantages over the next several years; or negative when we see signs of deterioration.

2. Estimated Fair Value

Combining our analysts' financial forecasts with the firm's economic moat helps us assess how long returns on invested capital are likely to exceed the firm's cost of

capital. Returns of firms with a wide economic moat rating are assumed to fade to the perpetuity period over a longer period of time than the returns of narrow-moat firms, and both will fade slower than no-moat firms, increasing our estimate of their intrinsic value.

Our model is divided into three distinct stages:

Stage I: Explicit Forecast

In this stage, which can last five to 10 years, analysts make full financial statement forecasts, including items such as revenue, profit margins, tax rates, changes in working-capital accounts, and capital spending. Based on these projections, we calculate earnings before interest, after taxes (EBI) and the net new investment (NNI) to derive our annual free cash flow forecast.

Stage II: Fade

The second stage of our model is the period it will take the company's return on new invested capital—the return on capital of the next dollar invested ("RONIC")—to decline (or rise) to its cost of capital. During the Stage II period, we use a formula to approximate cash flows in lieu of explicitly modeling the income statement, balance sheet, and cash flow statement as we do in Stage I. The length of the second stage depends on the strength of the company's economic moat. We forecast this period to last anywhere from one year (for companies with no economic moat) to 10–15 years or more (for wide-moat companies). During this period, cash flows are forecast using four assumptions: an average growth rate for EBI over the period, a normalized investment rate, average return on new invested capital (RONIC), and the number of years until perpetuity, when excess returns cease. The investment rate and return on new invested capital decline until a perpetuity value is calculated. In the case of firms that do not earn their cost of capital, we assume marginal ROICs rise to the firm's cost of capital (usually attributable to less reinvestment), and we may truncate the second stage.

Stage III: Perpetuity

Once a company's marginal ROIC hits its cost of capital, we calculate a continuing value, using a standard perpetuity formula. At perpetuity, we assume that any growth or decline or investment in the business neither creates nor destroys value and that any new investment provides a return in line with estimated WACC.

Because a dollar earned today is worth more than a dollar earned tomorrow, we discount our projections of cash flows in stages I, II, and III to arrive at a total pres-

Morningstar Research Methodology for Valuing Companies



Research Methodology for Valuing Companies

ent value of expected future cash flows. Because we are modeling free cash flow to the firm—representing cash available to provide a return to all capital providers—we discount future cash flows using the WACC, which is a weighted average of the costs of equity, debt, and preferred stock (and any other funding sources), using expected future proportionate long-term, market-value weights.

3. Uncertainty around that fair value estimate

Morningstar's Uncertainty Rating captures a range of likely potential intrinsic values for a company and uses it to assign the margin of safety required before investing, which in turn explicitly drives our stock star rating system. The Uncertainty Rating represents the analysts' ability to bound the estimated value of the shares in a company around the Fair Value Estimate, based on the characteristics of the business underlying the stock, including operating and financial leverage, sales sensitivity to the overall economy, product concentration, pricing power, and other company-specific factors.

Analysts consider at least two scenarios in addition to their base case: a bull case and a bear case. Assumptions are chosen such that the analyst believes there is a 25% probability that the company will perform better than the bull case, and a 25% probability that the company will perform worse than the bear case. The distance between the bull and bear cases is an important indicator of the uncertainty underlying the fair value estimate.

Our recommended margin of safety widens as our uncertainty of the estimated value of the equity increases. The more uncertain we are about the estimated value of the equity, the greater the discount we require relative to our estimate of the value of the firm before we would recommend the purchase of the shares. In addition, the uncertainty rating provides guidance in portfolio construction based on risk tolerance.

Our uncertainty ratings for our qualitative analysis are low, medium, high, very high, and extreme.

► **Low:** margin of safety for 5-star rating is a 20% discount and for 1-star rating is 25% premium.

- **Medium:** margin of safety for 5-star rating is a 30% discount and for 1-star rating is 35% premium.
- **High:** margin of safety for 5-star rating is a 40% discount and for 1-star rating is 55% premium.
- **Very High:** margin of safety for 5-star rating is a 50% discount and for 1-star rating is 75% premium.
- **Extreme:** Stock's uncertainty exceeds the parameters we have set for assigning the appropriate margin of safety.

4. Market Price

The market prices used in this analysis and noted in the report come from exchange on which the stock is listed which we believe is a reliable source.

For more detail information about our methodology, please go to <http://global.morningstar.com/equitydisclosures>

Morningstar Star Rating for Stocks

Once we determine the fair value estimate of a stock, we compare it with the stock's current market price on a daily basis, and the star rating is automatically re-calculated at the market close on every day the market on which the stock is listed is open. Our analysts keep close tabs on the companies they follow, and, based on thorough and ongoing analysis, raise or lower their fair value estimates as warranted.

Please note, there is no predefined distribution of stars. That is, the percentage of stocks that earn 5 stars can fluctuate daily, so the star ratings, in the aggregate, can serve as a gauge of the broader market's valuation. When there are many 5-star stocks, the stock market as

a whole is more undervalued, in our opinion, than when very few companies garner our highest rating.

We expect that if our base-case assumptions are true the market price will converge on our fair value estimate over time, generally within three years (although it is impossible to predict the exact time frame in which market prices may adjust).

Our star ratings are guideposts to a broad audience and individuals must consider their own specific investment goals, risk tolerance, tax situation, time horizon, income needs, and complete investment portfolio, among other factors.

The Morningstar Star Ratings for stocks are defined below:

Five Stars ★★★★★

We believe appreciation beyond a fair risk-adjusted return is highly likely over a multiyear time frame. Scenario analysis developed by our analysts indicates that the current market price represents an excessively pessimistic outlook, limiting downside risk and maximizing upside potential.

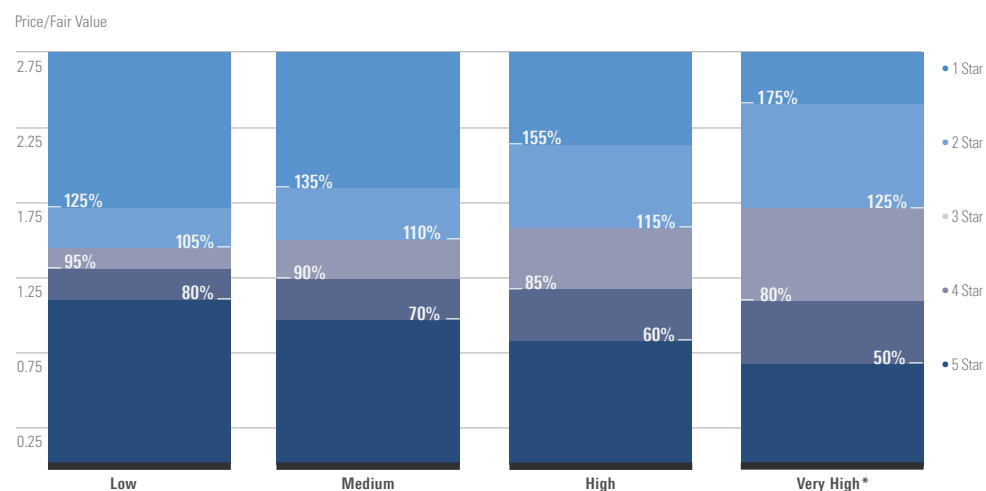
Four Stars ★★★★

We believe appreciation beyond a fair risk-adjusted return is likely.

Three Stars ★★★

Indicates our belief that investors are likely to receive a fair risk-adjusted return (approximately cost of equity).

Morningstar Research Methodology for Valuing Companies



* Occasionally a stock's uncertainty will be too high for us to estimate, in which case we label it Extreme.

Research Methodology for Valuing Companies

Two Stars ★★

We believe investors are likely to receive a less than fair risk-adjusted return.

One Star ★

Indicates a high probability of undesirable risk-adjusted returns from the current market price over a multiyear time frame, based on our analysis. Scenario analysis by our analysts indicates that the market is pricing in an excessively optimistic outlook, limiting upside potential and leaving the investor exposed to Capital loss.

Other Definitions:

Last Price: Price of the stock as of the close of the market of the last trading day before date of the report.

Stewardship Rating: Represents our assessment of management's stewardship of shareholder capital, with particular emphasis on capital allocation decisions. Analysts consider companies' investment strategy and valuation, financial leverage, dividend and share buyback policies, execution, compensation, related party transactions, and accounting practices. Corporate governance practices are only considered if they've had a demonstrated impact on shareholder value. Analysts assign one of three ratings: "Exemplary," "Standard," and "Poor." Analysts judge stewardship from an equity holder's perspective. Ratings are determined on an absolute basis. Most companies will receive a Standard rating, and this is the default rating in the absence of evidence that managers have made exceptionally strong or poor capital allocation decisions.

Quantitative Valuation: Using the below terms, intended to denote the relationship between the security's Last Price and Morningstar's quantitative fair value estimate for that security.

► **Undervalued:** Last Price is below Morningstar's quantitative fair value estimate.

► **Fairly Valued:** Last Price is in line with Morningstar's quantitative fair value estimate.

► **Overvalued:** Last Price is above Morningstar's quantitative fair value estimate.

Risk Warning

Please note that investments in securities are subject to market and other risks and there is no assurance or guarantee that the intended investment objectives will be achieved. Past performance of a security may or may not be sustained in future and is no indication of future performance. A security investment return and an investor's principal value will fluctuate so that, when redeemed, an investor's shares may be worth more or less than their original cost. A security's current investment performance may be lower or higher than the investment performance noted within the report. Morningstar's Uncertainty Rating serves as a useful data point with respect to sensitivity analysis of the assumptions used in our determining a fair value price.

Bayerische Motoren Werke AG BMW (XETR) | ★★★★★

Last Price	Fair Value	Uncertainty	Economic Moat™	Moat Trend™	Stewardship	Industry Group
82.93 EUR	105.00 EUR	High	Narrow	Negative	Standard	Autos



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